MONTHLY

Business Review

FINANCE • INDUSTRY • AGRICULTURE • TRADE

FOURTH FEDERAL RESERVE DISTRICT

FEBRUARY 1952

CONTENTS

Vol. 34—No. 2 Federal Reserve Bank of Cleveland Cleveland 1, Ohio

Construction Activity Outlook

THE volume of new construction put in place in the entire country last year reached an all-time high of nearly $30 billion, as compared with the previous record of $28 billion established in 1950.

That seven percent increase, however, is entirely attributable to the higher construction costs which prevailed during 1951. If anything, the physical volume of construction last year was probably a shade smaller than the peak reached in 1950.

Several factors explain the continued high level of construction activity. First, selective credit controls applied only to new residential, commercial, and amusement construction and did not affect the backlogs of commitments in existence at the time. Secondly, effective material controls were not invoked until a year later (October 1951), and even then, contractors were allowed to work off existing inventories of controlled materials, which in many instances were adequate to maintain construction schedules near the peak for some time.

A third factor was the industry's ability to shift easily to defense construction. No extensive retooling was required. The equipment used to build civilian highways and toy factories is readily put to work on military airfields and armament plants. The final factor was the great increase in manufacturing building and other types closely connected with the defense effort.

A decline in the aggregate, however, may be in store for 1952. Most observers expect to see a drop of between seven and ten percent (in physical volume) depending upon the availability of controlled materials.

Fewer Starts Much of the anticipated shrinkage this year is identified with the prospects for residential building. New housing starts are expected to total somewhere between 600,000 and 925,000 as against 1,090,000 in the past year. The lower estimate is based upon DPA's second-quarter material allotments of 60 percent of the 1951 rate of use of copper, brass, and steel in residential building. After the new allotment schedule was published, the Housing Administrator announced that builders could start around 800,000 units by stretching scarce building materials and excercising "much self-discipline." In the President's annual budget message to Congress it was suggested that new housing starts in fiscal 1953 (July 1952 through June 1953) be held at 850,000 or less. Thus, while an official goal of around 800,000 new starts has apparently been announced, estimates within the industry suggest that the builders could exceed this goal by perhaps as much as 15 percent.

Certain other types of construction, such as commercial buildings, public buildings, and community facilities presumably also will be sharply reduced during the coming year, except in critical areas. For example, for the first quarter of 1952 NPA denied 77 percent of the applications for this type of building because the quantities of scarce metals set aside for it were only sufficient to supply those applicants with projects at least 20 percent completed or in need of structures destroyed by fire or other disaster. Since second-quarter quotas are even smaller, this type of construction may be brought to a virtual standstill.

In contrast to prospective declines in residential and "nonessential" construction, business expendi-

tures for new plant and equipment (at a seasonally adjusted rate) are expected to reach a new high in the first quarter of 1952 according to the November survey made jointly by the Department of Commerce and the Securities and Exchange Commission.

Defense Construction

The bright spots in the 1952 construction picture are all closely related to the defense effort. The largest first-quarter capital outlay (seasonally adjusted), and the greatest increase from pre-Korean levels, are planned by the metals producing and fabricating industries. Petroleum, chemicals, and rubber producers, as a group, also plan to increase their capital goods expenditure rate during the first quarter, while the "all other" manufacturing group anticipates a sharply reduced rate. In the non-manufacturing category, transportation and mining industries as well as electric and gas utilities expect to increase their plant and equipment outlays during the first three months of 1952.

At year-end, the defense-related industrial expansion program was nearly 40 percent completed, according to the Director of Defense Mobilization, and two-thirds of the plants will be completed in 1952. Throughout the 1952-54 period, the electric power program calls for an average annual increase of 10,000,000 kilowatts in generating capacity. Even so, a recent survey of the power program estimated a deficit of 2,000,000 kilowatts in 1953 and 5,000,000 kilowatts in 1954 and recommended that the program be expanded. No leveling out in the railroads' capital expenditure rate is seen for the immediate future, although material allotments may stretch out deliveries of rolling stock.

The sharp cut in metal allotments since the survey was made will undoubtedly change many of these plans. First-quarter structural steel allotments for the industrial expansion program were more generous than fourth-quarter quotas, but second-quarter allotments are only sufficient for 77 percent of the amount needed for projects now under way. This means that new starts cannot be made without further curtailing existing projects. Equipment expenditures, however, are expected to remain at high levels through the second quarter. Also, industrial expansion continues to be stimulated by more than $8 billion of proposed facilities certified under the rapid amortization program.

Four major factors affect the industry's outlook for 1952. These are: the incentives offered to industrial expansion under the rapid amortization program; the rapid rise in the number of critical defense housing areas in recent months; the availability of funds in the mortgage market; and, the steel, copper, and aluminum shortages. Since each of these factors affects builders in a different manner, they are discussed separately.

Rapid Amortization Incentive

In order to encourage private capital to undertake the industrial expansion necessary to the defense program, Congress made provision for rapid amortization rights to be extended to companies expanding defense or defense-supporting industries. Up to 100 percent of the capital cost of the expansion could be written off over a 5-year period rather than over the 20 to 25 years normally allowed. Applicants were granted certificates of necessity giving them this right.

Certificates of necessity calling for over $1.3 billion in new or expanded industrial facilities have been granted to Fourth District concerns, or about 16 percent of the national total. Over half of this expansion is for metals production and fabrication, 14 percent for transportation equipment, and 9 percent for chemicals. In addition, non-manufacturing concerns with main offices in the District have received nearly $307 million in certificates of necessity for rail and water transportation and iron ore mining.

Certificates of necessity are still being granted by the Defense Production Administration, but the processing of applications is now based upon the importance of the production involved. Steel capacity is planned to reach the 120-million-ingot-ton level by 1954, some 20 million ingot tons above the pre-Korean level. This level is thought to be adequate to meet civilian and military needs. Since certificates to reach this goal have already been issued, not many entirely new steel projects are being looked for. Nevertheless, the District is prominent in the manufacture of about half of the items still on DPA's priority list and should continue to receive new plants under this program, although not in the same proportions as heretofore. It is estimated that about one-third of the work authorized by certificates of necessity up to the year-end had been put in place so that the program will continue as a stimulating force for many months ahead.

Housing for Defense Areas

When a community is certified as a critical defense housing area, it is anticipated that private builders will provide the housing programmed for military personnel and defense workers in such areas. Incentives are created by removing or relaxing real estate credit regulations on the required number of homes and by making available mortgage insurance under very liberal provisions. In the future the program may be used if necessary to channel critical building materials into such areas. Provision is also made for federal aid to supply necessary community facilities, such as water and sewerage systems and streets.

