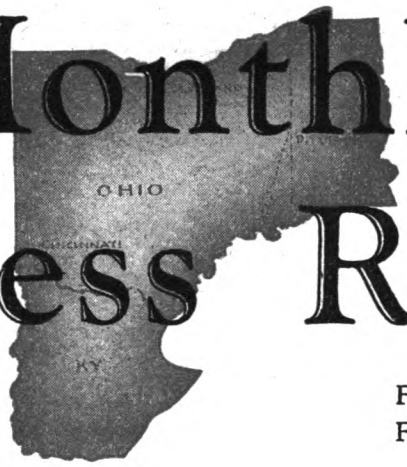
Monthly Business Review



Finance, Industry, Agriculture, and Trade

Fourth Federal Reserve District
Federal Reserve Bank of Cleveland

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PORTLAND CEMENT INDUSTRY

The portland cement industry provides one of the basic ingredients for a large scale construction program. Cement, mixed with water, sand, gravel or rock forms concrete which is an indispensable structural material used in virtually every type of building. Cement, mixed with water and sand, forms mortar or the essential binder in all brick and structural tile work. It is estimated that about two cents out of every construction dollar is spent for portland cement and three and a half cents for concrete and concrete products. It is one of the few building materials available today in ample quantities and at prices close to prewar levels.

According to the Bureau of Mines, 150 cement mills in the United States employing 25,000 people operated in 1939. Producing at 48 percent of capacity, these mills shipped 123 million barrels of cement valued at $181 million. In the same year, 15 mills in the District shipped 11.5 million barrels worth $15.7 million and employed about 3,000 persons. Fourth Federal Reserve District mills produce on the average about eight to ten percent of the nation's portland cement.

In 1945, eleven companies operating 14 mills in the District produced eight million barrels or about eight percent of the national total of 103 million barrels. Production in 1946 will be substantially larger as the tempo of construction rises.

Detailed production information concerning the cement industry is collected monthly by the United States Bureau of Mines for individual states and principal producing areas. Bureau of Mines' data for the State of Ohio, Western Pennsylvania and West Virginia includes all of the cement manufacturers in the Fourth Federal Reserve District plus three mills in West Virginia with an annual rated capacity of 3,100,000 barrels which are outside the District. To the extent of the annual output of these three West Virginia mills, production figures used in this discussion are overstated for the District. Census data on the other hand, are collected on a state basis and as a consequence it is not possible to allocate that part of Pennsylvania which belongs to the District.

History The cement used so extensively today is a product of the last century. It is a highly specialized material, produced with utmost care as to content and specifications.

The complete history of cement is lost in antiquity. The Carthagenians in about 200 B. C. used a natural cement to build a 70 mile long aqueduct and many ancient Roman buildings were constructed with this material. Natural cement was made from a cement rock which contained the proper ingredients and when mixed with volcanic ash and water, became a strong cohesive material.

The secret of its manufacture was apparently lost until 1756 when John Smeaton, an Englishman, developed a natural cement to build a lighthouse in the rough waters off the British coast. An English bricklayer, Joseph Aspden, invented artificial cement in 1824. He burned ordinary rock and clay in a kiln and pulverized the resulting mass. When water was added, it became a hard binding material resembling in color the stone in the Isle of Portland. He named it Portland Cement. A factory was established in 1825 to manufacture the product.

The portland cement industry started slowly in the United States and the first plant was constructed in the Lehigh Valley of Pennsylvania in 1872. Imported cement, however, was considered superior to the domestic product and high labor costs and lack of proper technical knowledge combined to retard rapid development.

By 1890, United States production amounted to only 335,000 barrels. With improved technology and growing acceptance of the American product, annual output of the 16 United States plants expanded to 8 million barrels by 1900 and to 176 million barrels by 1928. Despite these large increases in production, the United States has lost some of its share of output. In 1924, the American industry produced over 50 percent of the world's supply as compared to about 23 percent in 1939.

Growth in the Fourth District The first Fourth District plant commenced production in 1874 at Wampum, Pennsylvania, and has produced portland cement continuously since that date. On July 21, 1892, the Sandusky Cement Company began to manufacture the first portland cement produced in Ohio in a small plant at Bay Bridge. The initial capacity of the mill was only 200 barrels a day, and the principal raw materials were marl and clay mined on the site. Cement is still being produced from the same type raw materials in a modern plant at that location. The third mill to open in the District was located in nearby Castalia in 1898.

Reflecting the slow acceptance of American manufactured portland cement, no additional mills were constructed until 1909, when plants located in four widely separated towns began to function. Mills were erected in that year in Middlebranch, Ironton, and Superior, Ohio, and Universal, Pennsylvania. Twelve years then elapsed before another mill was built. Between 1921 and 1929, however, nine more mills were erected. Since that date, construction activity has been confined to modernization of old plants and abandonment of several properties. The following table indicates the growth of District capacity from 1920 to date.

Fourth District Cement Capacity

(in barrels)

1920	14,171,000
1925	21,971,000
1930	24,504,000
1935	23,504,000
1940	22,604,000
1945	21,704,000

FOURTH DISTRICT CEMENT MILLS—1946

FEDERAL RESERVE DISTRICT NO. 4

One company in northwestern Ohio gave up the competitive struggle in 1932. Its operations were hampered by a heavy bonded indebtedness and inability to raise new capital to modernize the plant. Fuel costs were high due to short, small diameter kilns and the use of the wet process without benefit of filters. Coal grinding equipment had become obsolete and lack of facilities to utilize waste heat to produce power, added to purchased power costs. As a result, the mill could not meet the competition of more efficient competitors.

Production of cement at New Castle, Pennsylvania, began to decline in 1926 and was finally discontinued in 1940 due to the exhaustion of limestone deposits in that area. The mill at this location employed the dry process. The location of cement mills now in active production in the District is indicated on the accompanying map.

Technological Developments Technological development in the industry has been as spectacular as capacity growth. From the haphazard methods of producing natural cement in makeshift stationary ovens, the cement industry has reached the stage where it requires an extremely complicated factory and a relatively large capital investment. Eighty operations are necessary to produce portland cement meeting the specifications of the United States Bureau of Standards.

The basic raw materials used are limestone, blast furnace slag or marl, and shale or clay. The chunks of limestone are reduced to near powder in a series of crushing operations and then clay or shale is added in the correct proportion. From this point on, either the dry or wet process may be used. If the dry process is used, the raw materials are first put through a dryer and then pass to a group of ball and tube mills and reduced to a powder. In the wet process, water is added to the limestone and mixed with the clay which is in the form of a "slurry" and the materials are ground in the wet state. Filters remove all but 20 percent of the water before the mixture is introduced into the kiln.

