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FOURTH FEDERAL RESERVE DISTRICT

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CONTENTS

Banking Review—1951

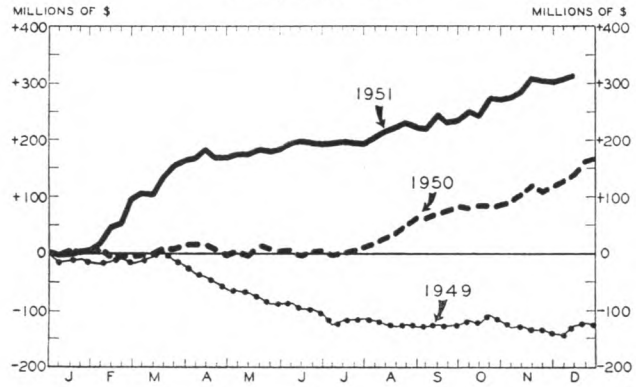
THE past year was marked by a change from presto to andante in the tempo of price and credit inflation, and a gradual shift from civilian to military in the emphasis of business activity. Although the transition did not occur at any specific moment, a fairly clear distinction can be drawn between the first quarter of the year, when commodity prices and industrial production were continuing to surge upwards to new peaks, and subsequent months when commodity prices reverted to lower ground after having tumbled sharply from their newly established records and production leveled off to form a fairly smooth plateau. A similar division of the year also marks the shift towards decontrol of the price of money, probably the most significant step in the gradual reassumption of the anti-inflationary potentialities inherent in orthodox monetary mechanics.

Inflation and Bank Credit Following "Korea", the sharp rise in prices which carried through the early months of this year was to a considerable degree fostered by a bullish attitude towards demand and a bearish view of the supply situation. Bank loans played a significant role in financing this inflation. The anticipations which motivated stockpiling by the three tiers of the economy — consumers, business, and government — resulted in distortion of monetary valuations disproportionate to that which might have been considered necessary to induce the diversion of resources required for rearmament.

Throughout most of 1951, however, realities exerted a more potent influence than semi-speculative psychology; bank credit was channeled more directly to the defense effort, and evidence of inflation in the upward creep of the cost of living index was of a more moderate nature. In spite of a rapid expansion in the early months of 1951, loans of commercial banks throughout the country increased approximately $6 billion during the year, as compared with a record expansion of nearly $9½ billion in 1950.

Business Loans Although bank loans to commerce and industry failed to respond to the usual seasonal shrinkage in the spring, and subsequently rose to new record levels, the expansion in such loans in the second half of 1951 was only half that of the post-Korean period of 1950. Moreover, the slower rate of expansion in the second half of last year was due primarily to a reduction in borrowing (net) for purposes not directly related to the defense program. Much of the loan expansion in the second half of 1950 had been in the form of loans to retailers and wholesalers, to commodity dealers and to sales finance companies, largely for the purpose of carrying increased stocks at higher prices, of goods for the use of civilian consumers. However, in the corresponding period of last year, loans to producers of metals and metal products, to public utilities, and to the petroleum, coal, chemicals, and rubber industries group, were responsible for most of the expansion in business loans. In spite of the seasonal gain in credit extended to processors of food, liquor and tobacco products, and to commodity dealers, a substantial part of the net new borrowing was for defense and defense-supporting purposes.

CUMULATIVE NET CHANGE IN BUSINESS LOANS
Fourth District, W.R.M.B.
1949, 1950, 1951



. . . the expansion of business loans was unusually vigorous in the early months of last year. The rate of gain during the second half of 1951 was roughly the same as that of the preceding year.

Indicative of the closer relationship of bank lending to rearmament last year than in 1950 is the fact that business loans at reporting banks in the Fourth District showed a greater percentage increase than in any other District during 1951. Defense and defense-supporting industries, such as steel, metal fabricating and machinery play an important role in the Fourth District economy, and the relative importance of loans to such industries by banks in this area last year was noticeably greater than in the country as a whole.

Since early last May data on bank loans by type of business and by purpose of loan have been formally reported by most of the large banks in this District and throughout the United States under the auspices of the Voluntary Credit Restraint Committee. Accompanying charts indicate the changes in outstanding loans of various business groups, as reported by banks in this District and throughout the country. (It will be seen that the scale used to indicate the loan expansion at reporting Fourth District banks is much larger than that for all reporting banks in the country. The difference in scale is based on the ratio of commercial and industrial loans at all weekly reporting banks to such loans outstanding at weekly reporting banks in this District).

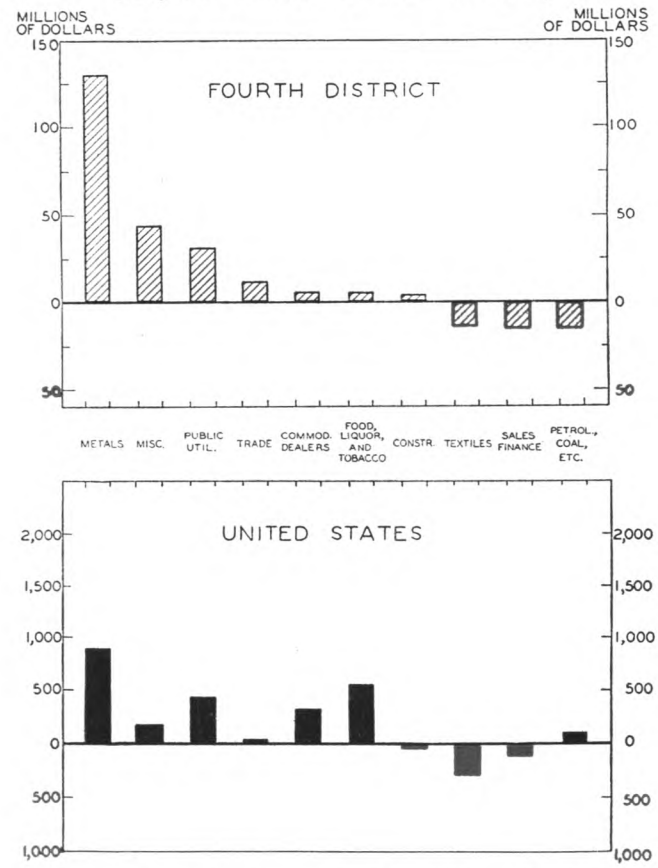
The preponderance of loans to firms engaged in the mining and manufacture of metals and metal products in the Fourth District loan expansion is clearly indicated. Elsewhere in the country such firms also provided the greatest impetus to the extension of credit to private business at reporting banks, but their relative importance was markedly less than in this District.

Borrowing by processors of food, liquor, and tobacco products was a highly significant factor in the national picture of private credit expansion, but of noticeably less significance in this District. Most typical of deflationary tendencies during the seven-month period was the shrinkage in bank debt of manufacturers of textiles, apparel and leather products, which was virtually of comparable degree in the Fourth District and nationally.

As was to be expected from the preponderance of borrowing by producers of metals and metal products in this District, most of the additional funds borrowed by businesses from reporting Fourth District banks in the seven-month period of 1951 were for defense and defense-supporting purposes. Such

NET CHANGE IN BUSINESS LOANS*
BY BUSINESS OF BORROWER

(Reporting Banks Fourth District and U. S.)
(May 9-November 28, 1951 — 29 weeks)



. . . out of a total loan expansion (net) of $188,000,000 in this District, nearly three fourths or $130,000,000 went to producers of metals and metal products. During the same interval, three other classifications reduced their bank borrowings.

