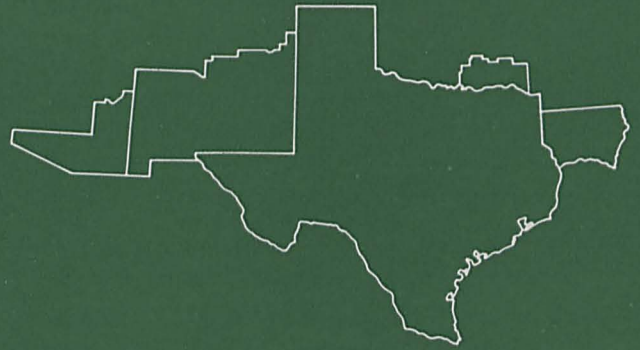


*The 1970's Decade for plastics  
Part 1: Polyethylene*

# ***business review***



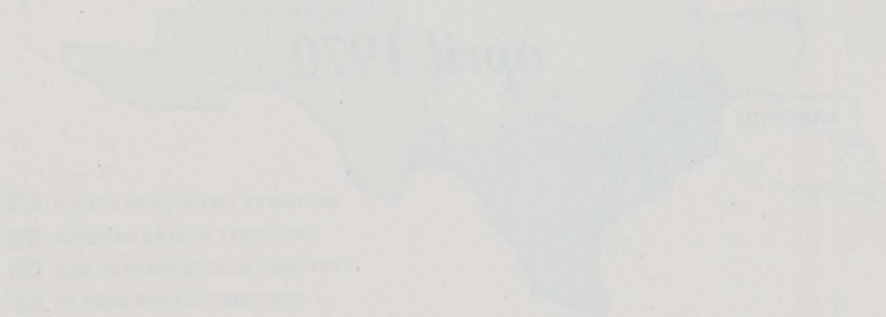
*april 1970*

**FEDERAL RESERVE  
BANK OF DALLAS**

*business  
review*

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# The 1970's: Decade for plastics

## Part 1: Polyethylene

Plastics is one of the fastest growing industries in the United States. Since 1960, the plastics industry has expanded three times as fast as total U.S. manufacturing. Production last year totaled almost 18 billion pounds, or triple the output in 1960. And observers foresee further rapid increases, with the industry more than doubling in the 1970's and annual production going to 40 billion pounds by 1980. By then, world consumption of plastics may well rival the use of metals, marking the beginning of an Age of Synthetics.

The future of plastics is of continuing importance to the Southwest. Not only is the world's heaviest concentration of plastics production clustered along the Gulf Coast of Texas and Louisiana, but petrochemical plants in these two oil-rich states supply most of the raw materials used in manufacturing plastics.

Plastics are synthetic resins derived from hydrocarbons, sometimes natural gas but more often petroleum. While normally solid as final products, they are liquid at some stage of processing — a characteristic that allows them to be molded into various shapes. Although plastics include many resins, all are either thermoplastic or thermosetting. Thermoplastic resins soften under heat and, with enough heat, can be reshaped. Thermosetting resins become rigid when heated and cannot be softened by reheating.

Of the two, the market for thermoplastics is far larger, accounting for about four-fifths of the plastic resins produced in the United States. It is also the faster growing. Since 1960, production of thermoplastic resins has increased at an average annual rate of 13 percent, compared with 7 percent for thermosetting resins. More

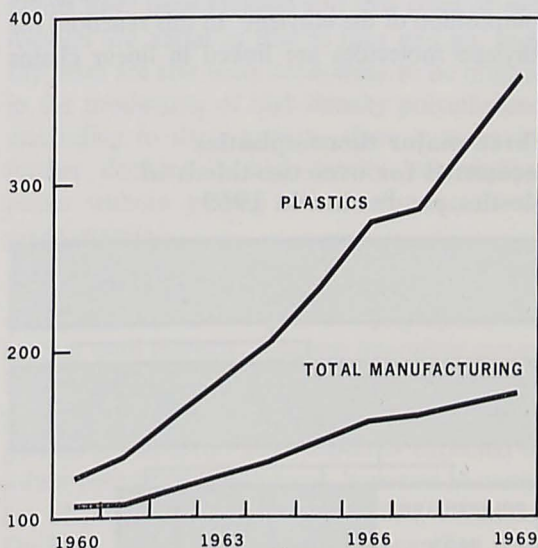
than two-thirds of all plastic resins fall into one of three families of thermoplastics: polyethylene, the vinyls, and the styrenes. This article centers on the production and marketing of polyethylene — the most widely used resin. The other two major families will be taken up in later issues.

### The polyethylene industry

The size of the polyethylene industry alone would account for the importance of plastics to the economy of the Southwest. Production of polyethylene reached 5.4 billion pounds in 1969, or more than 30 percent of all plastics produced in this country. Of that volume, about 85 percent was produced in Texas and Louisi-

### Plastics production grows three times as fast as total manufacturing

PERCENT (1957-59=100)



SOURCES: Board of Governors, Federal Reserve System.  
U.S. Tariff Commission.

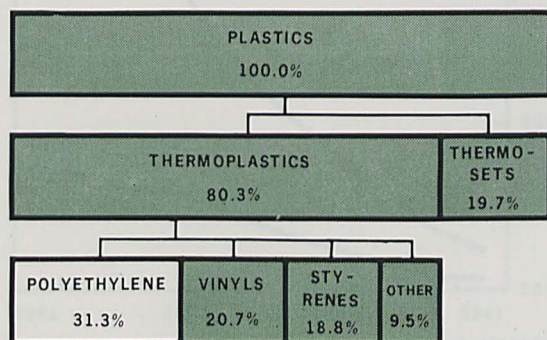
ana, where polyethylene facilities are closely related to the petrochemical operations of refining companies supplying feedstocks for the production of intermediate products.

Polyethylene is produced from ethylene through polymerization — a process of restructuring ethylene molecules into molecular chains. Ethylene, in turn, is produced either from ethane, through dehydrogenation, or from propane or propane-ethane mixtures, through cracking.

There are two types of polyethylene: the low-density type, used, for example, in food wraps and dry-cleaning bags, and the high-density type, used most often in bottles and other containers. In the production of both types, molecular chains are formed as liquid ethylene is transformed into a solid. But in low-density polyethylene, which is produced under heat and pressure, the chains have many unconnected links that stand out, like branches on a tree, keeping the polymer from being closely packed, even under high pressure. The result is a tough, flexible plastic used primarily in film and sheets.

High-density polyethylene is produced under much lower pressure but with the aid of a catalyst that sets up a chain reaction altering the composition of the ethylene. In this reaction, the ethylene molecules are linked in linear chains

### Three major thermoplastics accounted for over two-thirds of plastics production in 1969



SOURCE: U.S. Tariff Commission.

more like logs than trees and, therefore, much more closely packed than the low-density chains produced under pressure. The result is a fairly rigid plastic suitable for use in molded products.