Burning is the next step, and takes place in inclined rotary kilns from 6 to 12 feet in diameter and up to 400 feet long. The fuel is usually powdered coal and it is blown into the lower end of the kiln under pressure. As the mixture is heated, the moisture and several gases are driven off. Between 2500° and 2700° F. a point of incipient fusion is reached and a chemical reaction takes place. The materials combine to form a "clinker" about the size of a small marble. The clinker pours out of the lower end of the kiln and after cooling is ready for grinding. Since the clinker is not affected by weather it is sometimes stored in this form until finished cement is needed.

During the final grinding in tube and ball mills, a small amount of gypsum is added to regulate the hardening period when cement is mixed with water. The end product will pass through a screen containing 40,000 openings to the square inch, or so fine it would hold water.

High early strength cements are now receiving greater attention and are manufactured by additional grinding to further pulverize the product. Fineness is now measured by the turbidity of a liquid in which cement is suspended, since screens are not fine enough. Interest in air-entraining cement (air content increased through use of organic agents) continues to grow as a result of its superior durability and resistance to scaling.

Raw Materials Comparison of the production processes and facilities of the 14 Fourth District cement mills with the industry as a whole reveals some interesting differences and likenesses.

Production of cement in 1944 according to raw materials used was distributed as follows:

Percentate of Output According to Raw Materials, 1944

	140 Mills in United States*	14 Mills in Fourth District**
Limestone and Clay or Shale	72.0%	62.4%
Cement Rock and Pure Limestone	19.4%	5.3%
Blast furnace Slag and Limestone	6.3%	27.0%
Marl and Clay	2.3%	5.3%

Source: * United States Bureau of Mines.
** On basis of capacity since individual current operations are not available.

The relative importance of cement rock and pure limestone as the principal raw material in the manufacture of portland cement has steadily diminished. In 1898, it was used to produce about 75 percent of the total. By 1944, only 19 percent of production came from this material. Only one producer in the District uses this raw material. On the other hand, the use of limestone and clay has steadily increased in importance, rising from about 10 percent to 72 percent in the same period. Present District capacity of 62.4 percent using limestone and clay is therefore not far from the national average.

Blast furnace slag is a comparative newcomer as a raw material. None was used in 1898, but by 1912 about 13 percent of the cement manufactured in that year involved the use of slag. This proportion fell to 6 percent in 1944. The fact that 27 percent of District capacity uses blast furnace slag, reflects the importance of the District's iron and steel industry which is the chief source of this waste material. It is relatively cheap and eliminates investment in quarries and equipment and reduces crushing costs.

Since it takes about 650 pounds of raw materials to produce a 376 pound barrel of cement, closeness to raw materials is an important factor in locating plants.

Wet and Dry Processes The "wet" and "dry" processes are the two methods used to manufacture cement and the terms refer to the condition of the raw material when it is introduced into the rotary kilns for burning. About 51.5 percent of plant capacity in the United States uses the wet process. In 1944, wet processing plants operated at 42 percent of capacity and produced 57.4 percent of the finished cement manufactured that year as compared to 33 percent of capacity operation by dry processing mills. In the Fourth District, 56.3 percent of total capacity utilizes the wet process or about 5 percent more than the national average.

Fuel Cement mills use impressive quantities of fuel in converting the raw materials to clinker. In 1944, the mills consumed 3.7 million tons of coal, 2.5 million barrels of fuel oil, and 35.5 billion cubic feet of natural gas. It takes approximately 126 pounds of coal, or .2 barrels of oil, or 1,500 cubic feet of gas to produce a barrel of cement. Classification of plants according to kind of fuel used is shown in the accompanying table.

Type of Fuel Used by Portland Cement Plants 1944

	143 Mills In United States* Percent	14 Mills In Fourth District Percent
Coal	60	79
Oil	8	..
Natural Gas	8	..
Coal and Oil	6	14
Coal and Natural Gas	10	..
Oil and Natural Gas	4	..
Coal, Oil and Natural Gas	4	..
Coal and By-product Gas	0	7
Total	100	100

Source: *United States Bureau of Mines.

In the Fourth District, coal is the dominant form of fuel and is used by 79 percent of the plants which have 81 percent of the District's capacity. This compares to 60 percent of the nation's plants that used coal and which produced 54 percent of finished cement in 1944. That coal is the principal fuel in the District is not surprising in view of the abundant supply of low cost bituminous coal available. Oil and natural gas are important fuels in mid-western, southwestern, and western cement plants which are relatively new in the industry.

Rotary Kilns Rotary kilns have steadily increased in size since 1900. In that year, the average kiln was 70 feet long and had an annual capacity of about 35,000 barrels. By 1935, the average length had increased to 146 feet with a capacity of around 300,000 barrels. The diameter of kilns has had a corresponding increase. Whereas 6 feet was common at the beginning of the century, many are now 10 and 12 feet in diameter. Individual kilns with lengths up to 400 feet have been constructed recently.

An analysis of the size of all cement kilns in the United States as compared to District kilns is shown in the accompanying table:

Number and Length of Rotary Kilns

	Average Length	Less than 100′	100-125′	126-149′	150-199′	200′ and up
U. S.* ('35)	146′	10.3%	45.5%	8.4%	21.4%	14.4%
District ('45)	141′	0.0	63.4	0.0	26.8	9.8

*Source: Mechanization in the Cement Industry, W.P.A., National Research Project.

It is apparent that kilns in the Fourth District are smaller on the average than for the nation as a whole. The average length is five feet less, and nearly two-thirds of the kilns are between 100 and 125 feet long as compared to less than half of this size for the entire country. The largest kiln in the District measures 10 x 240 and has an annual rated capacity of about 750,000 barrels.

Generally considered, large kilns are more efficient producers of cement than small kilns. The capacity is proportional to the square of the diameter and related only in a minor degree to the length. Whether or not waste heat is to be utilized is the prime consideration in determining kiln length. When purchased power costs are low, it is more economical to build a very long kiln to utilize as much of the heat as possible that is put into the kiln and curtail heat losses through the stack. Burning costs per barrel are thus reduced and the longer units do not require additional labor for their operation.

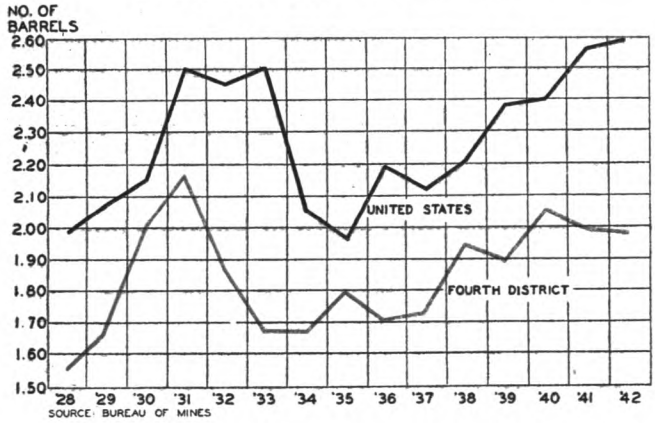
If purchased power costs are high, it may be more economical to use shorter kilns coupled with waste heat boilers to generate the plant's power needs. The outstanding new cement plant completed in 1943 has four kilns 250 feet long.