As of December 31st, three such areas had been certified in the Fourth District: Wright-Patterson Air Force Base near Dayton, Ohio; Lorain, Ohio; and, Midland, Pennsylvania. Over 100 critical defense

housing areas have been certified throughout the country during the past eight months, and more will be designated in the near future.

During the coming year, critical defense housing programs may receive priority on the steel, brass, and copper allocated to housing. In the Budget message, it was predicted that one-third of the new homes built in fiscal 1953 would be in areas serving military and defense needs. It was also estimated that roughly 400,000 new housing units should be built or placed under construction during the next 18 months to meet the needs in critical defense areas. Activity in these areas may be maintained at the expense of home construction in noncritical areas.

Mortgage Market A marked reduction in the availability of mortgage credit occurred in the spring of 1951. Some mortgage lenders, notably insurance companies, withdrew from the market while backlogs of commitments were worked off. Although there is no evidence to suggest that houses went unsold because financing could not be arranged, the tighter mortgage market is believed to have been an important factor in the lower level of starts during the second half of the year because builders were encountering difficulty in arranging financing for new projects.

Government insured mortgages (FHA and VA) for a time were unpopular with lenders because the interest rates were frozen while conventional type mortgages and other types of loans were providing a more attractive return.

By the end of 1951 the mortgage market began to ease somewhat. Many insurance companies had substantially reduced the backlogs of commitments which had caused them to withdraw from the market and were again in the market for suitable mortgages. Other institutional lenders, such as commercial banks as well as savings and loan associations, also began to seek mortgage investments more actively in order to employ accumulating funds.

Availability of Materials With the exception of copper, brass, aluminum, and structural steel, all other building materials and supplies are now readily available. Further, there is at present no reason to anticipate that the volume of output of these other materials could not be maintained at a level at least equal to last year's performance. The supply of building labor also appears adequate.

The over-all limiting factor, as far as the construction industry is concerned, is thus the availability of structural steel and copper. The former is essential to most classes of construction, including multi-family housing units. Within limits, a certain amount of substitution can be made, such as the use of wooden beams and supports as well as more extended use of reinforced concrete. Single-family units can readily be built without any structural steel. Copper and brass pose more difficult problems, particularly in their use for electrical wiring and plumbing. Aluminum can be used as a substitute for some applications, but it is in such short supply that it has been virtually banned as a building material.

Shortages of other classes of steel products are anticipated which could hamper all forms of construction. Among these may be included valves, pipe, pipe fittings, heating and ventilating equipment, cabinets, and perhaps (at a much later date) household cooking, refrigeration, and laundry equipment.

Second-Quarter Allotments Sharp reductions in the amounts of controlled materials allotted to construction were made from the first to the second quarters of this year which will pull down, at least temporarily, nearly every class of construction activity except direct military and atomic energy projects.

Structural steel allotments for industrial purposes will barely support current projects now under way and will eliminate any new starts except the most critical. Electric utilities were awarded an increase of about 10 percent and public roads were granted enough to equal 1951 fourth-quarter levels after a sharp first-quarter slash.

New starts of less essential commercial construction such as retail stores, public buildings and the like will be brought to a virtual standstill except in critical defense areas. As noted previously, allotments for residential housing were reduced 40 percent from 1951 rates of consumption, but current inventories and conservation methods may enable builders to start about 800,000 units.

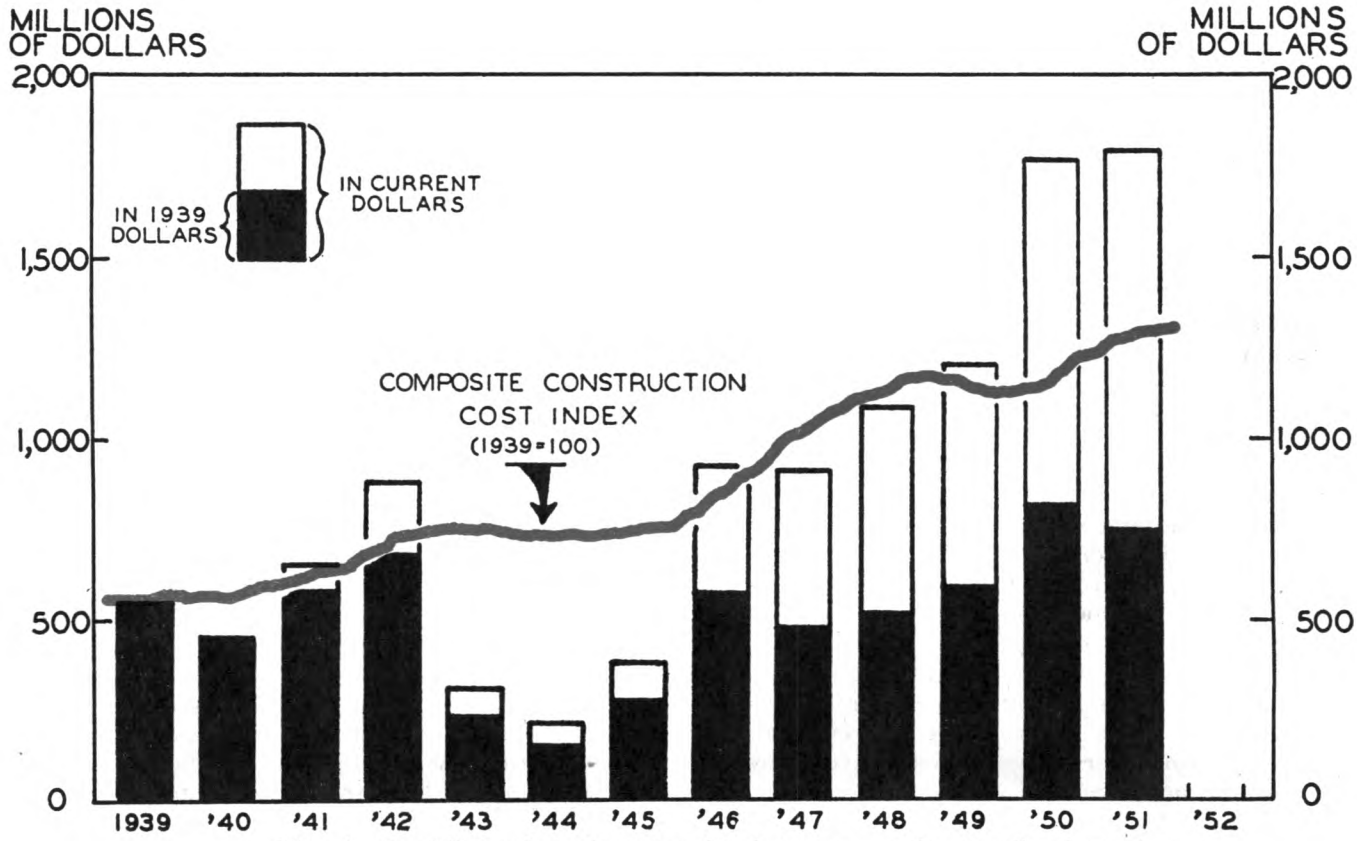
The effect of the reduced supply, according to DPA, will be to drop construction put in place in the second quarter to $6.5 billion, or $1.1 billion below the year-ago level. This would mean an annual rate well below the predicted $27-28 billion level.