Because of marked differences in the properties and applications of these two types of polymers, they make up two very distinct markets within the plastics industry. The market for low-density polyethylene is considerably larger and more mature. Production of this type of plastic totaled about 3.8 billion pounds in 1969, or 70 percent of all U.S. polyethylene production. The market for high-density polyethylene is growing much faster, however, partly because it is the newer market. Sales of high-density polyethylene increased more than tenfold in the 1960's, while sales of low-density polyethylene increased less than fourfold. By 1980, the market for high-density polyethylene is expected to be nearly half as large as the low-density market.

### Low-density polyethylene

As the market for low-density polyethylene has developed and become more defined, price competition has become more important. Prices have trended downward, from as high as \$1 a pound in the early 1940's to 10 cents a pound for some grades last year. To reduce operating costs, emphasis has been placed increasingly on greater economies of scale and improved productivity.

Economies of scale have generally required ever-larger plants. The average capacity for a low-density polyethylene plant is now about 200 million pounds a year, compared with 125 million in 1965, and the newest plants have capacities of about 300 million pounds. Monsanto, a major plastics producer, sold its 135-million-pound plant at Texas City purportedly because it was too small for economical operation.

Although demand for low-density polyethylene has increased fairly evenly over the years, the movement toward larger plants has often

caused the supply to increase abruptly and irregularly as new plants have gone on stream. As a result, the industry has been plagued intermittently by excess supply and accompanying price erosion. So far this year, however, prices have moved upward, reflecting a growing tightness in the market, and the outlook for the early 1970's may be the brightest in several years.

Low-density polyethylene capacity totaled about 4 billion pounds last year. With production about 3.8 billion pounds, the capacity utilization rate was close to 95 percent. Supply and demand will probably remain fairly well balanced, with the utilization rate staying above 90 percent, until at least late 1971, when Northern Petrochemical brings a new 500-million-pound plant on stream at Joliet, Illinois.

Sales are expected to double in the 1970's, bringing the annual total to 7.8 billion pounds by 1980. Most of this growth will come from increased use of low-density polyethylene in film and sheeting, especially in such items as refuse bags and heat-shrink pallet wraps, and greater sales to the wire and cable industry. Of the low-density polyethylene sold in 1969, 43 percent was used in film and sheets, 13 percent in injection moldings, 11 percent in extrusion coatings for paper and other substrates, and 10 percent in coatings on wire and cable.

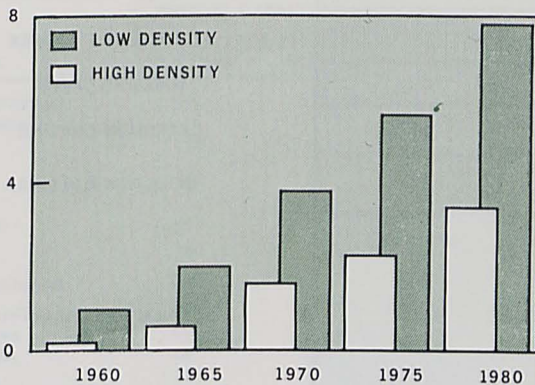
### High-density polyethylene

Prices of high-density polyethylene have also trended downward as production and sales have expanded. With larger markets, producers have been able to cut costs by increasing the size of their plants and improving their productivity. With lower costs, they have reduced prices in an effort to make further inroads into existing end-use markets and expand into new markets.

The greatest progress has been in penetration of the container market, especially the plastic-bottle market. Blow molders bought 38 percent of all domestic high-density polyethylene sold in 1969. About three-fifths of this —

### Sales of high-density polyethylene expected to continue gains relative to rising low-density sales

BILLIONS OF POUNDS



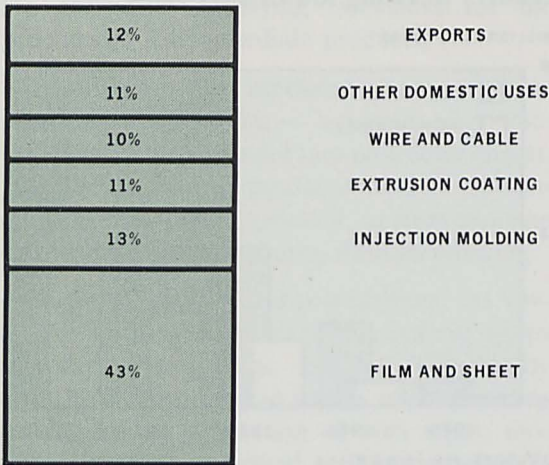
SOURCES: Standard & Poor's.  
U.S. Tariff Commission.

310 million pounds — was used in the production of plastic bottles. Roughly 80 percent of the plastic bottles produced last year were blown from high-density polyethylene. Injection molders were also significant users, consuming 21 percent of the high-density polyethylene sold.

While some industry experts think almost all economies of scale in low-density polyethylene plants have been realized and that costs of production are about as low as they can go, most say there are still some economies to be realized in the production of high-density polyethylene. According to these experts, there is room for further declines in high-density polyethylene prices without putting too much pressure on profit margins.

The balance between demand and supply has been close in the high-density polyethylene market until recently. Average operating capacity totaled about 1.7 billion pounds in 1969, and production was about 1.6 billion pounds, or 94 percent of capacity. The market is expected to soften considerably this year, however. A number of producers — including Allied, Celanese, Du Pont, and Monsanto — are expanding their plants, and Amoco is scheduled to bring its 100-

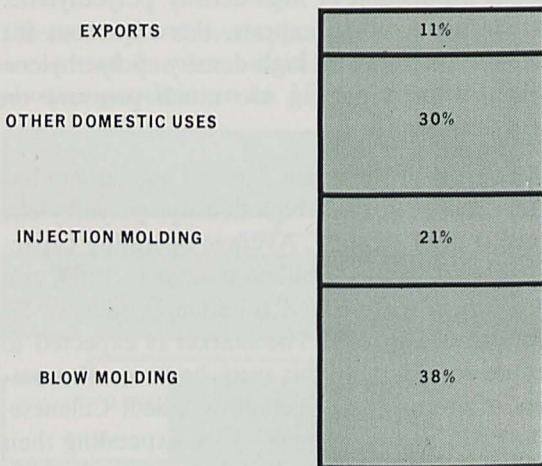
**Nearly half of the low-density sales in 1969 went for film and sheets . . .**



SOURCE: U.S. Tariff Commission.

million-pound plant at Alvin, Texas, into operation. With these additions, high-density polyethylene capacity will increase about 450 million pounds by mid-1970. That will be twice the projected increase in demand. As a result, the capacity utilization rate is expected to drop to about 85 percent before moving up again, gradually, in 1971.