Output per Man Hour Some indications of change in labor productivity can be obtained from measuring output of finished portland cement in barrels per man. The Bureau of Mines reports annually on this subject and provides productivity information on the basis of per man hour, per man shift, for all employees, or only for cement mill employees.

Since work shifts are of various lengths in different sections of the country, it is felt that productivity per man per hour is of greater significance. Likewise, use of all employees seems a better basis than only mill employees since this also reflects differences in output of quarry and crusher workers as well as differences in types of raw materials processed.

The chart presented herein shows output in barrels of finished cement on a per man per hour basis for the industry as a whole from 1928 to 1942 as compared to Ohio, Western Pennsylvania, and West Virginia.

CEMENT PRODUCTION PER MAN HOUR



Two significant features should be noted. The first is that productivity per worker has increased over this 15 year period and reflects better material preparation machinery, growth in kiln size, and better mechanical equipment as well as changes in rates of operation. In 1942, cement mills produced 183 million barrels of cement, the greatest quantity on record.

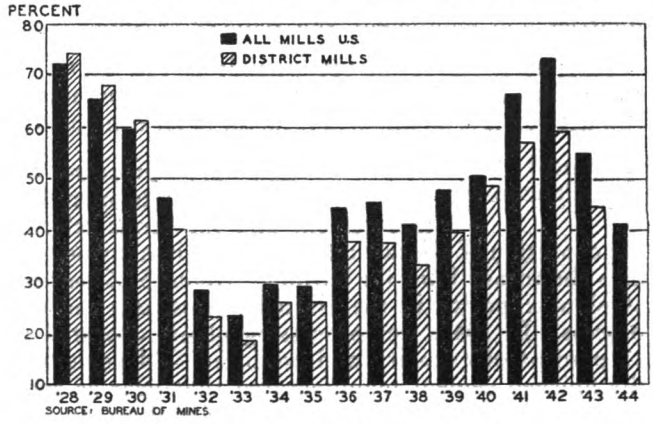
The second is that productivity for the District consistently ranges below the national average by as much as a half barrel per man hour. It is of special interest that while national productivity rose from 1940 through 1942, it declined in this area; however, the rate of increase in productivity in both areas has been about the same over the entire 15 year period.

The use of smaller kilns in the Fourth District accounts for a minor part of this difference since labor and power expended at the kiln account for about 20 percent of total labor and power costs. Another factor is that many of the plants are relatively old and as a consequence do not have as efficient quarry machinery, crushing and grinding equipment, and material handling methods as may be found in the newer far-western mills. For example, per man hour output in 1942 for California mills was 3.24 barrels and in Texas, 2.93 barrels, or one-third greater than in this area.

Rates of Operation Another indication as to the general condition of the cement industry is to be found in a study of the percent of capacity utilization of mills. The accompanying chart depicts the rate of operation for all mills as compared to District mills.

Of significance is the fact that even in the very best production years, the industry has not exceeded a rate of 73.5 percent of capacity. Apparently there is sufficient existing capacity to handle any forseeable future construction needs. Of chief interest, however, is the unfavorable trend in local plant utilization. During the last three years of the 1920 decade, District operations were at a higher level than for the nation. Thereafter production slumped below the national average and never again equalled it. The

CEMENT PRODUCTION AS A PERCENTAGE OF CAPACITY



peak year of 1942 saw District production rise to 59 percent of capacity as compared to 73.5 percent for the country as a whole. Two years later, operations had slumped to 30 percent and 43 percent respectively.

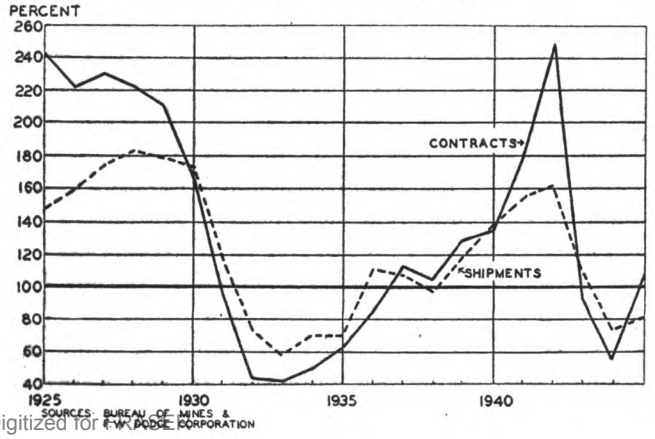
Since cement mill activity is closely related to the construction industry, it is apparent that one or two things have happened. From 1928 to 1931, District capacity increased 17 percent as compared to an expansion of only 11 percent in the entire industry. It would appear that local companies were too optimistic in appraising the future demand for cement so that rates of operations have suffered. The other possibility is that relative rates of construction activity have changed and the Fourth District has not shared equally in the recovery of building activity since the depression.

Effect of Construction Activity The shipment of finished portland cement from mills corresponds rather closely to total construction activity. The indexes for total construction contracts awarded in the Fourth Federal Reserve District and District cement shipments for the past 20 years have been plotted on the accompanying chart.

At the beginning of the period, cement output lagged behind construction contracts and then rose as the volume of construction declined. Thereafter, the two indexes declined, but cement shipments did not drop as far or as rapidly as building. From 1933 to 1942, the correlation is closer, although cement output did not expand as much as building did during 1941-42. This may be a reflection of the temporary nature of much of the war construction as well as its inflated cost. In the decline that followed the war peak, cement shipments again held up better than building activity.

A condition not reflected in this chart, is the fact that on the average for the past 20 years, Ohio has consumed more cement than was produced in the state. In the late 1920's, the excess of consumption over production averaged about 1.5 million barrels. In 1942 and 1943, however, the difference had shrunk to about one-quarter million barrels, and in the years immediately preceding, there was actually a surplus of production over consumption. This may indicate that local mills have succeeded in capturing a greater share of the market within the state.

