MONTHLY REVIEW

FEDERAL RESERVE BANK OF ATLANTA

Volume XXXIII | Atlanta, Georgia, July 31, 1948 | Number 7

Minor Elements in the District's Fertilizer Program

FOR MANY years commercial plant foods have been important to successful crop production in the Sixth District states. District farmers in 1946 used more than 4.2 million tons, or an average of 286 pounds to the harvested-crop acre. On the other hand, farmers in six typical Corn Belt states used only 48 pounds of commercial fertilizer for each harvested-crop acre. Since District farmers depend upon commercial fertilizer to a greater extent than do farmers in other large agricultural sections, changes in District fertilizer practices have particular significance.

The use of minor-element fertilizer materials marks a departure from traditional practices that promises to revolutionize some sectors of the farm economy. The term "minor elements" has been used generally to describe fertilizer elements other than nitrogen, phosphorus, potassium, and calcium, although their role is anything but a minor one. Other terms frequently used are "rare," "trace," "secondary," and "micro." The American Plant Food Council has suggested a threefold classification in which primary includes nitrogen, potassium, and phosphorus; secondary includes sulfur, magnesium, and calcium; and minor includes boron, manganese, zinc, copper, and iron.

As implied by the commonly used name, plants require relatively small amounts of the minor elements for normal growth. The amount of each element necessary varies with the crop. Estimates of the nutritive requirements of the corn plant, for example, show that the production of 100 bushels of corn on an acre requires 160 pounds of nitrogen, 40 of phosphorus, 125 of potassium, 75 of sulfur, 50 each of magnesium and calcium, 2 of iron, a third of a pound of manganese, and only a trace of boron, zinc, and copper.

Before 1870 it was believed that crops needed only the 10 elements carbon, hydrogen, oxygen, nitrogen, phosphorus, sulfur, calcium, iron, magnesium, and potassium. Since that time the list of essential elements has been rapidly lengthened. Early experimental work on fertilizers was based on the assumption that only nitrogen, potassium, and phosphorus needed to be supplied in them. Work on plant diseases, however, demonstrated clearly the fallacy of relying on the soil or on impurities in fertilizer mixtures to supply adequate amounts of the minor elements. Most of these elements have been used to cure specific nutritional diseases of plants. As early as 1932 zinc applications were successfully used to cure serious tree diseases, such as the "rosette" of pecans, the "little leaf" of peaches, the "frenching" of citrus, and the "bronzing" of tung. Before that time, in 1917, copper was recommended for treatment of the dieback disease of citrus, and since then it has been successfully used to combat the disease in other crops.

Mineral-nutritional diseases of plants are perhaps more prevalent in the Sixth District states than they are in any other agricultural area of comparable size in the country. Deficiencies can be located only in generalized areas, but a compilation of reports from many investigators shows that over most of the District a deficiency of one or more minor elements in the soil prevents the optimum growth of at least one commercial plant. In general, boron deficiencies are most common in the Piedmont. The Coastal Plains' soils often are deficient in several of the minor elements, including manganese, zinc, and magnesium.

Climatic factors, as well as the course of the region's agricultural development, have reduced the natural supply of all essential elements in the soil. The District is one of the oldest agricultural sections in the country. Many years of continuous cropping and the removal of practically everything grown on the land, with little plant food having been replaced except for elements supplied by commercial fertilizers, have resulted in a diminution of minor-element nutrients. The usual cropping systems have left the soil bare for such a great part of each year that erosion has been rapid. A relatively high annual rate of rainfall conducive to rapid leaching also has hastened minor-element deficiencies. In addition organic plant-food sources and low-analysis fertilizers have been largely replaced by higher-analysis fertilizers with purer ingredients. Although these fertilizers may be more efficient than others as suppliers of the major plant foods, they contain less of the minor-element-bearing impurities.