**. . . and more than half of the high-density products were molded**



SOURCE: U.S. Tariff Commission.

As the market grows in the 1970's, sales of high-density polyethylene are expected to increase 2½ times, reaching 3.4 billion pounds by 1980. Much of this increase will probably come from further inroads into the container field. As prices of high-density polyethylene fall, costs of containers made from this resin will compare more and more favorably with the costs of glass, metal, and coated-paper containers, opening up markets formerly dominated by nonplastic containers. The dairy industry, for example, has recently started using high-density polyethylene bottles, and with such acceptance that some observers predict plastic bottles will account for a fourth of all milk containers by 1973.

***Polyethylene producers***

The polyethylene market is dominated by large, diversified chemical and petroleum companies. Of the 13 producers of low-density polyethylene, four chemical companies — Dow, Du Pont, National Distillers, and Union Carbide — lead the field, accounting for more than half the industry's capacity. Gulf Oil ranks fifth in capacity and is planning further plant expansion. Other oil companies that have vertically integrated their production forward through ethylene into the low-density polyethylene market include Standard Oil of New Jersey, Cities Service, Mobil, Skelly, and Sinclair, all of which are significant producers.

Twelve companies produce high-density polyethylene. Eight are chemical companies, and four are either petroleum companies or, in the case of Chemplex, affiliated with petroleum companies. A fifth oil company — Amoco — is due to enter the market about midyear. Although seven of these companies also produce low-density polyethylene, only three of the six leading high-density polyethylene producers also make low-density polyethylene — a clear indication that participation in the low-density polyethylene market is not necessary for success in high-density polyethylene.

## Most polyethylene producers manufacture both types of polyethylene and supply their own ethylene

Producer	Plant location	ANNUAL CAPACITY (Millions of pounds)		
		Polyethylene, mid-1970		Ethylene, mid-1968
		Low-density	High-density	
Allied Chemical	Baton Rouge, Louisiana	—	250	—
	Geismar, Louisiana	—	—	1250
	Orange, Texas	28	25	—
Amoco Chemicals (Standard Oil of Indiana)	Alvin, Texas	—	100	—
Celanese	Deer Park, Texas	—	250	—
Chemplex (Skelly-American Can)	Clinton, Iowa	180	110	500
Cities Service (Columbian Carbon)	Lake Charles, Louisiana	150	—	380
Dow Chemical	Plaquemine, Louisiana	175	50	610
	Bay City, Michigan	—	—	70
	Midland, Michigan	—	—	150
	Freeport, Texas	225	60	1,550
Du Pont	Orange, Texas	480	200	750
	Victoria, Texas	120	—	—
El Paso Natural Gas-Rexall	Odessa, Texas	300	—	450
Enjay Chemical (Standard Oil of New Jersey)	Baton Rouge, Louisiana	200	—	1,000
	Bayway, New Jersey	—	—	175
	Baytown, Texas	—	—	90
Gulf Oil	Cedar Bayou, Texas	200	—	400
	Orange, Texas	200	100	—
	Port Arthur, Texas	—	—	425
Hercules	Parlin, New Jersey	—	50	—
Monsanto	Alvin, Texas	—	—	500
	Texas City, Texas	—	180	100
National Distillers	Tuscola, Illinois	150	—	380
	Deer Park, Texas	300	—	—
National Petro Chemicals (National Distillers — Owens-Illinois)	Tuscola, Illinois	—	—	<sup>2</sup> (380)
	La Porte, Texas	—	170	—
Northern Petrochemical (Mobil)	Beaumont, Texas	—	—	460
	Texas City, Texas	135	—	—
Phillips Petroleum	Houston, Texas	—	195	—
	Sweeny, Texas	—	—	<sup>3</sup> 1,100
Sinclair-Koppers	Houston, Texas	—	—	500
	Port Arthur, Texas	175	100	—
Texas Eastman (Eastman Kodak)	Longview, Texas	250	—	450
Union Carbide	Torrance, California	80	—	150
	Whiting, Indiana	200	—	275
	Taft, Louisiana	—	—	500
	Seadrift, Texas	170	250	900
	Texas City, Texas	250	—	750
	Institute, West Virginia	—	—	350
	South Charleston, W. Va.	160	—	440
ALL PRODUCERS		4,128	2,090	13,655

<sup>1</sup> Allied's part of a 600-million-pound capacity joint venture between Allied, Wyandotte, and Marbon Chemical.

<sup>2</sup> Capacity of National Distillers, which owns 50 percent of National Petro Chemicals.

<sup>3</sup> Includes a 500-million-pound capacity joint venture between Phillips and Houston Natural Gas.

SOURCES: Oil and Gas Journal.

Federal Reserve Bank of Dallas.

The concentration of polyethylene production in Texas and Louisiana — 16 of the 21 low-density polyethylene plants in operation and 12 of the 14 high-density polyethylene plants — results primarily from the high costs of transporting ethylene and ethylene feedstocks except through pipelines. Polyethylene producers have clustered their plants near the pipeline network that laces the Gulf Coast area of these two states.

### *Vertical integration*

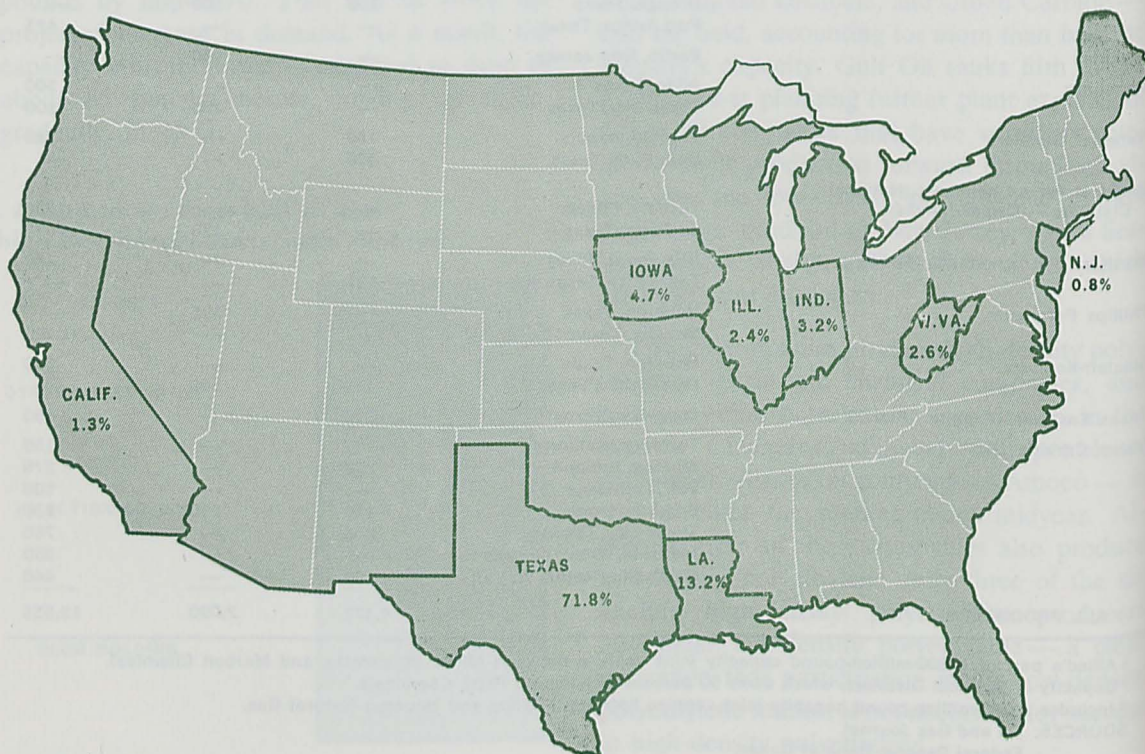
Vertical integration is a way of life with polyethylene producers. Every producer of low-density polyethylene is integrated back into the production of ethylene, and most high-density polyethylene producers make their own ethylene. Producers of polyethylene account for more than 80 percent of total ethylene capacity, and