CEMENT SHIPMENTS AND TOTAL CONSTRUCTION CONTRACTS AWARDED
Fourth District — Average 1935-1939=100



The principal uses of portland cement in the normal construction years just before the war has been estimated by the Portland Cement Association as follows:

Classification	Percent
Structural (building, bridges, railroads)	29
Paving (roads, streets, airports)	24
Housing and miscellaneous uses	20
Conservation (reclamation, water supply, sewerage)	17
Farm	10
Total	100

If total new construction in 1946 approximates $7.5 billion as has been estimated by the Department of Commerce, cement consumption should range between 126 and 131 million barrels, or 25 to 30 percent more than in 1945. About 22 million barrels will be needed to carry out the Wyatt housing program which contemplates the beginning of construction on 1,000,000 housing units. The elimination of so-called non-essential commercial and industrial construction may substantially modify predicted cement consumption.

Production should keep pace with the increase in construction activity. In fact, the shortage of lumber may increase the use of cement and concrete products in place of wood and steel. One company has invented a monster machine which lays the concrete shell of a house like an egg. Increasing use of concrete, cinder, and aggregate blocks instead of hollow tile has provided a rapidly expanding market for cement in this field.

Marketing Problems For many years, cement manufacturers have tried to maintain a stabilized market for their product. Two devices are used to attain this goal. First, all cement prices are quoted on an F.O.B. delivered basis with prices computed from a multiple basing point system. The price of cement in a given community will therefore be the sum of the lowest combination base price plus rail freight to the given market, no matter where the cement is manufactured or the actual means of transportation used. The result is that the cement prices of different mills will be quoted on a uniform basis n any given market, but each mill will actually receive a different net-to-mill-equivalent price, the differences depending upon the actual amount of transportation cost in making delivery.

The second device used to stabilize markets is the uniform practice of only selling cement through, or to, recognized dealers. Contractors must buy their requirements through the specified dealer in that area and not directly from a mill. On large jobs, however, the cement may be shipped directly from the plant to the construction site, but the dealer will receive his customary allowance and may handle the financial end of the transaction even though he does not see the cement. There are some exceptions to this general

sales policy. Direct sales are made to railroads and concrete products manufacturers for use and not for resale. Direct sales are also made to states and the Federal Government and to public highway contractors for use on projects located outside of given metropolitan areas. The price, in these cases, is usually that which the dealer would have paid.

Bulk Shipments A minor revolution, caused in part by the wartime shortages, has been taking place in the shipment of cement. Bulk cement shipments have risen from about 20 percent in 1939 to 35 percent of the total in 1944. Trucks have enjoyed a 100 percent increase in this type of business while the amount shipped by railroad has declined about 12 percent. The proportion of bagged cement shipped in cloth has declined 43 percent while the use of paper containers has increased 8 percent. Shortages of textiles has made the procurement of new cloth bags practically impossible.

Most cement mills would like to see these trends continue. Cement is handled in bulk more economically and eliminates the troublesome problem of bag deposits, cleaning and repair of old sacks, and disputes with dealers as to the condition of returned sacks. Further expansion may take place in bulk shipments when transportation agencies can procure additional equipment and dealers and contractors the proper facilities for storage. Paper bags are also preferred in the industry over cloth sacks since they are thrown away after use. Paper shortages have slowed developments in this direction.

The relative use of trucks, rail, and water transportation for both bulk and bagged cement has remained about the same over the past five years with rails handling 80 percent, and trucks 17 percent of the total.

INDUSTRIAL SUMMARY

Labor disputes in a few key industries are again slowing the pace of industrial activity in the Fourth District as well as the entire nation. In the fourth week of April, a major electrical equipment manufacturer continued strike-bound thus reducing the flow of motors and other indispensable components of industrial tools and a wide variety of consumer durable goods. Widespread copper and brass strikes are affecting not only the entire radio and electrical industries but are also curtailing materials needed for the construction industry.

The work stoppage at the bituminous mines which began on April 1, and which at this writing offers no prospect of early termination, was promptly reflected in curtailment of steel operations. The national steel production rate which after a four week shutdown had attained 89.5 percent of capacity in the final week of March, dropped to about 75 percent by the third week of April. Mills continue to operate at the best rates possible and are closing only when remaining coal supplies are estimated sufficient to keep furnaces and coke ovens properly banked until such time as new fuel supplies become available.

As a result of the coal shortage, pig iron output was restricted far below the March level when it was insufficient to meet foundry needs. The supply of foundry labor has improved, but the shortages of iron and coke have prevented an expansion of casting production.

Automobile, truck, and automotive parts manufacturers began to reduce their rate of operations at the end of the month primarily because of the lack of steel sheets. Passenger car and truck production had reached nearly 50,000 per week early in April. Other suppliers of consumer durable goods are also feeling the shortage of iron and steel products. Tin plate producers are worried about the supply of steel to meet the demands of seasonal food packing.

In general, District cement plants had sufficient coal supplies at the end of the month, but present rates of production cannot long continue. Brick and structural tile producers are also concerned over coal supplies since the majority had only enough for four or five weeks of operation at the beginning of the strike. Clay sewer pipe production has been at a standstill since February 4 and supplies of pipe are exhausted. Although the companies and men have agreed on a new wage schedule resumption of production appears to be contingent upon some degree of price relief.

ANNOUNCEMENT

A new weekly statement of condition, covering eleven large member banks in the Fourth District, has been inaugurated by the Research Department.

The report is comparable to the weekly statements issued by the Federal Reserve Banks of New York and Chicago covering metropolitan banks in their respective areas.

Of the eleven banks, three are located in Cleveland, three in Cincinnati, and five in Pittsburgh. In terms of total resources, these banks represent approximately 42 percent of all member banks in the Fourth District.

This new series is not intended to supplant the "Weekly Report of Member Banks in 101 Cities" published by the Board of Governors and which includes 41 member banks of this District. That older series will continue to be compiled and released as in the past. The new three-city series is based on a smaller sample but is available several days in advance of the more comprehensive series.

The statement as of the close of Wednesday is prepared each Friday and is available to anyone who may be interested in current changes in loans, investments, deposits, and other bank balance sheet items in the Fourth District. Requests to be placed on the mailing list should be addressed to the Research Department.—*Editor.*

RECENT BANKING DEVELOPMENTS

Early in April total loans of the 41 weekly reporting member banks in this District reached $1,141 million, a new record high and up $180 million from the end-of-war level.

Four types of bank loans are primarily responsible for this postwar expansion of bank credit:

	Increase Aug. 15, 1945 to Apr. 17, 1946
Loans to Others than Brokers on U. S. Government Securities	$ 75,000,000
Commercial, Industrial, and Agricultural Loans	65,000,000
"All Other" Loans	28,000,000
Real Estate Loans	13,000,000
	$181,000,000

Between V-J Day and the Eighth War Loan, there was considerable liquidation of loans to others than brokers for carrying U. S. Government securities. But from early November to the end of January, including the period of the Drive, such loans increased nearly $150 million. Liquidation since then has been of only nominal proportions with the result that this type of credit still shows a large net increase over last August.