Application of the knowledge of minor-element plant foods has perhaps progressed further in Florida than it has in any other District state. Citrus growers generally have abandoned the fertilization program made up exclusively of nitrogen, potash, and phosphorus and now use in addition magnesium, copper, zinc, manganese, and, sometimes, boron and iron. They also use nutritional sprays containing zinc and copper, and occasionally manganese. The Florida Citrus Experiment Station now makes definite recommendations to citrus growers for the application of minor-element materials. Fertilizer companies in the state sell special mixtures containing the required minor elements. Although the general application of the knowledge gained in research on minor elements is of fairly recent origin, about half the fertilizer samples tested by the Florida State chemist in 1943 were guaranteed to contain at least one of them. Florida vege-

table growers also are using considerable quantities of these rarer elements in fertilizers and in nutritional sprays.

Over most of the District, however, minor-element materials are not widely used at present. Before extensive applications can be made, in fact, much experimental work must be done to determine the need of different crops for the various elements, the proper methods of use, and the tolerance of plants to various rates of application. In their reactions on plants the minor elements differ in one very important respect from the fertilizer elements commonly used. Excessive applications of the ordinary plant foods may be of no especial benefit, but they rarely do plants any actual harm. Too much of the minor-element materials, on the other hand, often has a very toxic effect. For most plants the range between adequate and dangerous amounts of the minor elements is very small. Different plants, however, have varying degrees of tolerance. Rather large amounts of boron can be used on alfalfa, for example, but such amounts may be toxic to the succeeding crop.

Experimental Work

Impressive evidence of the beneficial results obtained from a use of minor-element fertilizer materials is rapidly accumulating. State experiment stations in the Sixth District states are conducting continuous tests to ascertain the minor-element needs of various crops. So far the most promising results have come from the use of boron, zinc, copper, and manganese.

With boron applications research workers at the Mississippi State College have obtained significant increases in cotton yields in the Brown Loam area. The experiment, which was designed to determine whether applications of boron could counteract the harmful effect of overliming, showed that such applications increased cotton yields as much as 25 percent on both limed and unlimed soils. It is not claimed that boron will increase the cotton yield on all Mississippi soils. The results do suggest, however, that many of them will respond to boron.

Experiments with boron on alfalfa and crimson clover at the Alabama Agricultural Experiment Station showed striking results. In many greenhouse culture experiments conducted with crimson clover on typical Coastal Plains' soils, boron more than doubled the yields. It also proved to be very effective in the development of seed heads and in increasing seed yields. An experiment on a small alfalfa plot that was seeded in the fall of 1941 on sandy soil in central Alabama typifies boron's effects on alfalfa. The usual lime, phosphate, and potash treatments were made at the time of seeding. Although a good stand was obtained, the crop turned yellow and appeared to be a near failure. The plot was then divided into four subplots, and boron and additional potash were applied to two of them. These two subplots produced about 2.7 tons of hay an acre, 65 percent more than the untreated plots produced to the acre. What is more important, the alfalfa on the untreated subplots failed to survive, as that on the others did, after the first year. Thus boron and additional potash made the difference between success and failure.

In Tennessee, where field tests of boron applications were made, alfalfa yields were increased from 20 to 80 percent on a fairly large number of soil types. It is known that the life of alfalfa stands has been prolonged appreciably, though exact measurements of this factor are unavailable. The use of boron on red clover and crimson clover also had beneficial results.

Preliminary tests in Georgia indicate that boron can be used in some areas to increase yields also of kudzu and other legume crops. In addition, truck-crop experiments indicate possible increases with the proper boron applications.

Studies in North Carolina on the effects that boron has on the growth of legume-hay and seed crops may have implications for District farmers also. Typical soils in the Piedmont, Coastal Plains, and mountain areas were used. In the Piedmont areas boron applications produced moderate but significant increases in hay yields. Seed yields on the best alfalfa soil were increased from 30 to 172 pounds an acre. Boron applied to peanuts at the rate of five pounds an acre in the Coastal Plains region gave a significant increase in quality. With crimson clover, the addition of 15 pounds of boron to the acre increased seed yields from 270.5 pounds an acre to 390.5 pounds. These studies show that boron is required for the most economic production of legume hays or seeds over most of North Carolina.

Sweet-potato yields in South Carolina experiments were increased from 40 to 70 percent by the use of boron. On one plot the application of five pounds of boron to the acre increased yields from 153 to 235 bushels an acre. Larger applications gave less desirable results; the tolerance of the sweet potato to even a slight excess was very low. Although the trials covered only one season, they were sufficient to indicate that sweet potatoes need a small amount of boron for satisfactory growth.