New regulations undoubtedly will have to be issued to implement the scheduled material allocations. The amount that a builder self-certifies may have to be revised downward and controls placed over his inventories.

The net effect of these controls and allocations as set off against the remaining stimulating factors plus military and atomic energy construction cannot be pin-pointed. Undoubtedly total construction activity will range below the 1951 mark, but not by as much as scarce material allocations would seem to indicate. The ingenuity of engineers and contractors should not be underrated as they tackle the job of stretching scarce materials and finding suitable substitutes.

Fourth District Highlights Although construction contract awards made within the Fourth District reached a new all-time high in dollar volume last year, the increase over the

TOTAL CONSTRUCTION CONTRACT AWARDS
1939-1951
Fourth District



. . . although the dollar value of construction last year was fractionally above the record year of 1950, the estimated physical volume was not very much greater than prewar 1939. The protracted rise in construction costs has created a bias in dollar figures.

Source: F. W. Dodge Corporation; U. S. Dept. of Commerce

record year of 1950 was less than 1 percent. When the 8 percent rise in construction costs is considered, the indicated reduction in physical volume was about 7 percent.[1]

Substantial year-to-year gains were posted by only two major types of construction, industrial building and utilities. The dollar value of industrial building awards climbed nearly 90 percent over the 1950 total but it was 13 percent short of the 1942 wartime dollar peak. Electric power, gas, and water utility awards rose to a new dollar high, over one-fourth above 1950 levels.

Residential awards dropped about 2 percent below 1950's record dollar volume with most of the decline being centered in one-family units built for owner-occupancy. Awards for speculatively-built and rental (apartments and two-family houses) units remained near peak 1950 levels. Even allowing for price changes, the drop within the District was not more than 12 percent as compared with a 17 percent decline in physical volume (floor area) in the 37 Eastern States and the 22 percent dip in new dwelling units started throughout the nation. As a consequence, the District received 12 percent of the total dollar volume of all residential contract awards made in the 37 Eastern States as against 11 percent in 1950 and 10 percent in 1949. In the District's smaller metropolitan areas with populations of between 200,000 and 600,000 in 1950, the dollar volume of residential awards actually topped the 1950 peak.

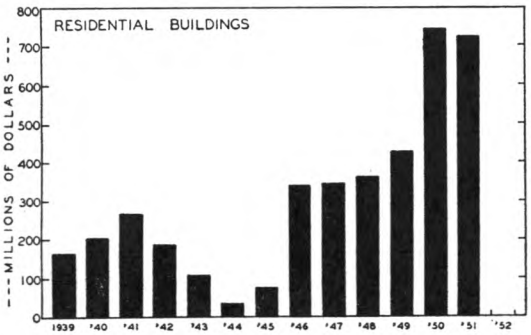
Commercial building awards were consistently below year-ago levels throughout the second half, but one large office building started in Pittsburgh during the first half brought the year's dollar total to record 1950 levels. Contract awards for all other less-essential types of construction tapered off rapidly during the second half of the year, dropping the 12-month totals well below 1950 levels. Public works awards also declined, reaching a four-year low in dollar volume.

1 Physical volume estimated by adjusting F. W. Dodge Corporation contract award data for changes in the Department of Commerce Composite Construction Cost Index.

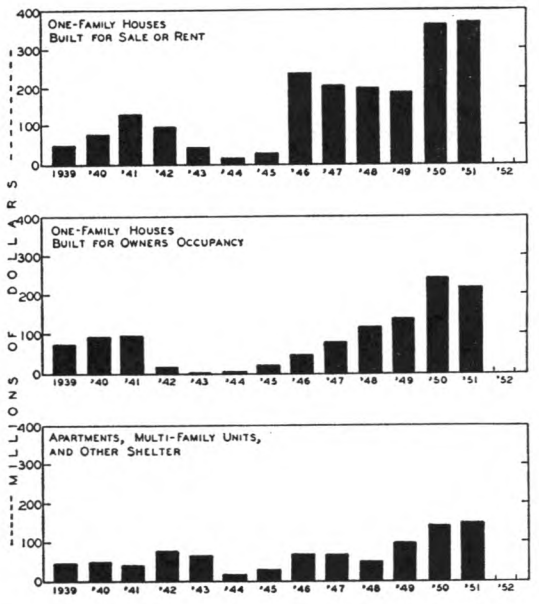
CONSTRUCTION CONTRACT AWARDS

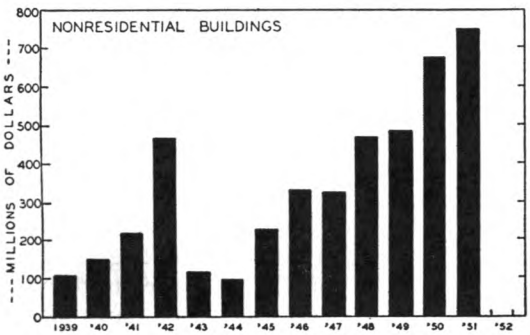
1939-1951

Fourth District

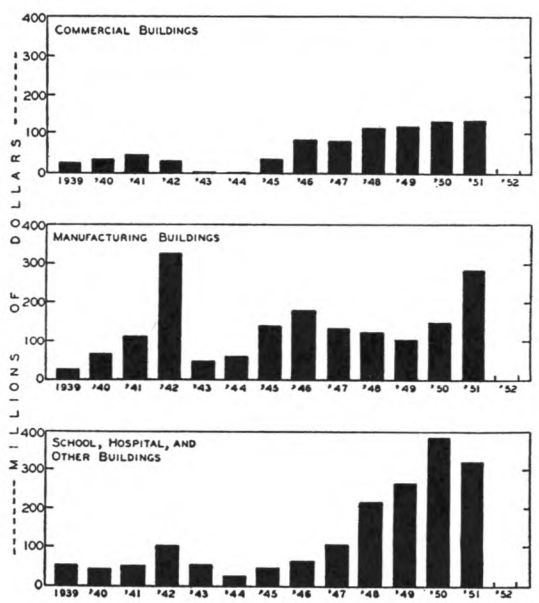


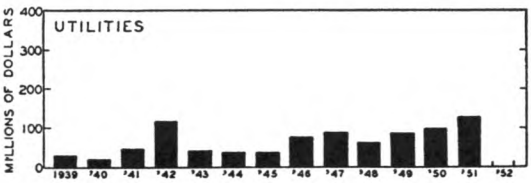
. . . total residential construction last year fell slightly short of the record 1950 dollar volume, chiefly because of a decline in value of one-family houses built for owner-occupancy. All other residential construction exceeded the 1950 aggregate.