The postwar rise in commercial loans, depicted on an adjoining chart, has extended into the sixth consecutive month. In establishing a new four-year high on April 10, commercial loans were nearly 25 percent above the 1945 low which constitutes one of the sharpest increases on record. Notwithstanding the large volume of bank deposits held by individuals and corporations, many commercial and industrial concerns apparently have found it necessary or desirable to supplement their existing cash resources through bank borrowing. Such borrowings from the 41 weekly reporting banks since V-J Day total $65 million, after allowing for concurrent repayments by other borrowers.

A third type of bank lending that has contributed to the postwar loan expansion is the category entitled, "All Other" loans most of which were made to consumers rather than to business enterprises. These loans in the aggregate are up some 20 percent since last August. Dollarwise the increase is considerably smaller than that of commercial or collateral loans discussed earlier, but the rise has been steadier (see chart) and is generally expected to show a further substantial growth despite unprecedented currency and deposit holdings of individuals.

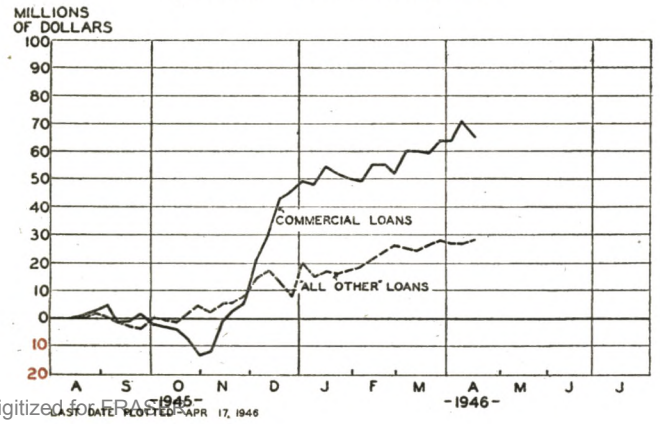
Real estate loans, the fourth factor contributing to postwar loan expansion, have recently shown a relatively rapid rise. Most of the $11 million gain since V-J Day has occurred since the turn of the year, and by April 17, the volume outstanding was $106,500 for each $100,000 outstanding on January 2 in the face of steady amortization of principal of most mortgages held.

Investments The effect of the series of cash redemptions of Treasury obligations beginning on March 1 upon security portfolios of weekly reporting banks is clearly visible on the accompanying chart of postwar changes in investments.

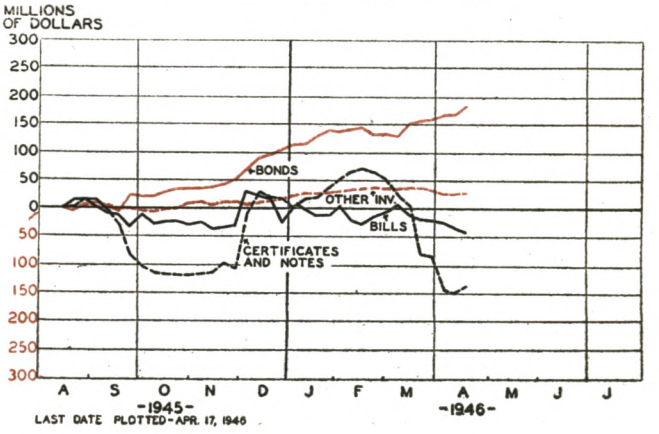
From mid-February to mid-April, holdings of certificates of indebtedness and Treasury notes dropped $107 million, to the lowest in nearly a year. This contraction in certificates and notes was virtually offset, however, by a comparable increase in Treasury bond holdings and a moderate increase in holdings of corporate and municipal securities with the net result that total investments are still slightly higher than on V-J Day. The relative changes in the several kinds of investments have been as follows for the eight months since the close of the war:

	Increases	Decreases
Treasury Bonds	$175,000,000	
Corporate and Municipal Securities	33,000,000	
91-Day Treasury Bills		$ 46,000,000
Certificates of Indebtedness and Treasury notes		142,000,000
Net Increase	$ 20,000,000	

POSTWAR FLUCTUATIONS IN LOANS
Fourth District Weekly Reporting Member Banks
(Cumulative from August 15, 1945)

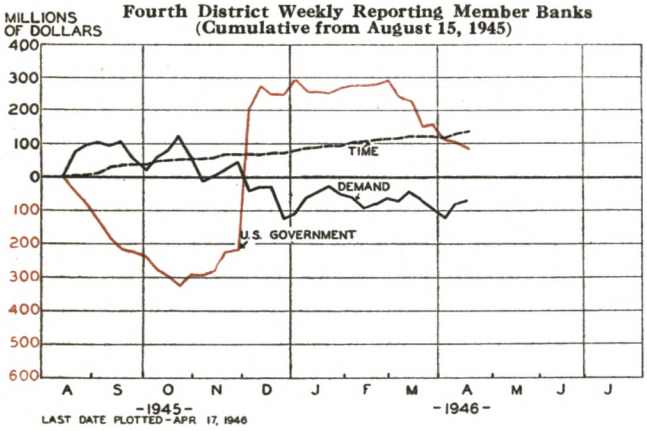


POSTWAR FLUCTUATIONS IN INVESTMENTS
Fourth District Weekly Reporting Member Banks
(Cumulative from August 15, 1945)



Cash Reserves Late in March, cash reserves of the 41 weekly reporting banks dipped to the lowest in about two years. The decline was not very pronounced in legal reserves, but balances on deposit at other banks reached a long-time low around the first of April. Some of this reduction in interbank balances may be attributable to transfers of funds out of the District by depositors, and to the purchase of securities by reporting banks. The major cause, however, is believed to be the transfer of funds from correspondent banks to the reserve banks, as war loan calls and income tax payments by depositors tended to deplete legal reserves. In many areas cash redemptions of certificates held by banks and their depositors were of insufficient volume to balance the concurrent withdrawal of Treasury deposits with the result that many banks shifted a portion of their interbank deposits to their reserve accounts.

POSTWAR FLUCTUATIONS IN DEPOSITS
Fourth District Weekly Reporting Member Banks
(Cumulative from August 15, 1945)



Deposits Total deposits of the 41 weekly reporting banks show very little net change during the first eight months of postwar conditions. There has been considerable variation, however, in the various categories of deposits.

Demand deposits of individuals and corporations have been in a slow and irregular decline since October or even earlier. Income tax payments, war loan subscriptions, and reconversion costs have been instrumental in varying degrees in this recent contraction and the postholiday return of currency was an offsetting factor of only minor consequence.