Research workers in Florida have studied the effects of the minor elements more intensively than have those in the other District states. Their early experiments with celery, tomatoes, lettuce, and other truck crops showed that commonly used fertilizer mixtures were inadequate. As early as 1924, Florida workers reported that manganese was required to grow tomatoes on Glade soils. Manganese was also found to give significantly increased yields of potatoes, snap beans, cabbage, cauliflower, lettuce, and many other truck crops.

A report of the Florida Experiment Station in 1936 showed that zinc sulfate effectively corrected a nutritional disease of corn known as "white bud," and greatly increased grain yields. When applied at a rate of from 10 to 20 pounds an acre under certain soil conditions, the zinc sulfate increased corn yields as much as 75 percent. Its use increased the efficiency also of some nitrogenous fertilizers for corn.

More recent Florida tests with minor elements on pasture grasses resulted in appreciable growth increases from applications of copper, manganese, boron, and zinc. The minor elements responded, however, only after nitrogen, potassium, and phosphorus were applied. Grasses tested include Dallis, carpet, Bahia, and Bermuda.

The South Carolina Experiment Station in 1945 tested the effects, under field conditions, of the various minor elements on corn, tobacco, peanuts, sweet potatoes, alfalfa, oats, soybeans, and pasture grasses. The seed crop of almost all the plants tested was greatly improved both in yield and in quality. When used singly, boron, magnesium, manganese, iron, and zinc seemed to give better results than either of the other elements, but combinations that included these elements gave the best results. Pastures were definitely improved where the complete mineral mixture was used.

Present Usage

Results of experiments with minor elements are rapidly being put to practical use. About 3,700 tons of boron were used as fertilizer material in 1945, whereas eight years before scarce-

ly any was being used for that purpose. It is estimated that 12,000 tons of copper sulfate were used in that year. Between 15,000 and 20,000 pounds of manganese sulfate are now used annually, most of it on Florida citrus and vegetable crops. Zinc-sulfate consumption has risen from a few tons annually to about 3,000 tons, a large part of the total number being used in the Southern states.

At least one of the major fertilizer companies in the District now offers for general use a mixed fertilizer containing greater than usual quantities of the more important minor elements. A very small tonnage of minor elements is used either in such mixed fertilizers or alone. This tonnage does represent considerable usage, however, since only a few pounds are needed to the acre.

In those areas where minor-element materials are of the greatest importance, fertilizer companies have stationed agronomists who advise farmers on their usage. Fertilizer companies in the District are also sponsoring research at public institutions in the minor-element needs of crops and on the problems relating to the practical application of the elements in crop production.

As with most new agricultural developments, extravagant claims have been made for the use of minor elements. Research workers and fertilizer-company representatives are quick to point out that the use of minor elements is only a part of any over-all program for supplying plants in the most efficient and economical manner with all the elements they need. Consideration must be given to the nature of the soil and the soil-fertilizer reaction, the requirements of the various plants, and the relationship between the different elements. Many soils require additional minor elements, but many do not. Often a particular soil will require the addition of minor elements only for certain crops.

Heavy cropping, excessive erosion, and soil leaching have reduced the available nitrogen, phosphorus, potassium, and calcium content in many District soils to very small amounts. When one or more of these major elements is the limiting factor in crop growth, little or no good is accomplished by the addition of minor elements. When the supply of major plant foods is increased, however, minor elements may themselves become limiting factors. Minor elements, therefore, are usually recommended as a necessary part of a complete nutritional program and are added only to mixed fertilizers containing relatively large amounts of the major plant-food elements.

Any plant food, of course, is of value to plants only in the degree of its availability, regardless of the amounts contained in the soil. In general, the minor elements are more available on acid soils than they are on soils of a pronounced alkaline reaction. In this country J. A. Naftel, of Alabama, was the first to demonstrate the relationship between overliming and a deficiency of available boron. The effects of overliming are to "lock up" boron in a manner that prevents its effective use by plants. Ordinarily, iron is so abundant that liming causes no deficiencies. Liming may affect the availability of manganese, zinc, and copper, however, the way it affects that of boron.