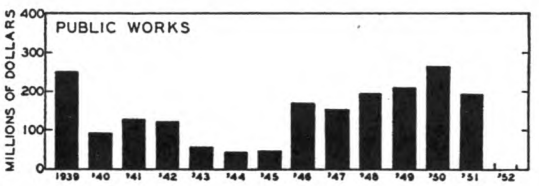


. . . total nonresidential construction established a new record (in dollars) last year, solely because of the large increase in the construction of manufacturing buildings. A noticeable reduction occurred in the miscellaneous category.





. . . public utility construction reached a new all-time high last year, at least in dollar terms.



. . . contracts awarded for public works declined to a 4-year low in 1951—perhaps a 6-year low in physical volume.

Source: F. W. Dodge Corporation

Size of Business in Fourth District Farming

Firms engaged in trade or industry have long been measured or compared for size in terms of their yearly sales volume. Occasionally reference is made to floor area, or to the number of employees, especially when such figures are large and impressive; but the most universal yardstick, applicable to both large and small enterprises without bias, is the dollar volume of business done in a typical year.

A similar yardstick is now available for the measurement of agricultural enterprises, and to catalog the various farming areas of the country according to the "size" of the typical farms in each region. The Bureau of the Census has classified all farms enumerated into seven broad economic groups. The distribution of farms in the Fourth District according to this new schedule is depicted in the accompanying map and chart.

Variations in Gross Sales

Nearly three-fourths of the 47-million-acre land area of the Fourth District is used for farming. This area is broken up into 353,000 farms with an average size of 96 acres each. Total sales from these farms in the year covered by the recent census amounted to $992 million, or $2,806 per farm.

Only about one-third of the farms in this District, however, had gross sales of over $2,500. In view of the fact that, because of operating costs, less than half of farm sales actually represent net return, owners or operators of the other two-thirds of the farms either obtain income from other sources or maintain a very low level of living. This is particularly true for those below $1,200 which comprise fully half of the farms in the District.

Some idea of the general distribution of the predominant size of business in the various areas may be had from the accompanying map. A more detailed display showing the distribution of farms falling into each of the various economic classes is shown in the circular graph. In general, counties with the greatest proportion of the high income farms (over $5,000) conform rather closely with the solid red area on the map while the greatest proportion of the very low income farms (below $1,200) occurs in the uncolored area. Those with sales between these extremes are rather widely distributed throughout the District with some tendency to concentrate in the diagonally shaded area. This latter area also contains some large farms and a very substantial number of part-time and residential units.

Sales as a Yardstick

The high income area indicated on the map accounts for somewhat less than one-third of the farms, yet over half of the marketed output originates in this area. The fact that even in this area a substantial proportion of the farms are part-time or residential, thus producing little for sale, tends to illustrate further the fact that most of the marketed food and fiber is produced by a relatively small number of farm businesses. At least one-third of the farms in virtually every county in the high income area actually had sales of less than $2,500. This factor is especially prominent in some of the counties along Lake Erie where as many as three out of every five farms are too small even to be considered as commercial units.

Measuring farm size by volume of cash sales brings several counties into prominence that are not generally considered as agricultural.[1] A notable example would be Cuyahoga County in Ohio, which is among the lowest of the District in respect to the proportion of the area used for farming and which ranks lowest in the average acreage per farm. A description of farming in this county by some conventional methods would show that operations were on a much smaller scale than, for example, in eastern Kentucky where the average farm acreage is over twice as large. Actually, the average output per farm in Cuyahoga County is more than 16 times greater. Further comparison will show that the eastern area of Kentucky has eighty times as much farm land as Cuyahoga County, yet the value of marketings is only three times greater. Still greater extremes could be pointed out, as Cuyahoga County is far from being the most prominent agricultural county in the District and the average of these eastern Kentucky counties does not represent the lowest county figure.

A sharp distinction may also be made between southern Ohio and western Ohio by using gross sales as a gauge of size. Average acreage, which is a commonly used measure of size, would indicate little difference between these two areas, as the typical acreages are not greatly different. The value of products marketed per farm, however, show a magnitude of operations over two and one-half times greater in western Ohio.

NOTE: Other economic aspects of Fourth District agriculture as revealed by the 1950 Census will be covered in future articles.

(1) A very good method of measure involving the computation of "units of work" per farm would probably also make this distinction.

The relationship between size of business (gross sales) and various other factors such as the degree of mechanization and expenditures for non-farm goods and services is quite evident in the Fourth District. The section of the District where the cash sales are the highest (see map) contains only 31% of the farms but claims 76% of the corn pickers, 72% of the grain combines, 54% of the pick-up balers, 51% of the tractors, 46% of the electric water pumps, 43% of the telephones, 42% of the home freezers, and 36% of the trucks and electric washing machines.

Expenditures in this same area account for 59% of the District total tractor and machinery repair bills, 58% of the gasoline and oil, 52% of the seeds, plants, etc., and 46% of the livestock and poultry feed purchased.

Characteristics of Size Various economic and social characteristics seem to accompany farm businesses of different sizes. Farm management records bear out the fact that over the long run, the fairly large farms yield the best returns in spite of the higher fixed costs which accompany them. Some farm management experts are on record as saying that it normally pays to have a farm business twice as large as the average one in the community. On larger farms, the chances of making a high income are greater in prosperous years although, of course, the chances of loss are greater in depression years. Generally speaking, however, the probabilities of making a good income are greater than those of experiencing a loss.