. . . for the nation as a whole, loans to producers of metals and metal products were not nearly so predominant; borrowings by public utilities as well as the food, liquor, and tobacco group also were of significance.

* excluding loans of less than $50,000

loans are usually devoted to financing the production of actual war material, or the expansion of plant and equipment in the so-called basic and ancillary industries. Reports from Fourth District banks indicate that 75 percent of the loan expansion between early May and December was for such purposes, as compared with 50 percent at reporting banks nationally.

Real Estate Credit A further indication of the reduced emphasis on the financing of the civilian standard of living in 1951 was the slowdown in the expansion of real estate credit particularly in the second half of the year. In 1950, mortgage loans of commercial and mutual savings banks, savings and loan associations, and life insurance companies throughout the United States, (the major institutional sources of mortgage funds), increased approximately $9½ billion. Last year the combined mortgage portfolio of these financial institutions is estimated to have increased less than $8 billion.

Although an additional $8 billion of credit being used to finance the construction and acquisition of properties which for the most part do not add directly to the productive capacity of the nation can in no way be considered either as anti-inflationary or as directly in support of defense, it must be noted that much of the expansion in this type of credit resulted from commitments undertaken in the latter part of 1950 and early 1951. Many of the mortgage loans granted last year were by statute exempt from the restraining provisions of Regulation X, and involved commitments made prior to the decline in bond prices which followed the Treasury-Federal Reserve accord last March.

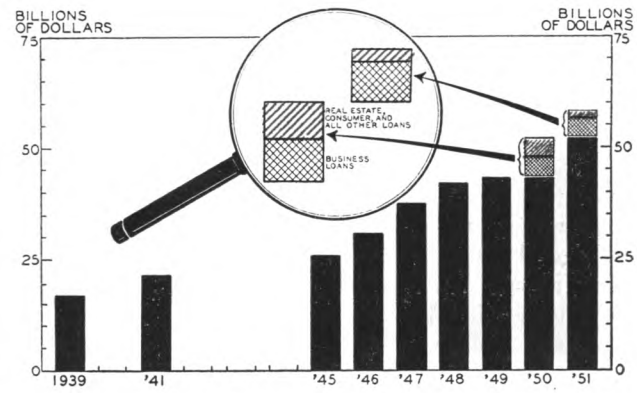
In the second half of 1951, nonfarm mortgage recordings of $20,000 or less were consistently below the corresponding figures for 1950, and as repayments were at the same time higher than in 1950, the increase in outstanding mortgage debt in the second half of last year was substantially less than in the same period of 1950.

The curtailment of mortgage lending was particularly striking at commercial banks, where an increase in loans results in a corresponding expansion of the money supply. An estimated increase of nearly $900 million in real estate loans of these banks in 1951 was less than half the $2 billion growth in such loans in the previous year. And the expansion in the second half of the year was the smallest for the comparable period in any year since World War II.

In the Fourth District, however, mortgage loans at banks continued to expand at a pace not far short of the 1950 record. This may be due in part to the influx of workers to the industrial centers where defense and defense-supporting production has expanded substantially. Average incomes in the Fourth District probably increased more than in the country as a whole, while unemployment remained low. Banks in this area continued to receive funds, on balance, from other Districts, and consequently were probably less restricted in their activities by the various measures adopted to curtail the supply and availability of credit than were banks in other parts of the United States.

LOANS OF ALL INSURED COMMERCIAL BANKS, U.S.

1939 – 1951



. . . although loans increased further to a new all-time high of $58 billion during 1951, the year's expansion was substantially less than in 1950. The slowdown occurred primarily in real estate, consumer, and miscellaneous loans.

A significant factor in the real estate credit field throughout the postwar period has been the activities of the various Federal agencies concerned with housing. Mortgage insurance written by the F. H. A. during 1951 was substantially less than in the previous year. Percentagewise, the sharpest curtailment of new insurance was in loans to finance housing projects, involving structures of more than four family units. Insurance written on homes (1-4 family units) also was below the corresponding 1950 volume in each month, but a somewhat larger volume of property improvement loans was insured in the early part of the year.

Loan guarantees by the Veterans Administration last year, on the other hand, totaled substantially more than in 1950. Outstanding commitments of the F.N.M.A. to purchase mortgages were steadily worked down until October, and actual purchases were held well below year-ago levels. Nevertheless, "Fannie Mae's" portfolio of mortgages increased $350 million in the first nine months of the year. Moreover, Congress appropriated additional funds and authorized the F.N.M.A. to make advance commitments, beginning in October, for the purchase of mortgages on military and defense housing, thereby stimulating the activity and enlarging the secondary market provided by this agency.

Consumer Loans Perhaps the least inflationary aspect of the bank loan picture in 1951 was the moderate decline in consumer instalment credit outstanding at commercial banks which continued almost without interruption throughout the year. From the all-time high of $5¾ billion established in October 1950, instalment credit shrank more than $300 million in the next twelve months.

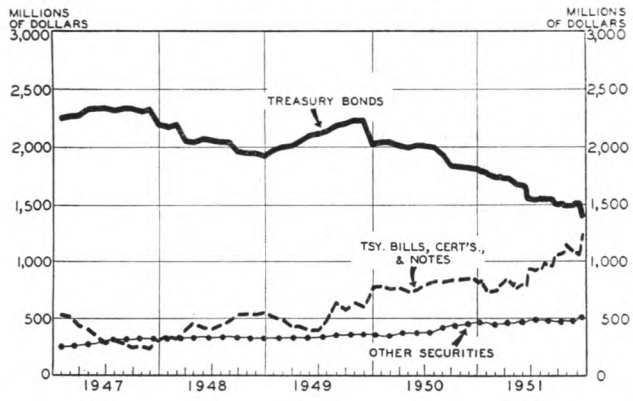
Most of the decline was in loans on such articles as major household appliances, television sets, furniture and other non-automotive consumer durable goods, reflecting heavy repayments on the large volume of such goods purchased in 1950, together with a slowdown in sales this year. Instalment credit outstanding on automobiles declined slightly, although new loan volume established new records throughout most of 1951. Higher prices tended to offset reduced supplies and smaller unit demand in maintaining new loan volume on automobiles at a high level, whereas substantial markdowns and allowances on other types of consumer durables were quite common during 1951.

Instalment loans for repair and modernization purposes were virtually unchanged (net) for the year, while loans incurred for miscellaneous personal purposes such as educational or medical expenses, and debt consolidation, showed a further moderate net gain.

Movements in instalment credit at reporting Fourth District banks closely followed the national pattern, with outstanding loans declining during the year for the first time since the end of World War II, while new loan volume remained close to the record total of the previous year.

Investments Holdings of U.S. Government securities by all commercial banks and the Federal Reserve Banks combined increased last year for the first time since 1945. Although the increase was small — approximately $2 billion compared with a total portfolio of $82.8 billion — it added to the expansionary effect of loans on the money supply, whereas in 1950, the rapid loan expansion was partially offset by a reduction in holdings of U.S. Government securities by commercial and Federal Reserve banks combined.

INVESTMENTS 1947 – 1951
Fourth District, W.R.M.B.



. . . holdings of Treasury bonds continued to decline to new postwar lows during 1951. Most of the shrinkage reflected Treasury refundings of maturing issues with certificates of indebtedness.