Evidently the recent rapid increase in the use of lime will be continued in an effort to make Southern soils, which are generally very acid, more productive. It will make good crops of the more valuable legumes possible, and they will add needed organic matter and nitrogen to the soils. At the same time, it may mean that larger amounts of the minor elements will be required to counteract the resultant decrease in their availability.

Alfalfa's boron requirements illustrate the rather delicate balance that must be maintained to insure minor-element availability. Though a relatively heavy boron feeder, alfalfa may contain only an ounce of boron to a ton of hay. In fertile soils the plow layer of an acre may contain only from one to five pounds of available boron. The content in many Southeastern soils is so low, however, that even a slight reduction in availability greatly reduces the crop yields. By the application of from 25 to 50 pounds of boron to an acre the danger of a deficiency is removed, and lime may then be successfully used.

Optimum plant growth demands a balance of nutrient elements. Only in recent years have all the implications of a balanced feeding program for crops been generally recognized. In the District, where farmers have relied upon large amounts of commercial plant food for many years, the problem of balanced feeding has marked significance. It is now known that plants respond to a reduction in the available supply of one element by accumulating a larger quantity of some other element or elements. When the supply of one element is increased, the plant accumulates smaller quantities of other elements. It is apparent, therefore, that the relative amounts of the various elements, as well as their absolute amounts, must be considered.

Experiments with the tung tree have shown that a large accumulation of potassium, calcium, and magnesium may result in a manganese deficiency. Large accumulations of these elements also cause iron, zinc, copper, and boron deficiencies in tung trees. Florida experiments demonstrate that the application of nitrogen to tung trees receiving small amounts of copper will induce a severe copper deficiency. Similar results have been observed on a number of other crops. Where large amounts of commercial plant foods are used, therefore, minor elements may play an increasingly useful role in preventing nutritional unbalances. In that respect, the minor elements may increase the efficiency of the plant foods now used.

Experimental work on the balancing of nutrient elements for plants also indicates that minor elements may be used to increase yields even where a crop shows no symptoms of deficiency. If the proper balance is maintained, the typical deficiency symptoms may not appear even though the soil is lacking in minor elements. This situation is illustrated by a comparison that was made of leaf analyses in the case of tung trees grown under different conditions of soil fertility. An analysis of leaves from trees in a Florida tung orchard where yields were large showed a high concentration of plant nutrients and a proper balance among the nutrients. A similar analysis in a Louisiana orchard where yields were small showed a low concentration of plant nutrients but, nevertheless, a proper balance among the nutrients. Neither orchard showed the ordinary symptoms of malnutrition. Treatment of the low-yielding orchard with a so-called "complete fertilizer" containing only nitrogen, phosphorus, and potassium, however, resulted in the appearance of symptoms of magnesium deficiency. Thus it is possible that District crops are suffering from unrecognized plant-food deficiencies.

Economic Implications

Only to the extent that they result in appreciable economic benefits will minor-element plant foods become important in the fertilizer programs of District farmers. Though there is strong evidence that human welfare is directly affected by the mineral content of food crops, farmers can hardly be ex-

pected to use such soil amendments as the minor elements unless they can profit from doing so.

Economic benefits from the use of minor elements in fertilizers may include a more efficient production of crops that are already basic in the farm economy, as well as the successful production of crops that are now grown unprofitably. Both of these effects bear directly on the attainment of a higher rate of productivity per farm worker and on the shift to less-intensive farming systems, which is generally recognized as desirable.

Florida fruit and vegetable growers are demonstrating conclusively the effects that the minor elements can have on production efficiency. Their yields of citrus fruit and truck crops generally are far above what they would be without the use of minor-element fertilizers. Undoubtedly their unit-production costs have been lowered and, thus, profits increased. Fertilizer costs for each unit of production are lowered by the higher yields and possibly by decreases in the total amount of fertilizer required. For most of the other major District crops any appreciable improvement from the use of minor elements is something to be achieved in the future.

The greatest immediate economic effect of the use of fertilizers containing minor elements outside Florida will be felt in the legume and livestock program. The expansion of legume crops is widely advocated for soil improvement and for the development of a profitable livestock program. The unique ability of legumes to bring about the fixation of nitrogen from the air is particularly needed on many District soils. A season's growth of alfalfa on one acre under favorable conditions may fix from $10 to $20 worth of atmospheric nitrogen. Legume hay is relatively high in the proteins needed for efficient livestock production.