about 47 percent of all ethylene produced in the United States goes into the production of polyethylene.

Because of the high overhead costs of polyethylene plants, companies must operate close to full capacity to keep their plants profitable. By integrating their operations into ethylene, they can avoid the possibility of a cutback in capacity utilization resulting from a shortage of ethylene.

Most producers have also integrated forward into end-use markets, largely through the acquisition of plastic fabricators. Union Carbide became the largest plastic-film producer when it acquired Visking in 1956. Monsanto moved into the plastic-bottle market through the acquisition of Plax and became the second or third largest plastic-bottle maker. With a captive

### **Polyethylene production centered on the Gulf Coast, especially in Texas**





market for at least part of their output, producers are freer of fluctuations in the market and, therefore, more able to hold their production near full capacity.

### *Barriers to entry*

With economies of scale and high fixed costs requiring continuous, near-capacity outflows from large-scale operations, polyethylene producers must have both ready sources of feedstock and ready markets for their output. These requisites suggest that, while markets for polyethylene are expected to continue their rapid expansion, barriers to entry into these markets will probably remain high enough to keep out all but a few large, diversified companies.

As a barrier to entry into the high-density polyethylene market, economies of scale are not as formidable as in the low-density market. Scale economies will no doubt become increasingly important in high-density polyethylene, however, as that market grows and matures. The entries of Northern Petrochemical into the low-density market and of Amoco into the high-density market provide cases in point.

When Northern's new 500-million-pound low-density plant goes on stream next year, it will bring total U.S. capacity to 4,863,000,000 pounds a year, or 18 percent more than this year. If low-density polyethylene producers already in the market continue to operate their plants near full capacity (as they must), Northern will have to capture about 10 percent of the market for its plant to operate at full capacity. (Since Northern has already established a foothold in the market through acquisition of the Monsanto plant, its task will have been eased somewhat.)

By contrast, Amoco is preparing to enter the high-density polyethylene field with a plant of only 100 million pounds capacity. To operate this plant at full capacity, Amoco will have to capture only about 5 percent of the high-density market, which should not be hard to do

in view of the outlook for continued rapid increases in demand.

Another obstacle to entry into polyethylene is the extent of vertical integration of producers already in the market. With all but two of the companies now producing polyethylene also making their own ethylene, a new entrant might ordinarily be expected to build an ethylene plant along with its new polyethylene facility. But such an undertaking would substantially increase the capital costs of entry. The new Northern Petrochemical plant, for example, includes an ethylene facility large enough to supply all the company's input needs. But to include both facilities, Northern purportedly spent \$125 million.

A company wanting to produce only polyethylene would have the problem not only of providing capital for an ethylene plant but also of disposing of the ethylene it could not use in its polyethylene operation. Scale economies have become so important in ethylene production (plants with annual capacities of a billion pounds are not uncommon) that a company cannot afford to produce ethylene merely to meet the ethylene requirements of an economically sized polyethylene plant, regardless of capital costs. Unless the company already made other products taking ethylene as a feedstock, it would probably not build a combined ethylene and polyethylene facility.

Companies entering the polyethylene field also have to integrate forward into end-use markets to gain an equal footing with more established companies. Northern, for example, acquired three plastic-fabricating concerns before it entered the low-density polyethylene market. Without forward integration, a new producer might find it hard to reach a level of efficient operation by selling exclusively to the merchant market, particularly since established producers have already limited the customers available to a new producer.

WILLIAM H. KELLY

## *District highlights*

The seasonally adjusted Texas industrial production index declined nearly 1.0 percent in February to 181.0 percent of the 1957-59 base from a slightly revised 182.7 percent in January. All the decline was in manufacturing. Mining increased fractionally, and utilities were unchanged. Within manufacturing, production of durable goods declined substantially while production of nondurables declined only fractionally. The biggest drops were in transportation equipment and leather goods.

The index was 7.4 percent higher than a year earlier, with all major categories contributing to the advance. Mining and utilities rose more than 10 percent, and manufacturing rose nearly 6 percent. In manufacturing, the production of nondurable goods increased twice as fast as the production of durable goods. Crude petroleum output increased close to 13 percent over February 1969.

Total nonagricultural wage and salary employment in the five southwestern states increased fractionally in February to 6,288,400, compared with the revised employment of 6,277,000 in January. Because of seasonal factors, total employment is usually expected to decline slightly in February. Manufacturing employment declined 0.8 percent, which was more than expected. Nonmanufacturing employment rose 0.4 percent, showing its greatest strength in construction, which advanced 1.8 percent. Advances were also made in transportation and public utilities, finance, services, and government. Mining and trade slipped slightly.

Compared with a year earlier, employment in these states was up 4.3 percent, with manufacturing showing a gain of 3.0 percent and nonmanufacturing a gain of 4.6 percent. All categories of nonmanufacturing registered ad-

vances over February 1969. Transportation and public utilities showed the greatest strength, advancing 10.7 percent, followed by construction, which advanced 6.1 percent. The least strength was shown by mining, which rose only fractionally. Government advanced 2.5 percent.

Comparison of changes in employment with changes a year earlier indicates some cyclical weakness in recent months. Since October, year-to-year advances in employment have been less than the strong rises made a year earlier. The most pronounced slowing has been in manufacturing. In only one month last year was the year-to-year gain in manufacturing employment higher than the gain a year before.

Loans adjusted increased at Eleventh District weekly reporting banks in the four weeks ended March 11. Time and savings deposits also increased, while total investments and demand deposits declined. Large certificates of deposit rose slightly.