Although the portfolio of the Federal Reserve banks expanded most rapidly in the first half of the year, holdings of Governments by commercial banks were reduced by a greater amount during the same period to provide funds for the increased reserve requirement ratios imposed in January and for the expansion of loans. In fact, holdings of Government securities by the Federal Reserve banks and commercial banks combined dipped to the lowest level since World War II in May of last year, $80.4 billion.

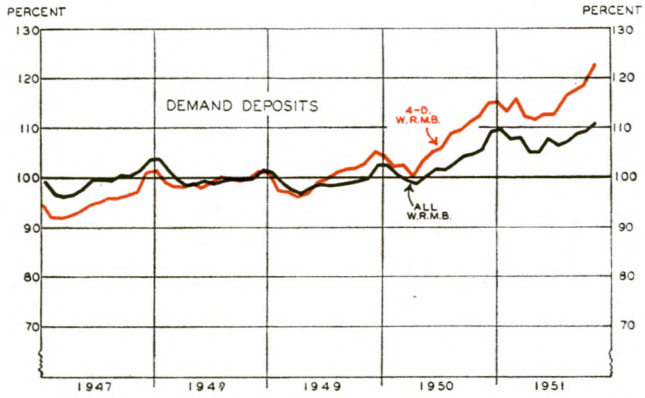
In the second half of 1951, however, while the Federal Reserve banks' portfolio showed little net change, commercial banks increased their holdings of Governments by nearly $3 billion. For the most part, the increase in commercial bank holdings of Government securities was in the form of Treasury bills, and was closely related to the net borrowing undertaken by the Treasury in the closing months of the year. The first instalment of deficit financing resulting from the defense program took the form of bills, both regular 91-day issues and two series of tax anticipation bills scheduled to mature in March and June 1952. These securities can be presented in payment of taxes when they mature, and are designed to smooth the flow of cash receipts into the Treasury.

The major change in the composition of commercial banks' portfolio of Governments during 1951 was the continued decline in holdings of Treasury bonds, amounting to nearly 14% at weekly reporting banks. To a considerable degree, this represented a switch from bonds to certificates of indebtedness by the Treasury in its refunding operations. Several maturing note issues were also refunded with certificates during the latter part of the year.

It is probable, however, that the decline in prices of Treasury bonds which followed the accord between the Treasury and the Federal Reserve in March, the higher interest rates prevailing on short-term issues and offered on new security issues, and the continuing heavy demands for funds by private business stimulated some shortening of portfolios during 1951.

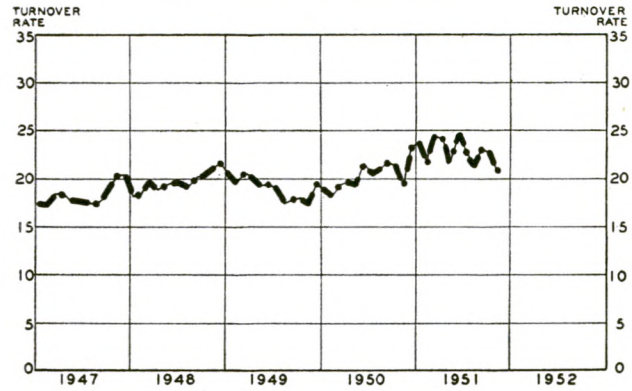
Fourth District banks maintained their holdings of Government securities virtually unchanged for the year as a whole. Holdings declined in the first half of the year to a postwar low, as was the case throughout the country, but additions to their investments in Governments in the second half of the year

ADJUSTED DEMAND DEPOSITS 1947 – 1951
Fourth District, W.R.M.B.



. . . after a seasonal decline in the early months of the year, adjusted demand deposits rose to new record levels, continuing to advance at a faster rate than in the country as a whole.

DEMAND DEPOSIT TURNOVER
Annual Rate; 1947 – 1951
Fourth District, W.R.M.B.



. . . the rate of turnover of demand deposits began to slow down slightly in the latter part of 1951, after having increased steadily since late 1949.

were sufficient to restore the portfolios to approximately the same level as at the end of 1950. Data from weekly reporting member banks in this District indicate that throughout the last quarter of the year, holdings of Treasury bills were consistently at least double the year-ago volume. The ability of Fourth District banks to maintain their holdings of Government securities virtually unchanged (net) in 1951 in the face of a more rapid loan expansion than was the case nationally was no doubt due in part to the continued inflow of funds to their District from other parts of the country.

Money Supply and Turnover

The expansion of both loans and investments at banks throughout the United States during 1951 resulted in a further expansion of the privately owned money supply to a new all-time high of more than $160 billion. (This includes demand and time deposits at commercial banks and currency in circulation outside banks.)

The increase in the privately owned money supply last year—approximately $6½ billion, was virtually the same as in 1950. Further expansion in demand deposits was responsible for most of the growth in the money supply, but the rate of increase was somewhat slower than in the second half of 1950. Factors contributing to the continued deposit expansion included higher material prices and labor costs, a higher level of business activity and increased taxes, all of which provoked a need for more ample cash balances.

The movement in demand deposits at Fourth District banks was similar to that of banks throughout the nation, though the net increase was again somewhat greater percentagewise than in the country as a whole. A moderate seasonal decline in the early months of the year (resulting in part from the accumulation of tax receipts by the Treasury) was followed by a renewed expansion of private accounts, as indicated in an accompanying chart. It is estimated that for 1951 as a whole, privately owned demand deposits in Fourth District commercial banks increased almost $500 million (approximately 7 percent) to set a new record of over $7,500 million at the end of the year. In 1950, demand deposits of individuals, businesses, and nonprofit institutions at Fourth District banks expanded nearly $800 million or 12 percent, with the increase in the six months after Korea being noticeably more rapid than in the second half of the past year.

The weakening of inflationary pressures during 1951 was further indicated by the leveling off in the rate of deposit turnover in the spring and its subsequent decline throughout the rest of the year. As indicated by an accompanying chart, turnover of demand deposits at reporting banks in this District reached a seasonal peak in June at a rate of nearly 25 times per year, in contrast to a turnover rate of less than 22 in the corresponding month of 1950. The seasonally low November rate of 21, however, was only slightly above the 19½ rate registered in the previous November. The levelling off and subsequent slowdown in the rate of deposit turnover occurred as consumer demand for goods lost its scrambling character. It may also reflect the reduced rate of loan expansion in 1951, and the probability that many businesses had by this time built up their cash balances to levels more adequate for their expanded operations and were thereby enabled to use their deposits less actively.

In contrast to the slower rate of expansion of demand deposits in 1951, time deposits registered one of the most substantial gains since the end of

World War II. Although previously accumulated savings were being drawn down for current expenditure in the early months of the year, balances began to expand in the spring, and rose almost continuously throughout the rest of the year for an estimated aggregate net gain of nearly $1½ billion. Approximately $125 million were added to private time deposits at commercial banks in the Fourth District last year, lifting them to a new all-time high of nearly $3,900 million. Although this represents only a small gain percentagewise—a little more than 3 percent—it contrasts sharply with the shrinkage of savings accounts in the post-Korean period of 1950. And when the heavy volume of contractual payments on debts incurred by consumers since 1945, and particularly in 1950 and early 1951, is taken into consideration, the accumulation of liquid savings appears even more noteworthy.

Savings and loan associations in this area also reported a substantial increase in deposits and share purchases in 1951, with the net inflow of funds establishing new peacetime records in every month since April.