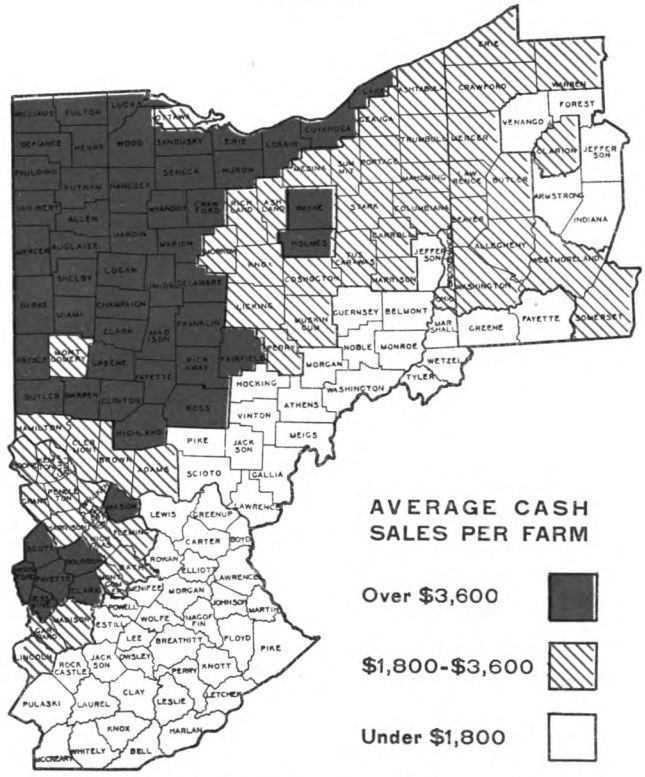
Small farm businesses by the same token are limited in their possibilities either for large profit or large loss. With lower fixed costs, these smaller farms may even be in a more favorable position in a period of depression in that losses would likely be lower, or net profits higher, than would be the case with larger farms. Factors aside from the price level may have similar effects. Even in years of general prosperity a farmer with poor soil, for instance, might very easily be merely multiplying his losses by farming more land of the same quality.

Profitable benefits often credited to largeness of business in farming are the opportunities for efficient and fuller use of labor, equipment, and capital. Bigger farm enterprises also may sometimes enable operators to cut costs or increase profits by buying and selling in larger quantities.

Although the size of a farm business may be increased by renting or buying more land, this is not the only means of expansion. Operators of the smaller farms are often able to increase economic size and realize some of the advantages of largeness by intensifying their operations. Additional enterprises may be added which would require no more land, such as poultry. Shifting to more intensive crops, thereby increasing the returns per acre, is another method which is sometimes justifiable. Even changing to purebred stock or using improved seed has the effect of increasing "size". Remodeling buildings to allow space for more livestock or to reduce labor requirements, or both, likewise tend to increase economic size. In recent years, these and other means have permitted considerable gains in the size of business among many of the low income farms as well as the larger ones which are indicated on the charts.

Considerable difficulty is often encountered by the small farms in attempts to enlarge, however, as they

SIZE OF THE FARM BUSINESS AS MEASURED BY GROSS SALES
In 1949



. . . counties in which cash sales per farm averaged $3,600 or more (in 1949) are concentrated in the northwestern portion of the District, and in a small area of Kentucky.
Source: Preliminary 1950 Census of Agriculture

ANNOUNCEMENT

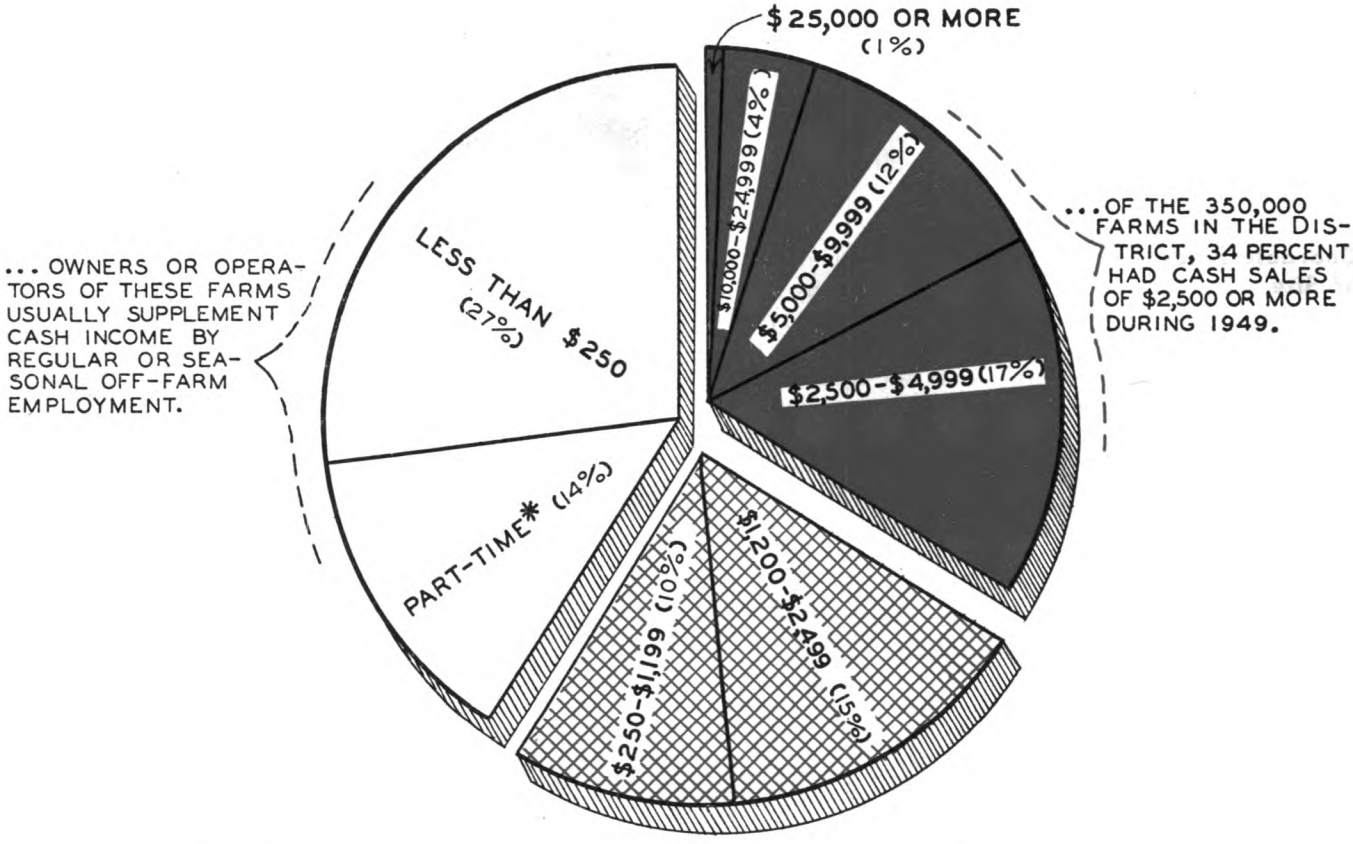
This bank's *Annual Report for 1951* has been published and is now available upon request to readers of the *Monthly Business Review* and others.