Loans adjusted rose \$10 million, compared with an increase of \$57 million a year earlier. Declines of \$42 million in business loans and \$20 million in real estate loans were more than offset by increases of \$34 million in loans to brokers and dealers to carry securities and \$33 million in "other" loans. Agricultural and consumer instalment loans rose only small amounts.

Total investments declined \$134 million, compared with a decline of \$69 million a year earlier but in contrast to an increase of \$36 million in the previous reporting period. Holdings of Government securities declined \$42 million, principally because of a \$26 million decline in Treasury bills and a \$28 million decline in long-term Government bonds. Holdings of municipal notes and bonds declined \$96 million.

Total demand deposits declined \$55 million. Increases of \$21 million in deposits of individuals, partnerships, and corporations and \$17 million in interbank deposits were more than offset by declines of \$54 million in deposits of states and their political subdivisions and \$39 million in deposits of the Federal Government. In the corresponding period a year earlier, total demand deposits declined \$112 million.

Total time and savings deposits increased \$26 million, principally because of a \$27 million rise in deposits of states and their political subdivisions. Large certificates of deposit increased \$8 million, in contrast to a decline of \$73 million in the year-earlier period.

Registrations of new passenger automobiles in Dallas, Fort Worth, Houston, and San Antonio increased 5 percent in February. Total registrations were down 4 percent from February 1969. Cumulative data for the first two months of 1970 show registrations in these four metropolitan areas off 10 percent from the same period last year.

Department store sales in the Eleventh District for the four weeks ended March 21 were 5 percent ahead of the comparable period last year. Cumulative sales through that date were 3 percent higher than in the corresponding period in 1969.

Daily average production of crude oil in Louisiana, New Mexico, Oklahoma, and Texas rose to 6,794,500 barrels in February. That was 1.2 percent higher than in January and 10.0 percent higher than a year earlier. Month-to-month changes in these four states contrasted sharply with year-to-year changes. Production in Oklahoma rose 5.5 percent from the January level, while production in Texas advanced only 0.1 percent. In contrast, production was 13.2 percent higher than a year earlier in Texas and

1.0 percent lower in Oklahoma. Nationwide, production was down 0.7 percent from January but up 6.3 percent from February 1969.

The high production allowables of recent months continue through April. For the fourth consecutive month, Texas set its allowable at 68 percent of the maximum efficient rate of production. Allowables in the other three producing southwestern states also remain unchanged from March. The rate for Louisiana is 48 percent and for Oklahoma 100 percent, while the rate for southeastern New Mexico is 75 barrels per well per day.

A cold, wet March curtailed activity on farms and ranches in the five states of the Eleventh District. Although some fields were being prepared and planted, many were too wet to work. Small grains were beginning to grow, and most spring vegetables were making good progress.

Farmers in these southwestern states intended on March 1 to plant 29.9 million acres to major spring crops — 5 percent more than plantings in 1969 and nearly 10 percent more than in 1968. Prospective plantings of rice and Irish potatoes were down, but acreage intended for cotton was up slightly more than 3 percent over 1969 and the increase for sorghums was nearly 6 percent.

Ranges and livestock were in generally good condition over the District, with grazing becoming available again and supplemental feeding on the decline. Some 1,295,000 head of cattle and calves were on feed in Texas on March 1 — 8 percent fewer than a month earlier but 25 percent more than a year earlier. In Arizona, there were 492,000 head on feed — 2 percent fewer than on February 1 but 14 percent more than in March 1969. The number on feed in the nation's six largest cattle feeding states totaled slightly over 7 million head — 4 percent fewer than a month before but 10 percent more than a year before.

The index of prices Texas farmers and ranchers received for their products on February 15 was 280 percent of the 1910-14 average. This was fractionally higher than in January and 12 percent higher than in February 1969. The all-crops price index, at 186, was down 1 percent from the previous month but 7 percent higher than in the previous February. Mid-February prices of oats, barley, and sorghum grain were higher than a month earlier, while prices of wheat, corn, hay, and rice were lower. Prices of livestock and livestock products, at 434, were up 2 percent over mid-January and 15 percent over February last year. Prices of all meat animals were higher than in February

1969 and, except for lambs, were higher than in January 1970.

The index of prices farmers and ranchers paid for commodities and services, interest, taxes, and wages at mid-February reached an all-time high of 386. Fractionally higher than the previous record of 383 reached at mid-January, this was 5 percent higher than the level a year earlier.

Cash receipts from farm marketings in the District states were 7 percent more in January than in the same month last year. The increase reflected a 17-percent gain in livestock receipts and a 4-percent decrease in crop receipts.

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***new  
par  
bank***

The Security Bank, Ruidoso, New Mexico, 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, March 9, 1970. The officers are: R. G. Scribner, Chairman of the Board; C. H. Wood, President; R. J. Stearns, Cashier; and R. F. Petty, Jr., Assistant Cashier.

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**STATISTICAL SUPPLEMENT**

to the

***BUSINESS REVIEW***

April 1970



FEDERAL RESERVE BANK  
OF DALLAS

**CONDITION STATISTICS OF WEEKLY REPORTING  
COMMERCIAL BANKS**

**Eleventh Federal Reserve District**

(In thousands of dollars)