Perhaps the greatest significance of the reversal of the outflow of private liquid savings in the spring of last year is that it demonstrated the operation of a seemingly forgotten principle of economics—namely, the sovereignty of the consumer. Despite the greatly expanded activities of the Government, and the extensive direction of economic activity by groups of producers—groups of each of the three factors of production, labor, management, and capital, sometimes working in unison—individuals in 1951 proved able to re-establish a substantial measure of control over economic affairs to their best advantage as consumers. They retarded the sapping of the dollar's purchasing power by scaling down their purchases and offering resistance to higher prices. They caused businesses engaged in production not closely related to defense to pare their orders, to reduce inventories of finished goods, particularly from the record levels reached in the spring, and in some industries, notably textiles, to reduce the volume of their operations. They provided funds out of current income which became available for financing the expansion of defense production at lower cost—both in terms of prices and scarcity of materials—than if those funds had been re-routed via business profits and reserves. Although the generator grew more powerful in 1951, it spent more of its force on a lamp of lower wattage.

Restraining Measures

It would be wrong to assume from the foregoing analysis that wholly voluntary actions by consumers, businesses and bankers were entirely responsible for the weakening of inflationary pressures since the spring of 1951, or that there is only a remote possibility of a renewal of the sharp upward movement of prices in 1952. Treasury revenues increased sharply as a result of higher incomes, increased tax rates and the speeding up of corporate tax payments under the Mills plan. Treasury expenditures for defense lagged behind contract awards, however, and the resulting cash surplus of the Treasury in the fiscal year ending June 30, 1951, absorbed potential purchasing power. Although this situation was reversed later in the year, and the Treasury borrowed funds, its need for cash was primarily a result of the uneven flow of tax receipts and expenditures.

Fiscal policy was supplemented by direct controls on materials in an attempt to ensure a steady flow of "scarce" commodities to defense and defense-supporting industries without relying on an unbridled mechanism of prices and personalities to achieve the desired distribution of resources. The imposition of price and wage ceilings was an additional element in the system of direct controls.

Most pertinent to this review, however, was the elaborate system of credit regulation which was developed throughout the past year. (A more detailed discussion of credit restraint was contained in the September issue of this Review).

The increase in reserve requirement ratios to the maximum permitted by law (except for central reserve city banks) in January absorbed about $2 billion of potential funds, and reduced the volume of secondary reserves—U. S. Government securities available for conversion into a base for credit expansion.

Also in January, margin requirements on collateral loans were raised from 50 percent to 75 percent, thus reducing the volume of credit which could be used to finance a given volume of security transactions. Partly as a result of this measure, collateral loans were below year-ago levels during most of the year.

The minimum down payment and maximum maturity requirements imposed on consumer instalment credit late in 1950 continued to deter some potential borrowers, to curtail the volume of credit which could be extended on individual instalment purchases, and to increase the rate of repayments on new instalment credit originated. A slight expansion of instalment credit developed during the summer and early fall when the maximum maturities on nearly all listed articles were extended, down payment requirements on household appliances reduced, and provision made for the acceptance of trade-ins on consumer durables as full down payment, in accord with the revised Defense Production Act of July 31.

The scope of Regulation X and companion regulations of the F.H.A. and V.A. was extended in January and February to include 3- and 4-family and multi-unit residences, and various types of new nonresidential construction including office buildings,

stores, hotels, service stations, restaurants, theatres and other buildings not essential to the defense effort. Although the effectiveness of Regulation X was delayed by the large volume of existing commitments which were exempt from its terms, and although the large volume of transactions involving real estate in existence prior to August 1950 do not fall within its scope, Regulation X and companion restrictions nevertheless added to the effect of higher prices, material scarcities and dearer money in retarding the expansion of real estate credit.

Under the authority of the revised Defense Production Act of July 31, 1951, down payment requirements on homes priced at $12,000 or less were reduced substantially while the maximum maturity on such units was extended to 25 years. The restrictive power of regulations on real estate credit was further weakened by provision in the Act for suspension of such restraints on credit in "critical defense areas".

Selective control of external financing by business and state and local governments was formally inaugurated in March on a voluntary basis, with Presidential approval and assistance from the Federal Reserve System. (See the June issue of this Review). Bulletins issued by the National Committee during 1951 indicated the appropriate policy to be pursued by commercial and mutual savings banks, investment bankers, savings and loan associations, and insurance companies, in screening loan applications and proposed security issues.

Particular emphasis in these bulletins has been laid on the desirability of reducing or postponing inventory loans, credit for financing plant and equipment expenditures, credit for public welfare activities of state and local governments and loans on existing real estate, except where the purpose of such financing will clearly benefit the defense program and help to promote the smooth functioning of essential civilian production and distribution.

Regional committees have been active in offering opinions to lenders as to the desirability of making certain loans from the standpoint of diverting financial resources to defense and minimizing credit inflation.

Among the loan applications which the regional committees deemed undesirable were the following:

To a farm tractor and implement dealer, in order to erect a sales and service building to retain his franchise.

To a church, to build a parish hall and an addition to a Sunday School building.

To a laundry, to purchase new machinery and equipment for expansion.

To a retailer, to modernize a store, add a new front and increase floor capacity to maintain competitive position.

To a chain store, to retire outstanding preferred stock.

To a municipality, to acquire unimproved land for erection of parking facilities.

To a state government, to pay a bonus to World War II veterans.

In banking circles, there seems to be a general agreement that lenders are acting in compliance with the recommendations of the regional committees, and in the many instances when there is less question as to the desirability or undesirability of financing, are screening their loans closely as to purpose and granting or refusing credit in accordance with the general principles and policy formulated by the national Committee for Voluntary Credit Restraint. The data collected last year in connection with the program (discussed in an earlier section of this article) lend statistical support to the opinion that this method of selective credit control functioned well during 1951 in the interests of restraining inflation and providing needed funds for the private financing of defense.

Open Market Operations

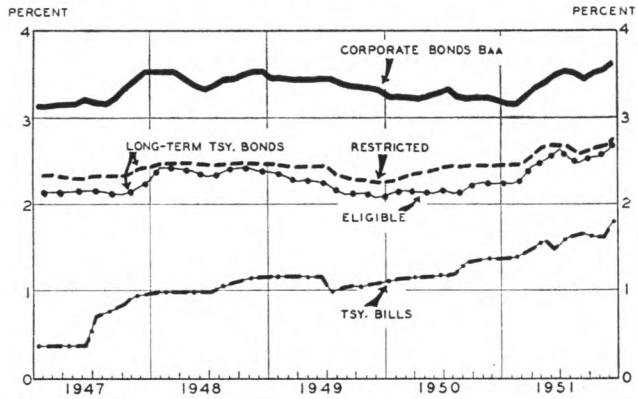
The selective restraints discussed above nevertheless remained only supplementary to the traditional main armament of monetary policy — open market operations. In fact, after reaching the accord with the Treasury over debt management and monetary policy in March, the Federal Reserve System was able to implement its over-all control of the volume, availability and price of credit with greater freedom and effectiveness than at any time in the past decade.

Open market operations are reflected directly in the Federal Reserve banks' portfolio of U. S. Government securities. In August 1950 a more flexible open market policy was inaugurated through which the System permitted prices of Government securities to fluctuate more widely before entering the market to make supporting purchases. As a result of this change in policy and the heavy demand for credit in the second half of 1950, yields on short-term Government securities particularly increased somewhat, and prices of long-term bonds declined closer to the par level.