So far Southern farmers have been unable to compete successfully with other farmers in the grain production required for livestock. They can partly overcome this disadvantage, however, if they can utilize their longer growing season for forage production. Efficient use of this climatic advantage depends upon their surmounting the obstacles of the summer dry periods and a relatively infertile soil. Legume crops offer one of the best means of overcoming them.

Alfalfa is particularly well adapted. Besides growing for about 10 months of the year, it derives part of its plant food from the air; has a deep root system, which makes it resistant to drought; and yields high-quality hay and pasture. To a considerable extent, recent acreage increases of this crop are attributable to the usage of minor-element fertilizer, particularly that containing boron.

Experience with alfalfa in Alabama reveals the value of the newer fertilization methods. At one time large acreages of the crop were grown in the Black Belt, but the stands could not be maintained against invasions of Johnson grass. Small acreages of it in the Tennessee Valley have been planted for many years, but the stands have deteriorated. In the Piedmont area the crop never became commercially established. The use of adequate lime and mixed fertilizer reinforced with additional amounts of potash and boron, however, will produce good yields in all of these areas.

Though newer fertilizer treatments that include boron could make an increase in alfalfa possible in the District, only in Tennessee is the possibility being realized on a large scale. Tennessee alfalfa acreage increased from 60,000 acres in 1940 to 122,000 acres in 1945. The use of boron, it is believed, is partly responsible for this increase. The extension service conducted a widespread educational campaign to acquaint farmers with the possible advantages of using boron on alfalfa. Boron not only increases yields and lengthens the lives of stands on land that is already apparently adaptable to alfalfa, but makes possible the successful production of the crop on that which is seemingly unsuitable.

Boron applications have increased the vigor of alfalfa stands so much that they can be profitably grazed by livestock. Since alfalfa can provide pasture during the summer dry period, when other pastures often fail, this development is particularly important to livestock farmers.

In the long run, the minor elements may play their most important economic role in pasture development. A shift from a cash crop to a pasture-and-livestock system continues to claim much attention from people concerned with the welfare of Southern agriculture. To make this change effective without a displacement of many agricultural workers requires that the total output of those farms affected be maintained or increased. Maintaining total output requires, in turn, either that pasture converted from cropland yield returns comparable to those obtained by cropping, or that the remaining cropland materially increase in productivity.

The experience of a South Mississippi farmer affords an example of how land may be converted from cotton to pasture and continue to be highly productive. In 1943 this farmer was growing 60 acres of cotton on his 260-acre farm. As part of the reorganization of his farm business he reduced his cotton acreage to a few acres and put most of his good cotton land into pasture. Fertilization included the use of 2,000 pounds of basic slag and 200 pounds of 50-percent muriate of potash per acre. On 25 acres of white Dutch clover and Dallis grass he carried 50 head of beef cattle for 10 months of the year. He has netted about $50 an acre a year from the pasture, an income comparable to his returns from cotton.

Minor elements were supplied by the basic-slag application. Under most acid-soil conditions, this material will supply the minor nutrients needed by many farm crops. Where the soil has a deficiency of several minor nutrients it often is the most effective and economical means of overcoming the deficiency. Though the effects of minor-element applications on pasture yields cannot be isolated in this example, it illustrates their effects under field conditions. In other words, the minor elements seem likely to exert their greatest effects as part of a well-rounded pasture-fertilization program.

Pasture-land fertilization that results in a heavy growth of the leguminous pasture crops means that other crops which follow will receive the benefits of the soil fertility built up by the pasture crop. The same output of intertilled crops can, therefore, be grown on fewer acres.