U. S. Government deposits in late April were still some $100 million higher than on V-J Day, by virtue of a nearly $600 million increase during the Eighth War Loan. However, since March 1, war loan deposits have declined noticeably as calls were made in connection with the Treasury's cash redemptions of maturing and called issues. Since the redeemed securities were held largely by banks, the redemption process had but little expansive effect upon demand deposits of nonbank enterprises and individuals.

Time deposits of the 41 reporting banks are approximately $125 million higher than at the close of the war. The eight-month rise was at an annual rate of about $190 million which is almost identical with the yearly increments during 1944 and 1945. Thus neither the volume of savings deposits nor their trend of growth appears to have been noticeably affected thus far by the economic changes entailed in reconversion to peace.

DEPARTMENT STORE SALES

The upward surge of department store sales which set in last October has lost none of its momentum. If anything, the pace was accelerated during March and the first three weeks of April.

If department store trade is indicative of the attitude of consumers in general, goods of all kinds will be taken off the market as rapidly as they can be produced for some time to come. Although some of the record dollar volume is the result of higher prices, there is not much evidence of effective consumer resistance to such higher prices. Nor is it likely that such hesitation will manifest itself as long as huge war-accumulated needs persist, and individuals have the means to buy, either out of current income or wartime savings, and by the use of instalment credit.

In the Fourth District the seasonally adjusted index of sales jumped 29 index points to 271, a new all-time high, and held near that level during the first three weeks of April. In the course of that spurt, the volume of sales in three District cities, Canton, Columbus, and Youngstown, attained a level better than 200 percent above the 1935-9 average. In all but one major city, sales reached unprecedented proportions.

This postwar expansion of department store trade has not been peculiar to the Fourth District. Year-to-year increases have been slightly smaller in this area than in some other Districts in the past six months, but in March the index for the Fourth District pulled abreast the national figure with both showing a gain of roughly 170 percent over the base period.

That stores are making every effort to capitalize on the current strong consumer demand is attested by the fact that outstanding orders of nearly 300 large department stores throughout the country rose about $100 million during February and at the close of that month stood at nearly $1 billion or approximately double the commitments of two years earlier.

While distribution of merchandise through department store outlets is only a small segment of the national economy, it is an important element and an easily measurable one. Its postwar behavior can hardly be viewed with alarm unless it proves to have been merely the beginning of a genuinely extravagant spending spree. The trend of sales in the coming months should provide more specific evidence as to the basic nature of this buying movement.

FARM LAND PRICES

The rise in the market price of farm land, which began at the end of the agricultural depression in 1933, appears to be continuing unabated.

On March 1, farm land values were 13 percent higher than a year ago, as reported by the Bureau of Agricultural Economics for the country as a whole. Over half of this increase occurred in the final four months of the period.

Although farm prices appear to have developed a tendency recently to show more strength during the winter months, the fact remains that the general level has advanced to within striking distance of the 1920 peak. As a matter of fact, in one Fourth District state, quoted land values are already 10 percent higher than at the crest of the World War I boom:

Value per Acre March 1
(1910-14 = 100)

	1946	1945	% Increase in 12 Months	1946 as compared to 1920 (Peak)
Kentucky.....	221	189	17	10% above
Ohio.....	140	121	16	12% below
Pennsylvania...	130	123	6	7% below
West Virginia ..	121	106	14	21% below
United States...	142	126	13	16% below

Source: U. S. Department of Agriculture.

Land values tend to reflect the current income producing possibilities of the land. A succession of good yields, a strong demand, or a high price may lead prospective purchasers to adopt an abnormal view of the income prospects of the land. An example of how one commodity may influence prospective purchasers is found in the tobacco producing areas, where favorable returns from tobacco plus the importance of acquiring a farm with a sizable tobacco production base is reported to be a pertinent factor in lifting farm land values.

Effect of Good Buildings Good buildings are exerting a relatively greater influence now than formerly because of the difficulty involved in remodeling or making repairs to existing structures. This is indicated by the fact that land with good buildings was found to be increasing in price faster during the past year than land with poor buildings. Still another example of the importance attached to buildings is the fact that small farms (with buildings) advanced in price relatively more rapidly in the past two years than larger farms since buildings represent a larger share of the total value of small farms than they do of large farms.

From 1940 until a year ago land of less than average productivity appeared to be increasing in price relatively faster than highly productive land. This tendency seems to be a fundamental characteristic of periods of rapidly rising land prices. But during the past year this trend has become less noticeable, presumably because as a rule the best buildings are found on the most productive farms, and the condition of the house, barn and other structures seems to have become an important consideration.

Non-real estate capital requirements for farming have increased more than real estate requirements since the prewar period as shown below. There are some who believe that this tendency for non-real estate investment in farming to increase may have some restraining effect on land values although thus far this effect is not apparent. In those areas where agricultural production continues to be further mechanized it seems possible that the ratio of non-real estate capital to real estate investment may grow.

Percentage Change in Non-Real Estate Capital and Real Estate Capital Requirement[1]
-1945-

	Non-Real Estate % Increase over Average 1937-40	Real Estate % Increase over Average 1937-40
Ohio (North Central General Farm)	71%	37%
Kentucky (Tobacco, Livestock)....	66	57

Modern farming requires a high investment in farm machinery and equipment most of which is more intricate than was required when horses provided the principal power on a farm. The growing importance of livestock necessitates a larger investment in the animals themselves, as well as the facilities needed to care properly for them.

A further claim on the capital required in farming is the increasing importance of maintenance and improvement of the soil. There are no new lands now to replace land worn out by improper care.

A recent comparison of farm account inventories in eleven North Central states[1] including Kentucky and Ohio shows that the capital required for productive livestock such as cattle, hogs, sheep and poultry has increased by an average of 77 percent; machinery and equipment by 101 percent; and feed, seed and supplies 89 percent over the average required for the four year period 1937-40. Meantime farm real estate values increased 46 percent and work stock (horses and mules) declined 35 percent.

Another factor affecting farm real estate prices in farm sections adjacent to highly industrialized areas of the district is the desire on the part of these workers to live in the country. They will often bid a higher price for farm property for its suitable location than it would command for strictly agricultural use.

Farm real estate prices during and following the present World War have closely paralleled those of World War I. A slightly lower level of prices still prevails currently, but the high volume of sales at increasing prices now suggests that this difference may be narrowed. A study of farm land price trends after World War I reveals that prices continued to increase

[1]North Central Regional Publication No. 5

(*Continued on Page 12*)

SUMMARY OF NATIONAL BUSINESS CONDITIONS

By the Board of Governors of the Federal Reserve System

(Released for Publication April 23, 1946)

Industrial production advanced considerably in March and appears to have declined only moderately in the early part of April notwithstanding a complete shutdown in the bituminous coal industry and some reduction in output at steel mills. The value of retail trade has continued to set new records during this period; wholesale commodity prices have risen further.