Nevertheless, holdings of Government securities by the Federal Reserve banks increased nearly $2½ billion during the second half of 1950 as banks, insurance companies and other financial institutions continued to liquidate Governments to provide funds with which to meet the unprecedented demand for credit by private borrowers. An additional factor in the acquisition of Governments by the System in the latter part of 1950 was the fact that the System's operations were geared to the establishment of a 1½ percent rate on 1-year issues, whereas the Treasury's refunding operations were based more closely on a 1¼ percent 1-year pattern.

In the early months of last year the expansion of the System portfolio of Governments continued un-

YIELDS ON SELECTED SECURITIES
1947 — 1951



. . . by year-end yields on Government securities has risen to the highest levels in more than a decade. Most of the stiffening occurred after the Federal Reserve-Treasury accord was reached in March.

der the additional impetus of increasd member bank reserve requirements. Net purchases by the System during these months consisted mainly of bonds, and notes maturing in 1 to 5 years.

On March 4, it was announced that the Treasury and Federal Reserve had reached "full accord with respect to debt-management and monetary policies to be pursued in furthering their common purpose to assure the successful financing of the Government's requirements and, at the same time, to minimize monetization of the public debt." Shortly afterwards, the Treasury offered to holders of the restricted 2½ percent bonds maturing in June and December 1972, the privilege of exchanging these issues for nonmarketable bonds at 2¾ percent maturing in 1980. These bonds carried a conversion privilege into 1½ percent 5-year notes. In response to this offer, $13½ billion, or about two-thirds, of the June and December 1972 bonds were replaced by the nonmarketable 2¾'s.

Immediately following the announcement of the accord, purchases of notes of 1- to 5-year maturity by the Federal Reserve banks stopped, and from April throughout the rest of the year, no market transactions were effected for System Account in these issues. Substantial purchases of bonds continued for several weeks, but these tapered off as the market readjusted itself to the changed conditions, and in the second half of the year System open market operations in bonds were infrequent and only nominal in volume.

From April to the end of the year, holdings of Government securities in the System portfolio showed little net change from the $23 billion level. Fluctuations around this figure for the most part reflected either seasonal movements in the demand for bank credit and currency, or temporary assistance by the System in the heavy refunding operations undertaken by the Treasury in the second half of the year. During the second half of the year there was an inflow of gold and a reduction in foreign deposits totaling more than $1 billion that tended to increase bank reserves.

Following the changed open market operations which flowed from the accord with the Treasury, prices of long-term Treasury bonds fell below par. The yield on the longest bank eligible issues outstanding rose from 2.26 percent in February to a high for the year of 2.72 percent in December.

Yields on short-term issues also rose substantially, with the bill issue dated December 27 being placed at an average rate of 1.865 percent — the highest since 1933—in contrast to an average rate of discount of 1.39 percent in February.

As a result of the decline in prices of Government securities, lenders who sold bonds to obtain funds for lending to private borrowers usually incurred a capital loss on their sale. This, together with the willingness of the Federal Reserve to permit wider fluctuations in bond prices, proved a deterrent to monetization of Federal debt. Moreover, the Treasury offered higher interest rates on the new securities issued in the latter part of 1951, which increased their attractiveness to investors. The 11½-month certificates issued in October, for example, carried a rate of 1⅞ percent in contrast to 1¼ percent offered on 13-month notes issued in October 1950.

Another aspect of open market operations since April last year was the steady reduction in the System bill portfolio, which toward the end of the year totaled only $117 million, the lowest figure since 1942. The apparent reluctance of the Federal Reserve banks to add to their bill holdings, except during the period of extreme tightness in the money market at the end of the year, caused a substantial increase in the volume of rediscounts. At one time in December, member banks were in debt to the Federal Reserve banks to the extent of about $1 billion—the highest volume of rediscounts since 1933 —on which they paid interest at 1¾ percent per annum.

The ultimate effect of open market operations during 1951 was to restrict both the supply of and the demand for credit. Monetization of the Federal debt involved a loss to the seller of Government securities, and increased yields made the holding of these securities more atractive. The increased cost to financial institutions of obtaining funds was passed on in their own loan rates and bids on private and state bond issues. As a result, the availability of mortgage money, for example, at rates of 4 to 4½ percent was substantially curtailed. More careful screening of loan applications from the standpoint of creditworthiness was induced. And the rise in the cost of

borrowing (the rate of interest charged on loans to borrowers with the best credit rating was raised to 3 percent at New York banks in December, in contrast to 2¼ percent at the beginning of the year) substantially increased the desirability of internal financing by businesses.

DIRECTORS — 1952
FEDERAL RESERVE BANK OF CLEVELAND

GEO. C. BRAINARD *(Chairman)*
President, Addressograph-Multigraph Corporation
Cleveland, Ohio

JOHN C. VIRDEN *(Deputy Chairman)*
Chairman of the Board, John C. Virden Company
Cleveland, Ohio

JOHN D. BAINER
President, The Merchants National Bank and Trust Company of Meadville
Meadville, Pennsylvania

JOEL M. BOWLBY
Chairman of the Board, The Eagle-Picher Company
Cincinnati, Ohio

EDWARD C. DOLL
President, Lovell Manufacturing Company
Erie, Pennsylvania

EDISON HOBSTETTER
President, Pomeroy National Bank
Pomeroy, Ohio

LAWRENCE N. MURRAY
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Pittsburgh, Pennsylvania

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Winchester, Kentucky

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Professor of Finance
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President, Sharon Steel Corporation
Sharon, Pennsylvania

Department Store Trade in 1951

For the year just past, department store sales averaged slightly larger in dollar terms than during 1950, but fell short in physical volume. In view of the fact that 1950 was a very strong trade year, the comparison suggests that the year just ended was at least moderately favorable, whether reckoned in dollars or physical units.

A shift from sharp inventory accumulation to a period of steady liquidation of excess inventories was one of the outstanding features of the year.

What has just been said applies both to the nation-wide average of department store sales and to sales within the Fourth District, although here the sales performance was somewhat more favorable than that of other districts probably because of the heavy impact of defense spending on consumer income.

The assertion that the past year's sales fell short of the previous year in terms of physical volume is based on broad estimates; regular statistics of physical volume of trade are not available. Since the dollar total of department store sales was less than 5 percent above the previous year for the entire country (or slightly above that margin for this District) and since a fair estimate of the average rise in department store prices from 1950 to 1951 is nearer to 10 percent, it is clear that the physical volume of sales failed to keep pace with that of 1950.

Sales Fluctuations The fact that an annual average is apt to conceal important divergences of movement within the year was perhaps never more true than during the year just past. Thus, department store sales started the year 1951 at the swollen levels of the second wave of scare buying by consumers. As it became apparent during the next few months that the threatened shortage of consumer goods was not materializing, and as the immediate prospects of the enlargement of the war were fortunately dimming, department store sales receded sharply.

The downward movement in sales was terminated during the second quarter, while the third quarter witnessed a mild recovery. (See accompanying chart.) The Christmas trade season, which is relied upon by merchants to fill out a year of trade, started auspiciously but ran into severe weather handicaps at several strategic points.

Inventories Inventory accumulation continued during the first quarter and part of the second quarter. This reflected not only the weakening of sales, but also the continuation of deliveries on previous orders, and probably some slowness on the part of merchants to shift their ordering policies in the light of the changed situation. In this District, department store inventories reached a peak in April, nearly 50 percent above the 1947-49 average, in terms of dollar value of inventory.