Item	Mar. 25, 1970	Feb. 25, 1970	Mar. 26, 1969 <sup>1</sup>
<b>ASSETS</b>			
Federal funds sold and securities purchased under agreements to resell.....	328,350	348,150	6,426,716
Other loans and discounts, gross.....	5,994,269	5,970,685	
Commercial and industrial loans.....	3,000,519	3,011,646	3,070,509
Agricultural loans, excluding CCC certificates of interest.....	106,206	106,535	105,871
Loans to brokers and dealers for purchasing or carrying:			
U.S. Government securities.....	500	500	1,001
Other securities.....	39,459	42,111	74,966
Other loans for purchasing or carrying:			
U.S. Government securities.....	1,230	944	400
Other securities.....	387,955	382,994	412,113
Loans to nonbank financial institutions:			
Sales finance, personal finance, factors, and other business credit companies.....	132,845	131,585	130,589
Other.....	342,679	310,390	413,447
Real estate loans.....	587,795	612,862	616,372
Loans to domestic commercial banks.....	10,222	16,099	256,761
Loans to foreign banks.....	10,329	10,021	7,637
Consumer instalment loans.....	729,816	727,163	647,046
Loans to foreign governments, official institutions, central banks, international institutions.....	425	750	0
Other loans.....	644,289	617,085	690,004
Total investments.....	2,484,670	2,500,217	2,716,523
Total U.S. Government securities.....	892,650	910,690	1,079,412
Treasury bills.....	44,226	43,915	86,641
Treasury certificates of indebtedness.....	0	0	0
Treasury notes and U.S. Government bonds maturing:			
Within 1 year.....	166,647	153,830	123,576
1 year to 5 years.....	598,375	627,561	667,969
After 5 years.....	83,402	85,384	201,226
Obligations of states and political subdivisions:			
Tax warrants and short-term notes and bills.....	5,906	3,843	33,701
All other.....	1,458,205	1,468,099	1,352,509
Other bonds, corporate stocks, and securities:			
Certificates representing participations in:			
Federal agency loans.....	56,828	50,308	154,482
All other (including corporate stocks).....	71,081	67,277	96,419
Cash items in process of collection.....	1,016,240	936,850	986,554
Reserves with Federal Reserve Bank.....	818,805	612,406	793,240
Currency and coin.....	84,080	86,000	84,560
Balances with banks in the United States.....	449,748	428,708	472,982
Balances with banks in foreign countries.....	8,672	7,916	6,250
Other assets (including investments in subsidiaries not consolidated).....	506,796	495,002	377,784
<b>TOTAL ASSETS.....</b>	<b>11,691,630</b>	<b>11,385,934</b>	<b>11,864,609</b>
<b>LIABILITIES</b>			
Total deposits.....	8,866,268	8,761,963	9,578,402
Total demand deposits.....	5,549,339	5,475,240	5,729,107
Individuals, partnerships, and corporations.....	3,909,984	3,832,534	3,974,620
States and political subdivisions.....	258,789	302,366	304,388
U.S. Government.....	142,610	155,695	163,210
Banks in the United States.....	1,129,544	1,077,310	1,180,314
Foreign:			
Governments, official institutions, central banks, international institutions.....	3,051	3,650	3,672
Commercial banks.....	24,594	26,274	24,029
Certified and officers' checks, etc.....	80,767	77,411	78,874
Total time and savings deposits.....	3,316,929	3,286,723	3,849,295
Individuals, partnerships, and corporations:			
Savings deposits.....	919,840	915,978	1,015,121
Other time deposits.....	1,625,228	1,615,218	2,038,785
States and political subdivisions.....	740,174	724,005	749,286
U.S. Government (including postal savings).....	1,823	2,086	10,983
Banks in the United States.....	15,314	15,486	27,530
Foreign:			
Governments, official institutions, central banks, international institutions.....	13,200	12,600	7,100
Commercial banks.....	1,350	1,350	490
Federal funds purchased and securities sold under agreements to repurchase.....	978,055	756,807	957,705
Other liabilities for borrowed money.....	274,468	375,537	264,170
Other liabilities.....	437,455	364,944	119,311
Reserves on loans.....	134,804	135,298	n.a.
Reserves on securities.....	13,277	13,284	n.a.
Total capital accounts.....	987,303	978,101	945,021
<b>TOTAL LIABILITIES, RESERVES, AND CAPITAL ACCOUNTS.....</b>	<b>11,691,630</b>	<b>11,385,934</b>	<b>11,864,609</b>

<sup>1</sup> Because of format revisions as of July 2, 1969, earlier data are not fully comparable. n.a. — Not available.

**RESERVE POSITIONS OF MEMBER BANKS**

**Eleventh Federal Reserve District**

(Averages of daily figures. In thousands of dollars)

Item	4 weeks ended Mar. 4, 1970	4 weeks ended Feb. 4, 1970	4 weeks ended Mar. 5, 1969
<b>RESERVE CITY BANKS</b>			
Total reserves held.....	726,216	759,270	741,387
With Federal Reserve Bank.....	675,374	704,669	689,590
Currency and coin.....	50,842	54,601	51,797
Required reserves.....	725,816	735,117	740,265
Excess reserves.....	400	24,153	1,122
Borrowings.....	23,355	28,555	45,414
Free reserves.....	-22,955	-4,402	-44,292
<b>COUNTRY BANKS</b>			
Total reserves held.....	785,303	801,841	766,901
With Federal Reserve Bank.....	604,640	610,848	591,715
Currency and coin.....	180,663	190,993	175,186
Required reserves.....	756,076	771,212	736,284
Excess reserves.....	29,227	30,629	30,617
Borrowings.....	13,388	14,255	10,534
Free reserves.....	15,839	16,374	20,083
<b>ALL MEMBER BANKS</b>			
Total reserves held.....	1,511,519	1,561,111	1,508,288
With Federal Reserve Bank.....	1,280,014	1,315,517	1,281,305
Currency and coin.....	231,505	245,594	226,983
Required reserves.....	1,481,892	1,506,329	1,476,549
Excess reserves.....	29,627	54,782	31,739
Borrowings.....	36,743	42,810	55,948
Free reserves.....	-7,116	11,972	-24,209

**CONDITION OF THE FEDERAL RESERVE BANK OF DALLAS**

(In thousands of dollars)

Item	Mar. 25, 1970	Feb. 25, 1970	Mar. 26, 1969
Total gold certificate reserves.....	413,719	278,482	379,795
Discounts for member banks.....	61,950	36,780	95,096
Other discounts and advances.....	2,240	2,240	0
U.S. Government securities.....	2,404,603	2,367,247	2,111,555
Total earning assets.....	2,468,793	2,406,267	2,206,651
Member bank reserve deposits.....	1,328,659	1,139,978	1,274,108
Federal Reserve notes in actual circulation.....	1,692,526	1,682,637	1,517,218

**CONDITION STATISTICS OF ALL MEMBER BANKS**

**Eleventh Federal Reserve District**

(In millions of dollars)

Item	Feb. 25, 1970	Jan. 28, 1970	Feb. 26, 1969
<b>ASSETS</b>			
Loans and discounts, gross <sup>1</sup> .....	11,434	11,498	11,027
U.S. Government obligations.....	2,054	2,151	2,466
Other securities.....	3,215	3,267	3,141
Reserves with Federal Reserve Bank.....	1,140	1,309	1,236
Cash in vault.....	260	269	258
Balances with banks in the United States.....	1,118	1,203	1,153
Balances with banks in foreign countries <sup>2</sup> .....	10	12	7
Cash items in process of collection.....	1,089	1,235	1,129
Other assets <sup>3</sup> .....	893	801	616
<b>TOTAL ASSETS<sup>4</sup>.....</b>	<b>21,213</b>	<b>21,745</b>	<b>21,035</b>
<b>LIABILITIES AND CAPITAL ACCOUNTS</b>			
Demand deposits of banks.....	1,406	1,456	1,408
Other demand deposits.....	8,611	8,880	8,778
Time deposits.....	7,186	7,079	7,730
Total deposits.....	17,203	17,415	17,916
Borrowings.....	1,184	1,637	885
Other liabilities <sup>5</sup> .....	1,088	961	568
Total capital accounts <sup>6</sup> .....	1,738	1,732	1,666
<b>TOTAL LIABILITIES AND CAPITAL ACCOUNTS<sup>6</sup>.....</b>	<b>21,213</b>	<b>21,745</b>	<b>21,035</b>

<sup>1</sup> Before July 2, 1969, this item was published on a net basis. <sup>2</sup> — Estimated.