Featured in the report are a "profile of 1951" and a summary of Fourth District banking, as well as the customary financial statements.

CLASSIFICATION OF FARMS BY VALUE OF PRODUCTS SOLD

During 1949

(Fourth District)



* Part-time farms include those in the $250-$1,199 class where the operator either worked 100 days or more off the farm or if some other source of income was greater than the value of products sold.

Source: Preliminary 1950 Census of Agriculture

may not be as readily adaptable to these changes. This is often due to the lack of suitable local markets, topographical features, or the inability to offer a sound basis for obtaining sufficient funds. In many instances, mechanization is not economically feasible on these small units. Other obstacles to adjustment and enlargement on many of these small farms are old age among the operators and lack of education and training. Moreover, attempts to increase acreage by combining small farms is often hindered by the inability of surplus operators to find satisfactory off-farm employment.

SUMMARY OF NATIONAL BUSINESS CONDITIONS

By the Board of Governors of the Federal Reserve System

(Released for Publication January 30, 1952)

Over-all stability in economic activity continued in December and January. Prices of some basic commodities have weakened in recent weeks, while prices of finished goods have generally been maintained. Bank loans to business expanded considerably in December and showed some decline in early January. Easing in money market conditions in January was reflected in reduction of Federal Reserve holdings of Government securities to the lowest level since early July 1951.

Industrial production

The Board's index of industrial production in December was 218 per cent of the 1935-39 average, about the same as in the preceding 4 months and in December the year before. The index averaged 220 for the year 1951, up 10 per cent from 1950. Durable goods output expanded further in December and topped the previous postwar high reached in April. There were offsetting declines, however, in nondurable goods and minerals.

Activity in producers' equipment and munitions industries generally increased in December. Gains were particularly marked for machine tool, electrical power equipment, and aircraft industries. Output of steel and nonferrous metals held close to the high November rates. In January a rise in steel capacity to 108.6 million tons per year was announced; output was scheduled close to the level of the preceding month but somewhat below the new rated capacity. Curtailed production of building materials in December reflected large inventories and the reduced level of residential construction. Output of household durable goods continued at a level moderately above the summer low and close to the 1947-49 average rate. Auto assemblies were considerably reduced in late December and early January, partly because of model changeovers.

The decline in nondurable goods production in December largely reflected moderate cuts in cotton textiles, paperboard, and newsprint consumption and a more than seasonal decline in manufactured foods. Operations at chemical and rubber plants continued at the high November levels and petroleum refining activity increased slightly further.

Coal production decreased in December after a marked rise in October and November. Crude petroleum output was stable at rates slightly below the peak reached last autumn.

Employment

Seasonally adjusted employment in nonagricultural establishments continued unchanged in December. The average workweek at factories in mid-December, however, rose to 41.2 hours, more than half an hour above the level in other recent months. Average factory hourly earnings showed a slight further gain and average weekly earnings advanced considerably to $67.36. Unemployment at 1.7 million was down about 150,000 from November to a level 550,000 below a year ago.

Construction

Value of new construction work put in place showed no change in December, after allowance for seasonal influences. The total for the year rose to 30 billion dollars as building costs were at new record levels and the construction of industrial and military facilities increased sharply. The number of housing units started declined seasonally in December to 62,000, bringing the 1951 total to 1,090,000 as compared with the record 1,396,000 in 1950 and with 1,025,000 in 1949.

Distribution

In the first three weeks of January, seasonally adjusted dollar sales at department stores were close to the high December level, although about one-sixth below the record January 1951 rate. Sales of apparel and other nondurable goods have been maintained in recent months. Sales by automotive and building materials and hardware stores continued to decline in December. Value of department store stocks was reduced less than seasonally in December, according to preliminary estimates.

Commodity prices

Prices of hides declined sharply and there were moderate decreases in textiles, chemicals and grains from the early part of December to the latter part of January. Foreign prices of metals, which had been far above domestic levels, also decreased, while the domestic price for tin was advanced. Prices of most foods and other finished goods have continued to change little. Manufacturers' ceilings and selling prices on new models of some leading makes of autos were raised about 5 per cent in the latter part of January.

The consumers price index advanced slightly further from mid-November to mid-December, reflecting mainly higher food prices, offset in part by declines in apparel and housefurnishings.

Money and Bank Credit

Bank credit, particularly business loans, expanded more sharply than usual in December and then contracted somewhat early in January. Metal and metal product manufacturers have been particularly important borrowers in recent weeks.

The December credit expansion contributed to a substantial rise in the private money supply — the amount of currency and bank deposits held by businesses and individuals. The money supply has not experienced its usual decline in January mainly because of a large transfer of bank balances from Treasury to private accounts.

Member bank reserve positions tightened sharply in the last half of December and eased considerably early in January. Federal Reserve holdings of Government securities have declined sharply in January and are now below the level of a month ago and at about the level of April 1951 following the Treasury-Federal Reserve accord.

Security markets

Common stock prices rose further in the first three weeks of January, reaching their highest level since April 1930. Accompanying an easing in money market conditions, yields on short- and medium-term U. S. Government securities declined during the first three weeks of January. Yields on long-term Governments showed little change, while yields on high grade corporate bonds declined substantially, returning to their November levels.

Marine Attack

by CLYDE WILLIAMS, *Director, Battelle Memorial Institute*

A ship's bottom can pick up a load of barnacles that may increase fuel consumption up to 50 per cent, and cut top speed by two to five knots . . .

The wood pilings of a pier can be completely destroyed in a few months if unprotected from marine borers . . .

Expose a strip of bare steel to sea water or sea air. In time corrosion sets in, its speed and extent varying with climatic and sea water conditions . . .

Chemists and metallurgists have been studying these and similar marine protection problems for many years. They have made remarkable progress in providing better protective coatings, wood preservatives, and corrosion-resistant materials.

The annual cost of waste and destruction resulting from "marine attack", however, still is in the billion dollar category. In coming years, with the backlog of knowledge already available, this economic burden should be greatly reduced.