Then the period of inventory liquidation set in. The sharpest drop occurred during the summer and the early fall months, as shown by the accompanying chart. By year end, inventories had been reduced to a position close to 20 percent above the 1947-49 average. The relation of stocks to sales at year-end appeared to be not far from a normal relationship.

Hard and Soft Goods Both hard goods and soft goods shared generally in the movements just indicated. It is understandable that the sales reaction which characterized the earlier part of the year was especially marked in hard goods lines for the reason that such goods had been the pacemakers in the previous scare-buying episodes. However, weakness in sales and excess of inventories were discernable also in the soft-goods lines, which add up to approximately three-fourths of a typical department store's offerings. Both types of goods likewise shared in the recovery trends of the summer and fall.

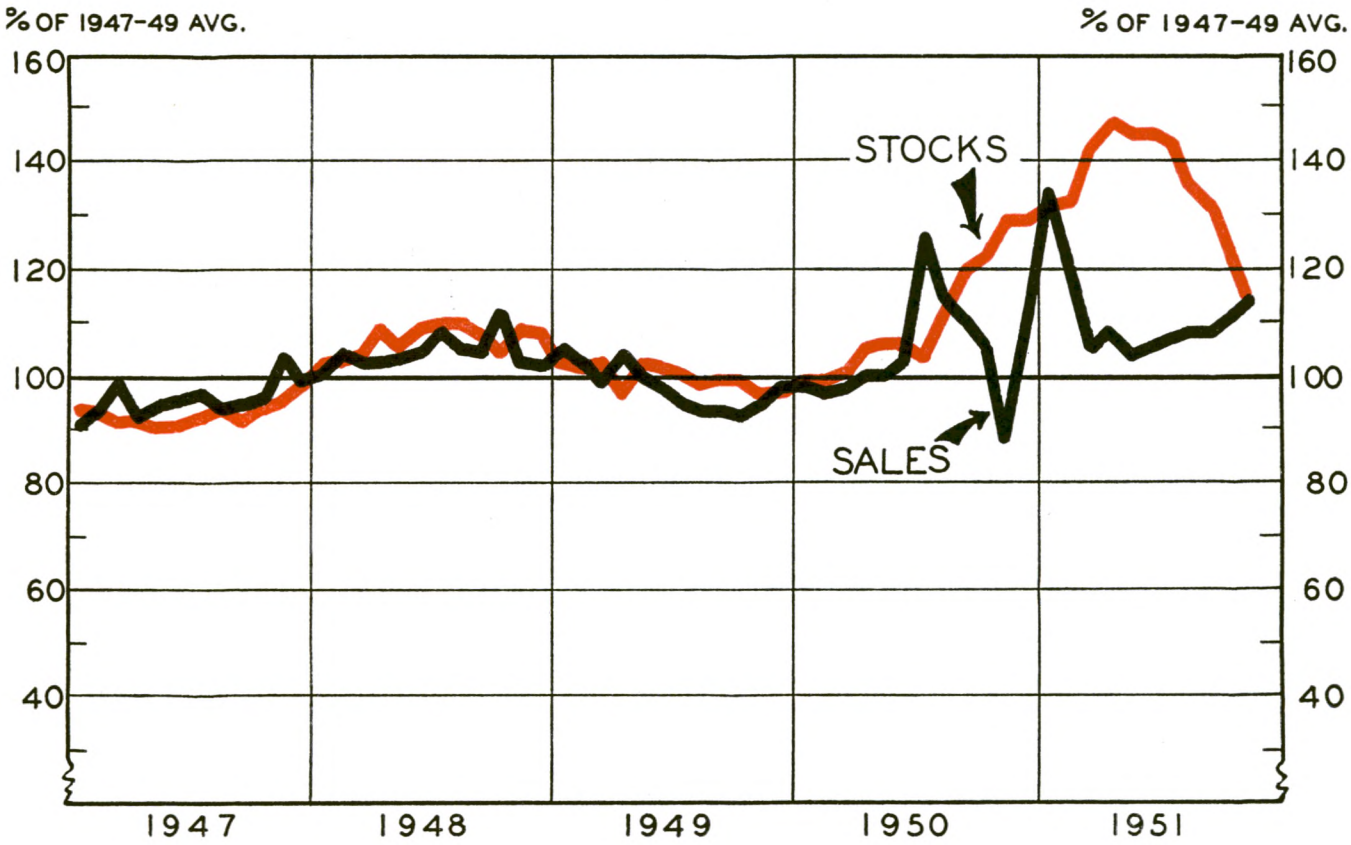
In respect to individual departments, the downward and upward movements of sales during 1950 were perhaps most pronounced in *radios, phonographs and television* and in *major household appliances*. At least in the case of the former, there was some evidence to suggest that forces deeper than the episodic reactions of consumers to the war news might be involved. Thus, even before the outbreak of the Korean War there had been signs of a passing of the crest in sales of television sets, which had enjoyed such a spectacular boom as a new product.

By contrast, the sales trend in furniture during 1951 was considerably less volatile than either that of television or appliances. The subsiding of the residential building boom in response to the defense trend of the economy during 1951 probably dampened sales of household furniture somewhat, although the postings of this department could hardly be considered unfavorable for the year as a whole.

Instalment Credit Along with the revival in hard-goods trade during the second half of the year there was a noticeable pickup in the volume of instalment sales, which had previously undergone a trimming or pruning operation. The volume of sales on the instalment plan made by

FOURTH DISTRICT DEPARTMENT STORE SALES AND STOCKS

Revised Monthly Indexes, Seasonally Adjusted
1947-1949 = 100



. . . after the violent fluctuations of 1950 and early 1951, sales settled down at a level only moderately above the general postwar average. Inventories have also retraced much of the 1950-51 bulge to record heights.

this District's department stores increased noticeably during the fall, even after allowance was made for seasonal factors. The mid-year relaxation in the standards of credit terms, at the direction of Congress, may have had something to do with such a development.

At the same time collections made on instalment debts (contracted in the past) increased during 1951 in relation to outstanding debt. Some merchants felt that the economic pressure on consumers to make such repayments had a dampening effect on sales of soft goods as well as of hard goods.

Revised Department Store Indexes

The following tables show revised indexes of department store sales and stocks for the Fourth Federal Reserve District, as well as for eleven cities within the District. They were computed as part of a comprehensive nationwide revision of department store indexes, undertaken in collaboration with the other Federal Reserve banks and the Board of Governors of the Federal Reserve System.

The revision was designed to accomplish three major improvements as follows:

(1) A shift of the base period from the average of the years 1935-1939 to the years 1947-1949.

(2) Revision of the seasonal factors used to derive the seasonally adjusted indexes, in the light of the accumulated information on postwar shifts in seasonal patterns.

(3) Reconciliation with the results of the comprehensive Census of Business covering the nation's retail trade in 1948. This takes the form of adjusting to the overall rates of growth between the last two census years, as well as improving the coverage of the department store samples in order to achieve greater conformity to the census coverage.

Further details on the scope, nature and methods of the revision may be found in an article entitled "Revised Indexes of Department Store Sales and Stocks", printed in the December issue of the *Federal Reserve Bulletin,* Board of Governors of the Federal Reserve System, Washington, D. C. Reprints of the article are available at this bank.