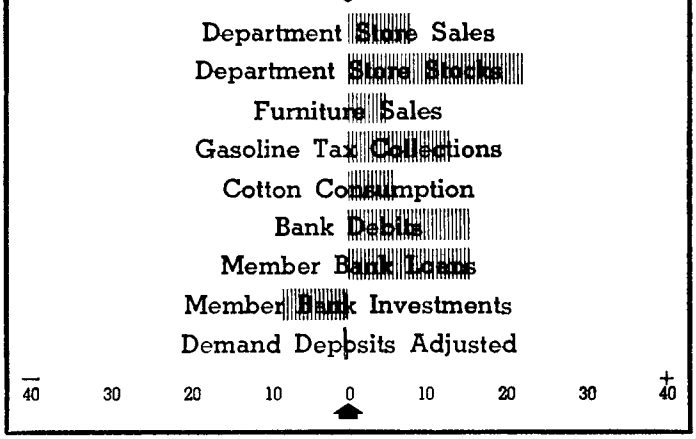
Though a more widespread usage of minor-element fertilizer materials promises to bring appreciable economic benefits to District farmers, these materials are not panaceas. Nor can they substitute for other plant nutrients, such as nitrogen, phosphorus, and potassium, or take the place of good farm management and land use. If they are used as an integral part of a well-rounded fertilization program, however, they can make an important contribution to the agricultural economy. The greatest present needs are for further research on their effects on crops under varying conditions and the application of the knowledge so gained to active farm practice. The practical application to farm-production problems, of course, does not have to wait for the final word from the research workers. The Florida Experiment Station, for example, has made recommendations of inestimable value to citrus

growers for using minor elements, even when many technical questions have not yet been answered. How soon minor elements can be put to work for the benefit of District farmers will depend in large part upon how soon research findings are made available for practical use and specific recommendations are made for their application.

BROWN R. RAWLINGS

Reconnaissance

Sixth District Statistics for June 1948 compared with June 1947



Bank Announcements

The Commercial Bank in Panama City, Panama City, Florida, a nonmember bank located in the territory served by the Jacksonville branch, began remitting at par, effective July 1, for checks drawn on it when received from the Federal Reserve Bank. This bank was organized in 1932. On June 30, 1948, it had a capital stock of $100,000, surplus and undivided profits of $384,208.75, and deposits of $7,002,873.25.

Officers of the bank are M. G. Nelson, president; E. A. Gardner, executive vice president; Rea Steele, cashier; and Jack A. Blackwell, B. McReynolds, and Eunice Robinson, assistant cashiers. Directors are Isaac W. Byrd, S. A. Daffin, Jr., E. A. Gardner, M. G. Nelson, and C. D. Waller.

Retail Credit Survey

Copies of the Sixth Federal Reserve District Retail Credit Survey for 1947, recently completed by this bank, may be obtained upon request. The survey, consisting of 57 pages, contains information on changes in sales and important credit items for nine lines of retail trade. Data are shown by leading cities and areas. Orders should be sent to: Research Department, Federal Reserve Bank of Atlanta, Atlanta 3, Georgia.

Sixth District Indexes

DEPARTMENT STORE SALES*

Place	Adjusted**			Unadjusted		
	June 1948	May 1948	June 1947	June 1948	May 1948	June 1947
DISTRICT	397	394	365	333	375	307
Atlanta	429	437	398	352	415	326
Baton Rouge	389	428	381	343	424	335
Birmingham	396	420	353	341	399	304
Chattanooga	368	363	336	331	363	303
Jackson	352	347	335	295	326	282
Jacksonville	420	457	413	369	434	364
Knoxville	445	422	324	365	401	265
Macon	311	319	315	264	310	268
Miami	401	382	366	321	336	292
Montgomery	375	384	377	315	361	317
Nashville	456	502	395	420	492	363
New Orleans	346	355	329	305	334	290
Tampa	513	467	441	461	467	397

DEPARTMENT STORE STOCKS

Place	Adjusted**			Unadjusted		
	June 1948	May 1948	June 1947	June 1948	May 1948	June 1947
DISTRICT	343	368	280	346	357	283
Atlanta	450	449	393	413	457	360
Birmingham	296	278	225	278	285	211
Montgomery	434	404	334	396	410	304
Nashville	553	537	445	516	545	415
New Orleans	370	340	294	347	350	276

GASOLINE TAX COLLECTIONS***

Place	Adjusted**			Unadjusted		
	June 1948	May 1948	June 1947	June 1948	May 1948	June 1947
SIX STATES	193	188	170	194	189	172
Alabama	194	195	177	203	199	185
Florida	176	188	165	176	190	165
Georgia	177	181	164	182	181	168
Louisiana	177	179	159	181	176	162
Mississippi	196	192	173	202	188	178
Tennessee	232	204	180	235	204	182