**BANK DEBITS, END-OF-MONTH DEPOSITS, AND DEPOSIT TURNOVER**

(Dollar amounts in thousands, seasonally adjusted)

Standard metropolitan statistical area	DEBITS TO DEMAND DEPOSIT ACCOUNTS <sup>1</sup>				DEMAND DEPOSITS <sup>1</sup>			
	February 1970 (Annual-rate basis)	Percent change			February 28, 1970	February 1970	Annual rate of turnover	
		February 1970 from		2 months, 1970 from 1969			January 1970	February 1969
		January 1970	February 1969					
ARIZONA: Tucson.....	\$ 5,850,792	-2	19	20	\$ 231,077	25.7	25.9	23.4
LOUISIANA: Monroe.....	2,830,560	10	17	16	82,595	33.4	30.6	27.9
Shreveport.....	9,779,880	-1	43	46	224,433	42.8	40.8	29.5
NEW MEXICO: Roswell <sup>2</sup> .....	899,808	-6	16	20	35,341	25.2	24.7	23.6
TEXAS: Abilene.....	2,055,084	0	4	5	95,175	21.5	21.3	20.0
Amarillo.....	5,661,936	-7	9	15	158,930	35.6	37.8	35.2
Austin.....	7,885,116	-7	-8	0	271,045	29.1	31.4	30.5
Beaumont-Port Arthur-Orange.....	6,218,484	3	11	6	235,425	26.2	25.2	24.5
Brownsville-Harlingen-San Benito.....	1,835,004	1	18	14	74,123	25.4	25.5	21.9
Corpus Christi.....	4,827,504	-6	2	5	200,046	24.4	24.8	23.7
Corsicana <sup>2</sup> .....	449,640	11	18	7	31,224	14.8	14.1	12.4
Dallas.....	115,675,812	2	17	12	2,134,670	54.5	52.9	47.2
El Paso.....	6,513,528	-6	8	7	225,684	28.7	29.6	28.1
Fort Worth.....	21,311,304	4	13	12	619,566	34.2	32.6	31.3
Galveston-Texas City.....	3,244,824	10	27	20	109,697	29.4	26.7	23.9
Houston.....	100,544,208	7	20	13	2,434,480	41.3	38.5	35.2
Laredo.....	899,124	7	12	9	39,893	23.1	21.7	20.6
Lubbock.....	3,955,212	14	9	1	150,437	27.0	23.0	24.5
McAllen-Pharr-Edinburg.....	1,604,952	0	6	4	95,866	16.6	16.5	17.0
Midland.....	2,089,092	11	9	3	136,658	15.6	14.3	14.8
Odessa.....	1,692,984	-1	22	19	78,909	22.0	23.5	18.4
San Angelo.....	1,266,516	0	16	15	66,668	18.9	17.5	17.0
San Antonio.....	17,090,712	3	16	15	598,340	28.7	27.8	24.1
Sherman-Denison.....	1,075,872	3	17	11	63,309	18.3	18.3	15.0
Texarkana (Texas-Arkansas).....	1,481,796	10	-2	-8	69,270	21.4	19.2	21.8
Tyler.....	2,149,032	-3	15	11	90,695	24.0	23.9	20.5
Waco.....	3,079,680	6	17	15	111,798	27.3	24.8	23.6
Wichita Falls.....	2,262,912	-1	1	-2	115,823	19.6	20.3	19.2
Total—28 centers.....	\$334,231,368	3	17	12	\$8,781,177	38.2	36.7	33.3

<sup>1</sup> Deposits of individuals, partnerships, and corporations and of states and political subdivisions.  
<sup>2</sup> County basis.

**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
1968: February...	9,561	4,391	5,170	6,863	2,851	4,012
1969: February...	10,328	4,734	5,594	7,707	3,091	4,616
September...	10,497	4,867	5,630	7,272	2,685	4,587
October...	10,306	4,726	5,580	7,223	2,646	4,577
November...	10,373	4,750	5,623	7,268	2,690	4,578
December...	10,692	4,947	5,745	7,203	2,628	4,575
1970: January...	10,793	4,910	5,883	7,108	2,568	4,540
February...	10,256	4,625	5,631	7,145	2,554	4,591

**BUILDING PERMITS**

VALUATION (Dollar amounts in thousands)

Area	NUMBER		VALUATION		Percent change		
	Feb. 1970	2 mos. 1970	Feb. 1970	2 mos. 1970	Jan. 1970	Feb. 1969	2 months, 1970 from 1969
	Feb. 1970	2 mos. 1970	Feb. 1970	2 mos. 1970	Jan. 1970	Feb. 1969	2 months, 1970 from 1969
ARIZONA: Tucson.....	552	1,071	\$ 3,370	\$ 8,043	-28	-3	65
LOUISIANA: Monroe-West Shreveport.....	47	106	336	3,418	-89	-81	24
TEXAS: Abilene.....	312	670	1,220	6,721	-78	-71	2
Amarillo.....	42	71	973	1,919	3	-14	36
Austin.....	528	1,063	1,338	15,304	-90	-14	279
Beaumont.....	287	585	4,957	13,299	-41	-67	-47
Brownsville.....	160	269	479	1,143	-28	-54	-46
Corpus Christi.....	71	117	217	637	-48	-28	-81
Dallas.....	300	517	3,942	5,435	164	194	93
El Paso.....	1,796	3,168	18,660	31,992	40	-15	-36
Fort Worth.....	16	34	764	931	357	18	-15
Galveston.....	418	762	4,327	16,254	-64	-68	-15
Houston.....	364	654	8,301	16,157	6	24	-17
Laredo.....	68	115	415	1,024	-32	-22	11
Lubbock.....	2,380	4,985	34,069	69,976	-5	-14	-14
Midland.....	34	68	581	773	203	-24	-26
Odessa.....	192	270	6,459	7,490	526	99	53
San Angelo.....	26	59	126	302	-68	-68	2
San Antonio.....	58	103	413	1,708	-36	49	-6
Sherman-Denison.....	74	118	318	552	319	219	208
Texarkana.....	60	103	2,658	3,248	-8	-24	-39
Tyler.....	1,069	1,990	4,861	10,128	-8	32	248
Waco.....	45	82	3,091	3,440	786	366	344
Wichita Falls.....	30	55	1,935	2,147	813	426	48
Total—26 cities.....	9,153	17,455	\$105,079	\$224,322	-12	-20	-14

**VALUE OF CONSTRUCTION CONTRACTS**

(In millions of dollars)

Area and type	February 1970	January 1970	December 1969	January—February	
	February 1970	January 1970	December 1969	1970	1969
FIVE SOUTHWESTERN STATES <sup>1</sup> .....	552	633	530	1,181	1,155r
Residential building.....	210	193	203	403	456
Nonresidential building.....	214	231	219	442	377
Nonbuilding construction.....	129	209	108	337	321
UNITED STATES.....	5,249	4,928	5,228	10,147	9,539
Residential building.....	1,482	1,475	1,744	2,941	3,562
Nonresidential building.....	2,269	2,252	2,168	4,511	4,006
Nonbuilding construction.....	1,498	1,201	1,317	2,695	1,971

<sup>1</sup> Arizona, Louisiana, New Mexico, Oklahoma, and Texas.  
r — Revised.  
NOTE: — Details may not add to totals because of rounding.  
SOURCE: F. W. Dodge, McGraw-Hill, Inc.