The new indexes shown below begin with January, 1947. Comparable data for back periods are available upon request.

Current indexes of department store sales and stocks published henceforth will be entirely in the new series. During a transitional period of three months, current figures on the basis of the old series will be furnished on request.

REVISED INDEXES OF DEPARTMENT STORE *SALES*
FOURTH DISTRICT

1947-49 = 100

Adjusted for Seasonal Variation

DISTRICT TOTAL

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1947	90	94	99	93	96	97	97	94	96	97	104	100
1948	101	104	103	102	103	105	108	107	105	113	103	102
1949	107	103	100	105	100	98	97	95	94	93	95	98
1950	99	98	98	100	100	103	126	116	111	107	88	112
1951	136	120	104	108	104	106	107	108	108	112	114	

AKRON

1947	94	92	94	100	97	99	96	98	97	100	106	99
1948	102	104	102	96	105	104	106	106	110	115	99	105
1949	103	103	102	102	98	94	95	93	94	95	96	96
1950	95	96	95	98	99	98	126	116	112	108	89	119
1951	142	121	102	104	103	102	110	113	113	123	114	

CANTON

1947	94	97	96	90	95	97	92	94	92	98	106	98
1948	100	102	104	100	105	105	112	112	114	116	108	106
1949	105	100	101	103	99	94	92	89	95	90	92	99
1950	96	96	98	101	104	105	124	113	111	105	88	119
1951	133	116	103	105	110	113	103	114	116	115	118	

CINCINNATI

1947	93	95	97	94	100	99	96	91	99	97	109	101
1948	101	103	104	100	104	105	107	104	107	111	104	103
1949	104	99	96	98	100	95	93	93	94	97	98	100
1950	105	95	96	100	100	96	121	115	108	103	100	112
1951	130	107	97	102	102	92	102	101	100	106	110	

CLEVELAND

1947	90	94	97	94	96	98	98	95	99	95	107	102
1948	102	104	103	101	102	105	107	107	106	111	103	104
1949	107	100	98	101	101	97	94	96	97	96	96	92
1950	105	93	96	98	101	101	121	116	115	109	89	121
1951	140	115	105	106	107	105	104	110	112	114	111	

COLUMBUS

1947	88	91	98	91	94	97	93	89	94	98	104	97
1948	98	102	101	101	105	105	110	107	108	117	101	102
1949	109	103	99	104	103	98	99	94	95	100	98	101
1950	101	96	93	96	99	99	122	112	106	102	88	109
1951	120	109	99	108	84	99	107	104	107	112	112	

ERIE

1947	82	87	90	88	95	91	91	94	97	94	97	100
1948	97	99	100	102	104	105	109	106	107	116	109	106
1949	107	102	103	110	111	100	99	94	102	101	98	96
1950	100	93	100	104	110	114	132	117	124	112	102	117
1951	136	118	109	116	113	119	130	122	121	124	118	

PITTSBURGH

1947	94	92	98	93	98	95	96	92	102	100	100	103
1948	97	102	100	101	107	106	105	106	106	115	107	103
1949	110	104	96	105	101	97	94	91	95	88	94	99
1950	98	98	95	100	100	104	125	113	110	104	75	99
1951	137	123	98	105	100	104	104	100	107	106	114	

SPRINGFIELD

1947	94	95	99	100	101	103	97	98	101	101	106	100
1948	102	102	100	103	103	104	106	101	104	112	99	100
1949	99	99	95	97	97	94	98	94	98	99	98	98
1950	94	96	91	99	97	96	111	110	106	98	87	108
1951	114	108	98	98	97	98	102	103	103	104	105	

TOLEDO

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1947	89	96	99	88	95	99	96	95	93	95	104	99
1948	102	102	102	99	103	107	109	104	107	117	104	105
1949	105	101	98	105	101	98	99	96	100	93	93	96
1950	95	90	94	98	101	102	124	109	112	106	106	110
1951	130	113	108	106	105	105	108	107	113	106	113	

WHEELING

1947	94	99	97	93	99	97	98	97	100	97	108	103
1948	102	104	105	98	108	106	105	105	109	114	101	103
1949	115	104	98	106	100	93	90	88	96	85	88	96
1950	99	96	95	101	100	102	121	113	106	98	81	108
1951	133	111	95	98	101	100	102	103	103	105	104	

YOUNGSTOWN

1947	89	94	91	92	98	98	95	98	98	98	106	97
1948	99	102	102	102	106	107	107	108	112	115	107	107
1949	110	104	105	108	101	97	91	93	96	73	91	98
1950	96	96	96	97	99	103	127	110	112	109	88	125
1951	142	126	113	104	109	117	114	115	120	115	118	

1947-49 = 100 ***Unadjusted for Seasonal Variation****

DISTRICT TOTAL

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1947	67	72	90	92	98	92	76	82	101	100	128	166	97
1948	75	80	98	97	105	100	85	93	110	116	127	170	105
1949	80	79	89	106	102	92	75	82	99	96	117	163	98
1950	74	75	88	100	102	97	98	101	116	110	108	186	105
1951	102	93	99	103	106	100	84	94	114	115	140		

AKRON

1947	70	77	82	97	97	93	84	84	99	99	128	166	98
1948	75	88	93	90	106	98	92	90	112	114	119	177	105
1949	76	87	86	102	99	88	82	79	96	94	116	162	97
1950	71	80	83	96	100	92	110	99	114	107	108	199	105
1951	105	102	93	98	104	96	96	96	116	121	138		

CANTON

1947	67	68	86	91	98	93	77	82	97	99	127	168	96
1948	72	72	95	98	109	100	97	95	120	118	130	181	107
1949	76	70	88	106	103	89	79	76	99	92	110	169	96
1950	69	67	87	103	108	100	107	96	116	107	105	203	106
1951	96	81	95	103	115	108	88	97	122	117	141		

CINCINNATI

1947	71	73	92	92	101	92	77	79	102	99	136	165	98
1948	77	80	102	95	106	97	85	91	110	113	130	167	104
1949	79	76	87	100	102	88	75	81	97	99	122	163	97
1950	80	73	88	100	102	88	97	100	111	105	124	182	104
1951	99	82	95	97	104	85	81	88	103	108	138		

CLEVELAND

1947	70	73	90	93	97	94	79	82	100	98	131	168	98
1948	80	81	97	98	104	100	86	92	107	114	126	171	105
1949	84	78	87	103	102	92	75	83	98	99	118	151	97
1950	82	72	87	98	102	96	97	99	117	112	109	199	106
1951	109	90	99	103	108	100	83	95	113	117	137		

COLUMBUS

1947	66	70	91	88	92	89	74	80	99	98	131	162	95
1948	74	78	97	95	103	97	89	94	114	117	127	172	105
1949	83	78	89	104	101	90	80	83	100	100	123	170	100
1950	77	73	85	95	97	91	99	98	112	102	111	183	102
1951	91	83	95	102	83	91	86	91	112	112	141		

* All indexes of *sales*, whether seasonally adjusted or unadjusted, are based on comparisons of average daily sales with those of the base period. This allows for differences in number of trading days per month.