COTTON CONSUMPTION*

Place	June 1948	May 1948	June 1947
TOTAL	148	145	140
Alabama	161	152	148
Georgia	145	146	139
Mississippi	93	97	103
Tennessee	136	120	122

ELECTRIC POWER PRODUCTION*

	May 1948	April 1948	May 1947
SIX STATES	327	344	292
Hydro-generated	250	324	260
Fuel-generated	429	371	333

MANUFACTURING EMPLOYMENT***

Place	May 1948	April 1948	May 1947
SIX STATES	145	146r	143
Alabama	157	157r	154
Florida	136	141r	130
Georgia	133	133	131
Louisiana	139	140	138
Mississippi	148	151r	151
Tennessee	154	155	152

CONSTRUCTION CONTRACTS

Place	May 1948	April 1948	May 1947
DISTRICT	481	606r	354
Residential	690	762r	467
Other	380	530r	300
Alabama	458	854	435
Florida	582	780	442
Georgia	397	654	287
Louisiana	514	330	217
Mississippi	393	191	345
Tennessee	501	432	476

CONSUMERS' PRICE INDEX

Item	June 1948	May 1948	June 1947
ALL ITEMS	176	174	162
Food	218	215	199
Clothing	201	201	182
Fuel, elec., and ice	135	134	122
Home furnishings	190	192	176
Misc.	148	148	143
Purchasing power of dollar	.57	.57	.62

*Daily average basis
**Adjusted for seasonal variation
***1939 monthly average = 100; other indexes, 1935-39 = 100

ANNUAL RATE OF TURNOVER OF DEMAND DEPOSITS

	June 1948	May 1948	June 1947
Unadjusted	19.5	18.7	18.4
Adjusted**	20.1	20.1	18.9
Index**	81.3	81.5	73.2

CRUDE PETROLEUM PRODUCTION IN COASTAL LOUISIANA AND MISSISSIPPI

	June 1948	May 1948	June 1947
Unadjusted	284	285	256
Adjusted**	286	289	258

r Revised

District Business Conditions

Federal Finance and District Bank Credit

ANNOUNCEMENT that on June 30 the Federal Government ended its 1948 fiscal year with a budgetary surplus directed public attention to conditions that have affected banking operations in the Sixth District and in the nation for several months. This is the second consecutive time there has been such a surplus. Except for three months during the last half of 1947 and one month during the first half of this year, the Treasury has reported a budgetary surplus each month during the past fiscal year. For the 12-month period the surplus amounted to 8.4 billion dollars before the transfer of 3 billion to the Foreign Economic Administration Trust Fund.

Both larger receipts and lower expenditures accounted for last year's increase over the 754-million-dollar surplus reported for the fiscal year of 1947. Total expenditures during fiscal 1948 were 36.3 billion dollars and net receipts were 44.7 billion, whereas during fiscal 1947 the amounts were 42.5 billion and 43.3 billion dollars, respectively.

The surplus has affected the banking system primarily in that it has been used to reduce the public debt, 36 percent of which was held by the nation's commercial and Federal Reserve Banks at the beginning of the last fiscal period. During fiscal 1948 the public debt was reduced by approximately 6 billion dollars through retirement to 252.3 billion, the lowest it has been since the early months of 1945. The marketable debt was reduced still more.

The Treasury chose that method of retiring the debt which had the greatest possibility of limiting inflationary pressures. Individuals and businesses reduced their deposits at the commercial banks by the amount of their net tax and other payments to the Government. These net deposits were transferred, for the most part, to the Treasury's account at the Federal Reserve Banks, and subsequently a large amount was used to retire short-term Government securities held by the Reserve Banks. By this process member-bank reserve accounts as well as the deposit accounts of individuals and businesses were reduced. Thus the banks' ability to expand credit was limited except as reserve accounts were increased by some other means.

Mainly, as a result of this debt-retirement program, holdings of short-term Government securities by the Federal Reserve Banks were reduced approximately 5 billion dollars during the first six months of 1948. This bank's holdings of short-term Governments—bills, certificates, and notes—declined 268 million dollars.