Protection against "marine attack" is of direct concern to owners and operators of ships and dock facilities, including the Armed Services. Others concerned include telephone and electric utility companies who lay cable in sea water; petroleum companies with off-shore drilling rigs; and railroad companies with bridges, causeways, and trestles over open sea water. In fact, "marine attack" concerns all industries and services that have marine or shore-based installations and equipment to maintain, or that process metal, wood, chemical, or cordage products for these installations and equipment.

Among the marine borers, the teredo, or shipworm, is one of the most destructive that has ever plagued mankind. Within a few months, a horde of shipworms has been known to destroy completely a pier worth millions of dollars. Embryonic teredos are hardly visible to the human eye as they lie on the surface of a wood piling. They grow to maturity as they bore themselves into the interior of the wood piling. Some reach sizes of many feet in length. Once buried inside, there is no obvious indication of the damage they are doing.

Recently, at Battelle's North Florida Research Station, we have found it possible to take pictures of the damage caused by marine borers, using a simple dentist's X-ray machine. This offers the first really reliable scientific tool for detecting marine borer activity. It is expected to lead to important discoveries for controlling borer damage. A cheaper means of introducing copper into wood preservatives is being studied. Certain copper derivatives are very good against attack by limnoria, a species of marine borer which is difficult to control in any other way.

Another marine pest, the barnacle, has an uncanny fancy for latching itself onto the underside of a ship's hull. Great quantities of these barnacles reduce a ship's speed, cause greater fuel consumption, and the additional expense of frequent drydocking. A few years ago, a new antifouling paint was developed by Battelle in cooperation with the major copper companies. It prevents fouling by barnacles and other marine organisms, up to four times as long as ordinary treatments. This has been demonstrated on all types of craft, and in cold, temperate, and tropical waters. A finely divided copper flake mixed into the special paint formulation permits maximum effectiveness and longer life.

Protection of ship parts and cargoes has always been one of the major battlegrounds in the fight against corrosion. Steel, the most commonly exposed metal, is usually protected from the atmosphere by paints. Most of those now in use employ mineral pigments such as red lead, zinc or lead chromate, iron oxide, titanium oxide, or aluminum flake. A clearer understanding of how these paints protect is needed. As this is obtained, longer life for anti-corrosive paints currently in use may be expected.

Better corrosion-resistant alloys are also in the picture. Under mixed industrial-marine atmospheric conditions, it has been found that certain steels containing small additions of copper, or copper and phosphorus, are much more corrosion-resistant than ordinary steel. Silicon also improves resistance. Particularly effective are substantial additions of chromium. An alloy with five per cent chromium shows roughly one-fifth the loss in weight of a copper-bearing steel.

Copper-base alloys, containing substantial amounts of nickel, have been found particularly useful to resist attack by high-velocity sea water on the condenser tubes of ocean steamers and naval vessels. Recent work in England and America has shown that these so-called cupro-nickels have much longer life if a small amount of iron is also present.

For resistance to sea water, however, titanium and its alloys, are unexcelled by any of the commercially available metals. As production of the new metal is scaled upward, it is expected to be an important marine metal for such applications as condenser tubes, piping, and exposed fittings.

Dehumidification, or "moth balling", of naval vessels has received wide attention since the end of World War II. Using this method, metal parts are protected from corrosion by keeping them in an enclosed space with the relative humidity at 30 per cent or less. Dehumidification equipment is now being mass produced. Its use for a wider variety of corrosion-resistant purposes is visualized.

There is a general awakening on the part of management to reduce hidden costs such as those traceable to corrosion by sea water and sea air and to fouling by marine organisms. Research will continue to respond to management's needs. Information on improved technological practice is being more widely disseminated. And as better materials and processes are devised, the battle will continue to reduce the unseen economic toll exacted by the destructive forces of nature.

Editor's Note—While the views expressed on this page are not necessarily those of this bank, the *Monthly Business Review* is pleased to make this space available for the discussion of significant developments in industrial research.

FINANCIAL AND OTHER BUSINESS STATISTICS

Time Deposits (at 54 Banks in 12 Fourth District Cities)

(Compiled January 11 and released for publication January 12)

City and Number of Banks	Time Deposits Dec. 26, 1951	Average Weekly Change During: Dec. 1951	Nov. 1951	Dec. 1950
Cleveland (4)	$ 906,919,000H	+$2,561,000	+$ 994,000	+$2,517,000
Pittsburgh (9)	505,359,000H	+ 1,772,000	— 1,484,000	+ 282,000
Cincinnati (7)	176,082,000	+ 74,000	— 426,000	+ 271,000
Akron (3)	102,139,000	+ 348,000	— 59,000	+ 356,000
Toledo (4)	109,641,000	+ 232,000	— 706,000	+ 450,000
Columbus (3)	89,288,000H	+ 196,000	+ 12,000	+ 198,000
Youngstown (3)	64,585,000	+ 67,000	+ 60,000	+ 49,000
Dayton (3)	47,988,000	+ 195,000	— 116,000	— 42,000
Canton (5)	44,447,000	+ 153,000	— 61,000	+ 213,000
Erie (3)	41,510,000	+ 128,000	— 580,000	+ 118,000
Wheeling (5)	26,168,000	— 22,000	— 136,000	— 103,000
Lexington (5)	11,050,000	+ 36,000	— 44,000	— 4,000
TOTAL—12 Cities	$2,125,176,000H	+$5,740,000	—$2,546,000	+$4,305,000

H—Denotes new all-time high.

Time deposits at reporting banks in 12 Fourth District cities increased more than seasonally in December at an average weekly rate of $5,740,000. This was the sharpest monthly increase in five years, but it may reflect in part the rather extensive seasonal decline in the previous month. If the changes in time deposits for November and December are combined, the net expansion in the two-month period was virtually identical with that of the comparable period of 1950.

At the end of last year, time deposits at the 12 cities combined stood at a new all-time high of $2,125,176,000, having risen in almost every month since March. For the year as a whole, the increase in time deposits totaled $75,000,000 (3.6%), the most substantial gain since 1946.

Cleveland and **Columbus** established new all-time highs with a December inflow of savings of $2,561,000 and $196,000 per week respectively, nearly the same as in 1950. For the year as a whole, the gains in time deposits at these two cities were 3.2% and 4.1%. **Pittsburgh** also registered a new all-time high in December with a record gain for the month of $1,772,000 per week. Time deposits at Pittsburgh rose in every month except November during 1951, for an annual increase of 4.9%.