ERIE

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1947	62	66	82	86	92	85	72	79	96	95	124	179	93
1948	73	75	93	97	101	97	86	89	105	118	138	190	105
1949	80	78	88	114	108	93	79	79	101	102	124	173	102
1950	75	71	88	105	106	106	104	98	123	113	130	211	111
1951	102	89	101	111	109	110	92	102	119	125	150		

PITTSBURGH

1947	69	75	97	92	99	93	69	83	105	105	119	163	97
1948	72	83	101	98	108	104	76	95	110	121	128	163	105
1949	81	84	90	109	102	95	68	82	97	93	112	157	98
1950	72	80	92	101	101	102	88	101	114	110	91	156	101
1951	101	99	99	101	101	102	74	90	110	111	138		

SPRINGFIELD

1947	67	74	90	95	101	99	79	85	102	103	127	178	100
1948	72	80	95	95	104	99	86	87	105	114	118	178	103
1949	71	77	83	97	98	89	79	81	99	101	118	175	97
1950	67	75	82	96	98	91	90	95	108	100	104	193	100
1951	81	84	94	90	98	93	82	89	104	106	126		

TOLEDO

1947	62	76	91	88	93	90	75	83	99	97	128	173	96
1948	72	79	95	97	101	97	85	91	113	120	128	183	105
1949	74	78	87	108	98	89	77	83	106	95	115	168	98
1950	68	70	86	98	99	92	97	95	118	108	130	192	104
1951	92	88	101	103	103	96	84	93	120	109	139		

WHEELING

1947	61	74	92	92	101	90	77	80	108	96	130	187	99
1948	66	78	108	89	110	99	83	87	118	113	121	187	105
1949	74	78	87	111	102	86	71	73	104	84	106	174	96
1950	64	72	87	103	102	95	96	93	114	97	97	197	102
1951	86	83	98	90	103	93	80	85	111	104	125		

YOUNGSTOWN

1947	67	76	86	94	98	90	73	84	100	101	128	163	97
1948	74	83	96	103	106	99	83	93	116	118	130	178	107
1949	81	84	97	111	101	89	70	80	99	75	111	164	97
1950	71	78	89	99	99	95	98	95	115	112	106	209	106
1951	105	102	107	105	109	107	88	99	124	118	143		

REVISED INDEXES OF DEPARTMENT STORE *STOCKS*
FOURTH DISTRICT*

1947-49 = 100

Adjusted for Seasonal Variation

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1947	95	94	92	92	91	91	92	94	91	94	96	98	
1948	103	103	105	108	106	108	110	110	107	105	109	108	
1949	103	101	103	98	103	102	100	98	99	99	96	98	
1950	99	99	101	105	106	106	103	112	119	122	128	128	
1951	133	133	143	148	145	146	144	136	132	122	114		

Unadjusted for Seasonal Variation

1947	86	93	97	97	92	85	83	91	95	105	109	87	93
1948	93	102	111	114	108	102	99	105	111	117	123	95	107
1949	93	100	109	103	105	96	90	94	103	111	109	86	100
1950	90	98	107	110	109	100	93	107	124	137	145	113	111
1951	121	132	151	155	148	137	129	131	137	137	128		

* Indexes of Stocks are not computed for areas smaller in size than the district.

Materials for High-Temperature Use

by **CLYDE WILLIAMS**, *Director, Battelle Memorial Institute*

Scientists are busy developing construction materials capable of resisting temperatures up to 5000° Fahrenheit, the flame heat of some of our modern fuels. Such materials are needed primarily for better performance of jet engines, rocket motors, gas turbines, and other high-temperature operating engines.

Just how hot is 5000° Fahrenheit? Water boils at 212° Fahrenheit and even that's more than your finger can stand. Now, imagine temperatures scaled upward. The operating temperature of the present jet engine is about 1600° Fahrenheit. Iron melts at about 2800° Fahrenheit. The surface temperature of the sun has been estimated at 10,000° Fahrenheit.

Through clever design of cooling systems, the need for better heat-resistant materials in engines operating at high temperatures can sometimes be avoided. For the most part, however, cooling devices are unreliable, too cumbersome, or they lower efficiency too much. Consequently, large sums of money are currently being spent for development of heat-resistant materials from high-melting metals, ceramics, metal-ceramic mixtures, and carbon.

Molybdenum, with a melting point of 4760° Fahrenheit, is one of the most promising metals for very high-temperature use. Two other metals, whose names you perhaps have never even heard, ruthenium and iridium, have nearly as high melting points: four others – tungsten, tantalum, osmium, and rhenium—have even higher melting temperatures. But, of these metals, only molybdenum is available in quantities sufficient to meet expected demands in the heat-engine field.

However, molybdenum will not be ready for practical use in its melting point range at extremely high temperatures until some of its unfavorable properties are modified. The most troublesome problem is to maintain molybdenum's resistance to oxidation as temperatures are scaled upward. At 930° Fahrenheit, the surface of the metal recedes at the rate of 0.02 inch to 0.05 inch per hour because of this oxidation. Several methods are now being investigated to reduce this loss and improve molybdenum's "surface stability". These include coating with a thin layer of such materials as silicon, alloying with other metals, and cladding.

The ideal solution, alloying molybdenum with other metals to create a molybdenum-base alloy which will resist oxidation, is under study at several laboratories. No reports, however, have yet been published.

Silicon coatings for molybdenum give excellent protection for long periods at extremely high temperatures. Potentially valuable applications for silicon are seen as a coating for materials used in making rocket nozzles and exhaust tubes. Because of their brittleness, however, silicon coatings are limited to applications which are not subject to considerable deformation or impact. The same disadvantage applies to ceramic coatings.

For practical purposes, cladding or encasing molybdenum with an oxidation-resistant metal is receiving widest attention at the present time. It has been found that clad molybdenum, under stress, can resist temperatures up to 2000° Fahrenheit. This is 400° Fahrenheit above the heat-resistant requirements for the present jet engine.

As all-purpose cladding materials, nickel and Inconel (79.5 per cent nickel, 13 per cent chromium, and 6.5 per cent iron) appear superior to all others tested. Compared with nickel, Inconel cladding has better oxidation resistance and is somewhat easier to shape and form. It does not, however, have good bond strength, i.e., it doesn't adhere, or "stick", well to the molybdenum.

In the medium high-temperature range, another metal, titanium, is rapidly coming into the picture. The melting point for titanium is 3137° Fahrenheit, as compared to molybdenum's 4760° Fahrenheit. Titanium will get the call over molybdenum where strength at very high temperatures is not the predominant need, and where properties such as lightness and strength are vital. For example, aluminum, which is used extensively in aircraft construction because of its lightness and strength, melts at 1200° Fahrenheit. If temperatures higher than those permissible for aluminum are met, titanium may be used.

In addition to experimental work with metals and their alloys, research is going on in many places on ceramic materials. An all-ceramic turbine blade is being investigated. Also, the so-called "cermets" will find application. These are ceramic-metal mixtures which seek to combine the unique properties of both materials. This technique is already used in making the cutting edge of high-speed cutting tools.

Research during recent years has produced both better materials and better design for ceramic linings in rocket motors which have withstood the most severe conditions of test-stand firings. However, more extensive service testing is needed before the worth of the linings is definitely known.

Today's quest for better heat-resistant materials will set the limits for the speed and performance of tomorrow's high-temperature operating engine. The metal turbine blades now used in superchargers and jet engines are subjected to temperatures up to 1600° Fahrenheit, an achievement made possible only through the metallurgical discoveries of the past ten years. During the coming decades, a new range of materials doubtless will be found which will enable still higher levels of achievement for the high-temperature operating engine.

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.

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TO MONTHLY BUSINESS REVIEW
(1952)