Industrial Production

Production at factories and mines, according to the Board's seasonally adjusted index, rose from a level of 153 percent of the 1935-39 average in February to 169 in March. This is slightly above the level reached last November before production was reduced by strikes in the automobile, electrical equipment, and steel industries. In April the index will probably show a decline of 3 or 4 points as decreases in coal and steel are only partly offset by continued increases in other industries.

The large increase shown by the total index in March was due for the most part to a sharp recovery in steel ingot production following settlement of the labor dispute. There were production gains also in industries manufacturing automobiles, machinery, stone, clay and glass products, furniture, textiles, paper and rubber products. These gains in steel and other industries were offset only in small part by declines in the nonferrous metal industries, some food industries, and crude petroleum.

Steel ingot production for the month of March averaged 84 percent of capacity as compared with 20 percent in February and at the end of March was close to 90 percent. Subsequently, due to reduced coal supplies, steel output declined and by the fourth week of April was down to a rate of 74 percent of capacity. In the automobile and machinery industries production increased substantially during the latter part of March and the early part of April, reflecting improvement in steel supplies and settlement of important wage disputes.

Output of stone, clay, and glass products continued to advance in March and production in the first quarter of this year exceeded the previous peak levels reached at the beginning of 1943.

Output of nondurable goods rose further in March to a level of 168 percent of the 1935-39 average, the highest level since last June. Production of nondurable goods for civilian use is now in larger volume than at any previous time. Activity at woolen mills has shown an exceptionally large advance since the end of last year and, with marked increases in cotton consumption and rayon shipments, the Board's index of textile production in March was at a level of 162 percent of the 1935-39 average. This equals the previous peak rate at the beginning of 1943.

Mineral production declined in March as a further advance in coal production was more than offset by a decline in crude petroleum output and by work stoppages at important metal mines. Activity at bituminous coal mines was suspended beginning April 1 owing to a labor-management dispute over a new wage contract.

Employment

Employment in nonagricultural establishments rose by about 600,000 in March after allowance for seasonal changes. This rise reflected increased employment in manufacturing—largely in the iron and steel group—and continued gains in trade and construction. There were further substantial releases from the armed forces. The total number of persons unemployed remained at a level of about 2,700,000 in March.

Distribution

Department store sales rose sharply in March and continued at a high level in the first half of April. Total sales during the Easter season are estimated to have been about one-fourth higher than last year.

Freight carloadings during March were close to the record rate for that month reached last year. In the first three weeks of April loadings declined, reflecting the stoppage of bituminous coal production. Shipments of most other classes of revenue freight continued to increase.

Commodity Prices

Wholesale prices of agricultural and industrial commodities continued to advance from the middle of March to the third week of April. The general level of wholesale prices is now higher than last September by something over four percent. In recent weeks ceiling prices for a number of products have been raised considerably and where ceilings have been removed prices have generally risen. A bonus of 30 cents a bushel has been granted on wheat delivered by May 25 under the certificate plan to help meet the critical food situation abroad, and a like payment has been offered for 50,000,000 bushels of corn. Subsidy payments for some commodities have been increased to prevent further price advances.

Bank Credit

Member bank reserve positions tightened in the last half of March as Treasury deposits at the Reserve Banks were increased by large income tax collections. Banks sold short-term Government securities largely to the Reserve Banks, and drew down their reserve balances to meet this loss of funds. Reserve positions were eased on April 1 in connection with the cash redemption of 2.0 billion dollars of Treasury certificates on that date, and in the following weeks banks bought Government securities and reduced borrowings at Reserve Banks.

Commercial and industrial loans at member banks in leading cities increased further. Loans to brokers and dealers rose at the end of March in connection with Treasury security retirement operations and declined sharply in the week ending April 3. Deposits, other than those of the Treasury, fluctuated considerably, reflecting large income tax payments and the April 1 tax assessment date in Illinois.

Yields on long-term Treasury bonds have remained relatively steady following a sharp decline in January and the first half of February.

Indexes of Department Store Sales and Stocks

Daily Average for 1935-1939 = 100

	Adjusted for Seasonal Variation			Without Seasonal Adjustment		
	Mar. 1946	Feb. 1946	Mar. 1945	Mar. 1946	Feb. 1946	Mar. 1945
SALES:						
Akron (6)	289	249	261	247	222	248
Canton (5)	329	279	294	256	212	264
Cincinnati (9)	284	285	221	252	214	219
Cleveland (10)	250	233	212	220	182	203
Columbus (5)	308	301	248	274	226	250
Erie (3)	287	225	257	239	191	239
Pittsburgh (8)	271	200	199	233	180	195
Springfield (3)	296	281	263	260	219	263
Toledo (6)	255	244	226	225	192	221
Wheeling (6)	283	229	206	224	185	199
Youngstown (3)	304	252	242	255	204	242
District (97)	271	242	222	237	194	214
STOCKS:						
District	174	163	149	168	151	144

Bank Debits in 29 Fourth District Cities

The smaller cities of the Fourth District continue to show sizable increases over a year ago in the volume of money transfers. During March such transfers as measured in terms of bank debits were 7.2% ahead of last year, whereas among larger cities the volume was running behind 1945, as shown in the accompanying tabulation.

10 Largest Centers:

Bank debits reported by **Columbus** banks exceeded $1 billion during the March quarter, for the best first-quarter volume on record, representing a 21% increase over a year ago, or more than that of any other major Fourth District city.

Dayton banks reported debits of nearly $175 million in March, or about 13% in excess of March 1945. The margin over a year ago for the entire first quarter (up 10.6%) was also large in comparison with many other industrial centers in the Fourth District.

During the March quarter debits in **Erie** ran better than 10% ahead of the comparable 1945 quarter, whereas the 10-city average declined slightly.

In **Toledo**, debits during the month of March totaled over $275 million, or nearly 7% above a year ago, as compared with a 1% decline for the ten-city aggregate.

19 Smaller Centers:

With debits mounting to nearly $20 million to a new all-time high for any month, **Zanesville** again led the list of smaller cities with a 42% increase over March 1945.

Portsmouth bank debits reached a volume in excess of $15 million during March or roughly 29% ahead of the same month in 1945, in contrast to an average increase of only about 7% among all other reporting centers in that group.