**TOTAL OIL WELLS DRILLED**

Area	Third quarter 1969	Second quarter 1969	Percent change	1969 cumulative	Percent change
					from 1968 cumulative
<b>FOUR SOUTHWESTERN STATES</b>					
STATES.....	1,957	1,795	9.0	3,752	1.5
Louisiana.....	290	226	28.3	516	-37.5
Offshore.....	115	27	325.9	142	-58.9
Onshore.....	175	199	-2.1	374	-22.1
New Mexico.....	167	252	-33.7	419	67.6
Oklahoma.....	373	339	10.0	712	3.5
Texas.....	1,127	978	15.2	2,105	8.8
Offshore.....	1	1	.0	2	.0
Onshore.....	1,126	977	15.3	2,103	8.8
<b>UNITED STATES.....</b>	<b>3,545</b>	<b>3,357</b>	<b>5.6</b>	<b>6,902</b>	<b>-6.3</b>

SOURCE: American Petroleum Institute.

**DAILY AVERAGE PRODUCTION OF CRUDE OIL**

(In thousands of barrels)

Area	February 1970	January 1970	February 1969	Percent change from	
				January 1970	February 1969
<b>FOUR SOUTHWESTERN STATES</b>					
STATES.....	6,794.5	6,716.4	6,177.5	1.2	10.0
Louisiana.....	2,444.0	2,408.9	2,211.2	1.5	.5
New Mexico.....	351.4	344.2	355.3	2.1	-1.1
Oklahoma.....	619.1	586.9	625.1	5.5	-1.0
Texas.....	3,380.0	3,376.4	2,985.9	.1	13.2
Gulf Coast.....	676.0	682.0	575.1	-9	17.5
West Texas.....	1,624.0	1,612.5	1,421.9	.7	14.2
East Texas (proper).....	182.0	178.8	136.5	1.8	33.3
Panhandle.....	85.0	84.9	84.8	.1	.2
Rest of state.....	813.0	818.2	767.6	-6	5.9
<b>UNITED STATES.....</b>	<b>9,469.7</b>	<b>9,534.3</b>	<b>8,908.2</b>	<b>-7</b>	<b>6.3</b>

SOURCES: American Petroleum Institute.  
U.S. Bureau of Mines.  
Federal Reserve Bank of Dallas.

**NONAGRICULTURAL EMPLOYMENT**

Five Southwestern States<sup>1</sup>

Type of employment	Number of persons			Percent change Feb. 1970 from	
	February 1970p	January 1970	February 1969r	Jan. 1970	Feb. 1969
	<b>Total nonagricultural wage and salary workers..</b>	<b>6,288,400</b>	<b>6,277,000</b>	<b>6,026,600</b>	<b>0.2</b>
Manufacturing.....	1,172,700	1,181,800	1,138,200	-.8	3.0
Nonmanufacturing.....	5,115,700	5,095,200	4,888,400	.4	4.6
Mining.....	229,500	230,800	228,900	-.6	.3
Construction.....	400,200	393,000	377,300	1.8	6.1
Transportation and public utilities.....	460,700	459,300	416,000	.3	10.7
Trade.....	1,431,800	1,437,900	1,370,200	-.4	4.5
Finance.....	318,000	316,200	297,900	.6	6.7
Service.....	996,200	989,200	949,500	.7	4.9
Government.....	1,279,300	1,268,800	1,248,600	.8	2.5

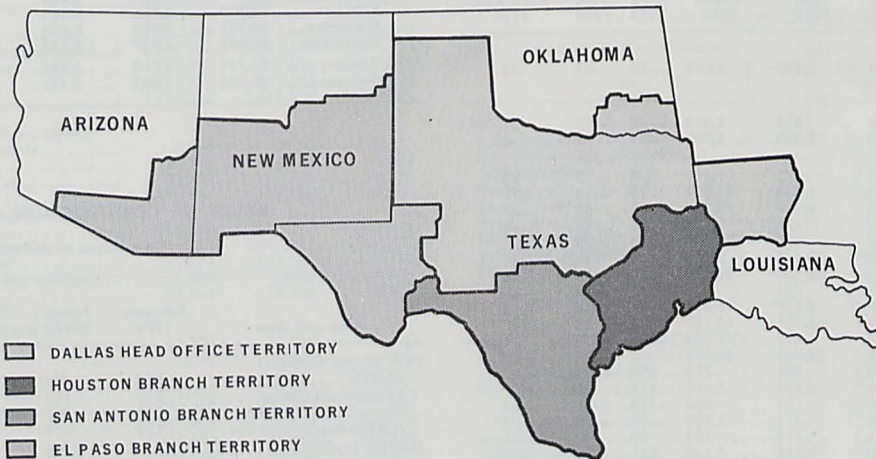
<sup>1</sup> Arizona, Louisiana, New Mexico, Oklahoma, and Texas.  
p — Preliminary.  
r — Revised.  
SOURCE: State employment agencies.

**INDUSTRIAL PRODUCTION**

(Seasonally adjusted indexes, 1957-59 = 100)

Area and type of index	February 1970p	January 1970	December 1969	February 1969r
<b>TEXAS</b>				
Total industrial production.....	181.0	182.7	177.1r	168.4r
Manufacturing.....	205.0	208.2	207.3r	193.7r
Durable.....	220.1	226.5	227.7r	213.5r
Nondurable.....	195.0	196.0	193.7r	180.5r
Mining.....	131.4	131.1	119.0r	119.1r
Utilities.....	261.7	261.7	252.8r	236.1r
<b>UNITED STATES</b>				
Total industrial production.....	169.4	170.2	171.1	170.1r
Manufacturing.....	169.0	170.0	171.2r	171.8r
Durable.....	169.1	169.6	171.1r	174.5r
Nondurable.....	169.0	170.6	171.4	168.3r
Mining.....	134.3	133.2	133.8r	124.8r
Utilities.....	231.0	230.6	227.9r	214.9

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



**ELEVENTH FEDERAL RESERVE DISTRICT**