At **Lexington,** time deposits increased at a rate of $36,000 per week in December in contrast to a $4,000 weekly decline a year earlier, and at the end of 1951 stood 10.7% above the December 1950 level. This was the sharpest percentage gain registered by any city. **Canton** and **Dayton** also scored greater-than-average percentage increases of 7.4% and 7.1% in 1951. The expansion in time deposits last year at **Cincinnati** was 0.5%, the first annual gain since 1947.

Indexes of Department Store Sales and Stocks

	Daily Average for 1947-1949=100 Adjusted for Seasonal Variation Dec. 1951	Nov. 1951	Dec. 1950	Without Seasonal Adjustment Dec. 1951	Nov. 1951	Dec. 1950
SALES:						
Akron (6)	113	114	119	190	138	199
Canton (5)	113	118	119	193	141	203
Cincinnati (8)	109	110	112	178	138	182
Cleveland (11)	110	111	121	180	137	199
Columbus (5)	112	112	109	188	141	183
Erie (4)	119	118	117	215	150	211
Pittsburgh (8)	106	114	99	168	138	156
Springfield (3)	106	105	108	189	126	193
Toledo (6)	108	113	110	189	139	192
Wheeling (6)	105	104	108	191	125	197
Youngstown (3)	114	118	125	191	143	209
District (87)	109	114	112	181	140	186
STOCKS:						
District	116	114	128	102	128	113

NOTE: Publication on this page of the Adjusted Weekly Index of Department Store Sales has been suspended pending a revision of the series.

Bank Debits*—December 1951 in 31 Fourth District Cities

(in thousands of dollars)
(Compiled January 15 and released January 16)

No. of Reporting Banks			Dec. 1951	% Change from Year Ago	3 Months Ended Dec. 1951	% Change from Year Ago
180	ALL 31 CENTERS		$10,548,231H	+ 9.7%	$30,394,195H	+13.2%
	10 LARGEST CENTERS:					
5	Akron	Ohio	$ 356,611	+ 6.7%	$ 1,063,620	+13.7%
5	Canton	Ohio	146,902	+ 5.1	448,532H	+12.8
14	Cincinnati	Ohio	1,176,229	+ 4.0	3,524,083H	+ 6.0
10	Cleveland	Ohio	2,759,914H	+ 8.5	8,004,938H	+15.2
7	Columbus	Ohio	625,548	+ 0.8	1,944,311H	+11.3
4	Dayton	Ohio	311,807	+ 4.8	927,368H	+11.8
6	Toledo	Ohio	481,900	+ 2.7	1,426,425H	+ 8.9
4	Youngstown	Ohio	224,279	+ 9.4	648,040H	+12.9
5	Erie	Penna.	116,254	+ 0.5	350,522	+11.3
43	Pittsburgh	Penna.	3,373,236H	+17.8	9,398,579H	+16.2
103	TOTAL		$ 9,572,680H	+ 9.8%	$27,736,418H	+13.3%
	21 OTHER CENTERS:					
9	Covington-Newport	Ky.	$ 53,194H	+14.9%	$ 149,545H	+11.4%
6	Lexington	Ky.	176,727H	+18.4	319,849	+ 9.6
3	Elyria	Ohio	32,146H	+12.3	90,630H	+15.7
3	Hamilton	Ohio	54,194H	+ 9.6	160,622H	+13.7
2	Lima	Ohio	58,745	+ 1.1	182,122	+11.4
5	Lorain	Ohio	21,244	+ 2.4	65,932	+ 5.1
4	Mansfield	Ohio	57,149	— 5.1	164,586	+ 1.9
2	Middletown	Ohio	62,051H	+37.2	176,887H	+34.5
3	Portsmouth	Ohio	24,434	— 2.3	72,838	+ 2.3
3	Springfield	Ohio	54,615	+ 2.2	172,720H	+15.4
4	Steubenville	Ohio	28,174	+ 1.9	84,139H	+ 9.8
2	Warren	Ohio	57,417	+15.2	174,449H	+22.3
3	Zanesville	Ohio	31,738	+ 0.5	94,865	+ 8.6
3	Butler	Penna.	38,477	+ 7.6	117,433	+12.9
1	Franklin	Penna.	7,573	—11.7	23,692	+ 0.2
2	Greensburg	Penna.	27,536H	+ 1.3	81,028H	+ 6.2
4	Kittanning	Penna.	12,388	+ 6.2	37,293	+14.6
3	Meadville	Penna.	14,967	+ 1.0	49,090	+15.4
4	Oil City	Penna.	23,695H	+17.2	66,059	+14.3
5	Sharon	Penna.	35,571	— 6.1	109,131	+ 8.2
6	Wheeling	W. Va.	103,516H	+ 9.4	264,867H	+ 8.5
77	TOTAL		$ 975,551H	+ 8.9%	$ 2,657,777H	+11.9%

* Debits to all deposit accounts except interbank balances.
H—Denotes all-time high.

The usual year-end increase in deposit activity lifted the volume of debits reported by banks in 31 Fourth District cities to a new all-time high of $10,548,231,000 in December. However, the increase in debit volume in December was less than seasonal. The year-to-year margin dipped to 9.7%, the smallest gain this year (after adjustment for the number of trading days).

TEN LARGEST CITIES

Cleveland and **Pittsburgh** alone of the ten large centers posted all-time highs in December, and Pittsburgh was the only large center where the year-to-year gain (17.8%) exceeded the percentage increase for the ten centers combined.

December debits at each of the other nine large centers were less than 10% higher than the comparable 1950 figure. In most cases, the percentage gain in deposits between December 1950 and December 1951 was greater than the comparable year-to-year gain in debits, indicating a year-to-year decline in the rate of deposit turnover.

The seasonal expansion in debit volume from November to December last year was the smallest in four years at each large center except **Pittsburgh** and **Youngstown.** Nevertheless, for the final quarter of 1951, nearly all of the large centers posted new all-time high debits totals. In comparison with the last quarter of 1950, increases ranged generally between 11% and 16%.

TWENTY-ONE SMALLER CENTERS

Debits at the smaller centers during December totaled a record $975,551,000, exceeding the previous all-time high established a year earlier by 8.9%. The increase in debit volume in December appeared to be slightly less than seasonal at these centers also, but new all-time highs, registered by eight of the smaller centers, were more frequent than in the group of large cities.

Middletown resumed the lead in year-to-year comparisons with an increase of 37.2% over December 1950.

Tobacco auctions were reflected in **Lexington** debits which were more than double the November figure and at a new record, 18.4% above the comparable 1950 volume.