(In thousands of dollars)

	March 1946	% change from year ago	3 months ended Mar. 1946	% change from year ago
ALL 29 CENTERS	$4,957,189	− 0.3	$14,164,465	+ 0.1
10 LARGEST CENTERS:				
Akron, Ohio	$ 209,836	− 0.2	571,234	− 1.8
Canton, Ohio	76,310	−13.6	219,291	−11.0
Cincinnati, Ohio	667,061	+ 2.1	1,959,913	+ 2.9
Cleveland, Ohio	1,267,003	− 5.3	3,726,939	− 3.0
Columbus, Ohio	382,871	+16.0	1,067,550	+18.3
Dayton, Ohio	173,752	+12.7	476,730	+10.6
Toledo, Ohio	277,127	+ 6.8	744,484	+ 3.9
Youngstown, Ohio	92,417	+ 3.1	262,877	+ 5.8
Erie, Penna.	61,638	+ 1.0	180,411	+10.1
Pittsburgh, Penna.	1,302,095	− 5.0	3,642,098	− 6.5
Total	4,510,110	− 1.0	$12,851,527	− 0.6
19 OTHER CENTERS:				
Covington-Newport, Ky.	$ 32,410	+28.7	$ 90,836	+23.0
Lexington, Ky.	51,755	+ 2.6	207,875	− 0.8
Hamilton, Ohio	27,126	+17.4	72,946	+13.5
Lima, Ohio	29,347	−11.5	85,977	− 5.7
Lorain, Ohio	11,478	+25.5	32,284	+24.3
Mansfield, Ohio	26,601	+ 6.0	74,026	+11.9
Middletown, Ohio	25,264	+20.6	70,938	+22.7
Portsmouth, Ohio	15,385	+28.8	41,028	+19.6
Springfield, Ohio	36,240	− 1.7	100,398	+ 3.0
Steubenville, Ohio	18,245	+11.3	50,332	+10.9
Warren, Ohio	24,131	− 5.5	67,349	− 7.3
Zanesville, Ohio	19,772	+42.0	53,483	+40.7
Butler, Penna.	22,184	− 5.7	60,060	− 3.1
Franklin, Penna.	7,221	+ 8.0	19,664	+13.0
Greensburg, Penna.	14,997	+18.9	40,810	+16.9
Homestead, Penna.	5,988	+15.4	16,527	+14.4
Oil City, Penna.	15,643	−15.7	45,730	− 7.6
Sharon, Penna.	17,447	+ 1.5	47,536	− 1.5
Wheeling, W. Va.	45,845	+10.8	135,139	+14.4
Total	$ 447,079	+ 7.2	$ 1,312,938	+ 7.5

Fourth District Business Statistics

(000 omitted)

Fourth District Unless Otherwise Specified		March 1946	% change from 1945	February 1946
Savings Deposits—end of month:				
39 banks O. and W. Pa.	$	1,449	+19	1,441
Retail Sales:				
Department Stores—97 firms	$	57,855	+ 6	43,682
Wearing Apparel—16 firms	$	2,767	− 2	2,033
Furniture—71 firms	$	3,318	+35	3,106
Building Contracts—Total	$	a	a	50,019
—Residential	$	a	a	11,605
Commercial Failures—Liabilities	$	149	−75	70
—Number		2	−67	7
Production:				
Pig Iron—U. S. Net tons		4,424	−15	1,147
Steel Ingot—U. S. Net tons		6,535	−15	1,392
Bituminous Coal—				
O., W. Pa., E. Ky. Net tons		22,098	+13	19,066
Cement—O., Pa., W. Va. Bbls.		a	a	639
Electric Power—				
O., Pa., Ky. Thousand K.W.H.		a	a	2,320

a Not available.

Wholesale and Retail Trade

(1946 compared with 1945)

	Percentage Increase or Decrease SALES March 1946	SALES First 3 months	STOCKS March 1946
DEPARTMENT STORES (97)			
Akron	− 4	+ 4	+ 8
Canton	− 7	+ 3	a
Cincinnati	+11	+17	+12
Cleveland	+ 4	+11	+20
Columbus	+ 6	+13	+17
Erie	− 4	+ 6	+11
Pittsburgh	+15	+18	+14
Springfield	− 5	+ 4	a
Toledo	− 2	+ 4	+19
Wheeling	+ 8	+15	+24
Youngstown	+ 2	+ 7	a
Other Cities	+ 6	+17	+10
District	+ 6	+12	+15
WEARING APPAREL (16)			
Canton	−11	− 7	+ 3
Cincinnati	− 3	− 4	−18
Cleveland	+ 6	+13	− 7
Pittsburgh	− 1	+ 3	+10
Other Cities	− 7	− 1	+ 7
District	− 2	+ 2	− 1
FURNITURE (71)			
Canton	+40	+43	− 7
Cincinnati	+36	+57	+16
Cleveland	+15	+37	+42
Columbus	+43	+49	+21
Dayton	+53	+76	a
Pittsburgh	a	a	a
Allegheny County	+39	+53	a
Toledo	+74	+75	a
Other Cities	+39	+65	+21
District	+35	+53	+20
WHOLESALE TRADE**			
Automotive Supplies (6)	+44	+39	+15
Beer (6)	− 7	+ 4	−38
Clothing and Furnishings (3)	−23	a	a
Confectionery (3)	+45	+35	a
Drugs and Drug Sundries (4)	+14	+17	a
Fresh Fruits and Vegetables (12)	+ 9	+10	+ 8
Furniture and House Furnishings (3)	+35	a	a
Grocery Group (40)	+19	+21	+19
Total Hardware Group (20)	+20	+18	+ 4
General Hardware (5)	+26	+37	+ 4
Industrial Supplies (6)	+ 5	− 1	a
Plumbing and Heating Supplies (9)	+20	+13	a
Jewelry (6)	+64	+68	a
Lumber and Building Materials (6)	+41	a	−45
Machinery, Equip. & Sup. (exc. Elect.) (3)	−19	a	a
Meats and Meat Products (3)	+38	a	+106
Metals (3)	+ 5	a	a
Paints and Varnishes (5)	+32	+31	a
Paper and Its Products (6)	+13	+ 9	a
Tobacco and its Products (15)	+27	+32	+50
Miscellaneous (13)	+23	+15	+42
District—All Wholesale Trade (160)	+18	+19	+27

** Wholesale data compiled by U. S. Department of Commerce, Bureau of the Census.
a Not available.
Figures in parentheses indicate number of firms reporting sales.

FARM LAND PRICES

(*Continued from Page 9*)

for almost eighteen months after the close of the War, and for about a year after cash farm income had reached its peak and had begun to decline. On that occasion farm land values did not respond quickly and directly to a change in the trend of prices received for agricultural products.

During the past year farmers were reported to be the purchasers in two-thirds of the sales. Of the non-farmer buyers 66 percent were nearby residents, many of whom plan to operate the land acquired.

Nearly 60 percent of all sales in 1945 were for cash according to surveys made. Nevertheless heavy debts were being accumulated on some farms. About 14 percent of all sales carried a debt of three-fourths or more of the purchase price, and 33 percent of the purchasers were indebted to the extent of one-half the purchase price.