Other steps taken by the Federal Reserve authorities to dampen inflationary pressures included a joint statement made in November by the Board of Governors, the Comptroller of the Currency, and the National Association of Supervisors of State Banks. The statement urged bankers to use caution in the extension of credit.

Shortly after the joint statement was issued, the support price of Government securities was lowered, resulting in a decline in the prices of Government bonds. Taxable bonds of 15 years or more maturity, for example, had average prices of 104.1 in June 1947, 101.6 in December 1947, and 100.7 in January 1948. Short-term rates on Treasury bills and certificates were increased in the last half of 1947 through joint Treasury and Federal Reserve action. Moreover, in January of this year Federal Reserve Banks increased their discount rates from one to 1¼ percent.

Using its authority to alter further the reserve requirements of member banks in central reserve cities, the Board of Governors raised reserve requirements from 20 percent to 22 in February and to 24 percent in June. The power to increase reserve requirements for reserve city banks and for country banks had already been exhausted. The Board of Governors has remaining the power to raise requirements at the central reserve city banks to 26 percent.

The American Bankers Association representing the nation's commercial bankers has urged that bankers undertake a policy of "voluntary restraint." At meetings held throughout the District under the auspices of the state bankers' associations, bankers have been urged to limit their loans to those that are productive and to eliminate lending that might contribute to inflation. Many banking spokesmen claim that this program, if successful, would make unnecessary the granting of further powers to the Federal Reserve authorities.

Effectiveness of these measures to check the extension of credit and the resulting increase in purchasing power has been limited by factors outside the Federal Reserve System's control. As a consequence, the net reduction in member-bank reserves from January to June 1948 has been much less than the drain imposed by Treasury operations including the retirement of debt held by Federal Reserve Banks.

In the Sixth District, member-bank reserves declined by only 78 million dollars, or about 10 percent, from the first of the year to the end of June. With the exception of June, currency in circulation has declined each month in 1948 with a consequent increase in member-bank reserves from this source. Outstanding Federal Reserve notes of this bank, for example, were 90 million dollars less on June 30 than they were at the beginning of the year. Sixth District member banks, moreover, have shared in the increase in reserves that resulted from the three-quarter-billion-dollar inflow of gold that occurred during the first six months of 1948. Furthermore, the reduction in Federal Reserve credit because of the Treasury's debt-retirement program has been offset in a large part by the sale of long-term Government bonds to the Federal Reserve Banks. In carrying out its commitment to support bond prices the Federal Reserve System increased its holdings of United States Government bonds 3.5 billion dollars during the first six months of this year.

Member banks in this district reduced their holdings of United States Government securities during the first half of this year by approximately 82 million dollars. The greatest rate of decline occurred at the reserve city banks in Atlanta, Birmingham, Jacksonville, Nashville, and New Orleans. Most of the reduction in bank holdings of Government securities occurred in bonds maturing in five years or more. The banks as a group increased their holdings of short-term Government securities.

Reserves were also maintained by reducing balances with other banks. During the first half of this year the balances that all District banks held at other banks declined approximately 100 million dollars. Practically all of this reduction came about because of withdrawals by the country banks from their balances at reserve city banks both within and outside the Sixth District.

Although it is possible that on balance the program of voluntary restraint, together with the measures taken by the Federal Reserve System and the Treasury, have limited to some extent the expansion of bank credit during the first part of this year, total loans have not been reduced. At member banks as a group, total loans on the last Wednesday in June were the same as they were at the beginning of the year. During the corresponding period last year there was a 2-percent increase in total loans.

At the country banks, however, loans increased. Their 5-percent increase for the first six months of this year was sufficient to offset the 5-percent decline at the reserve city banks. The decline at the reserve city banks, however, paralleled that which occurred during the corresponding period of 1947 when total loans declined 4 percent.

Judging from the reports of the weekly reporting banks in leading cities, a decrease in commercial and industrial loans accounts for the decline in total loans at the reserve city banks. These loans normally decline during the first six months of each year. Real-estate loans and consumer and other loans, however, continued to advance from month to month. It is the greater proportion of these types of loans held by country banks than by others that probably helps to explain the continued expansion in total loans at these banks.

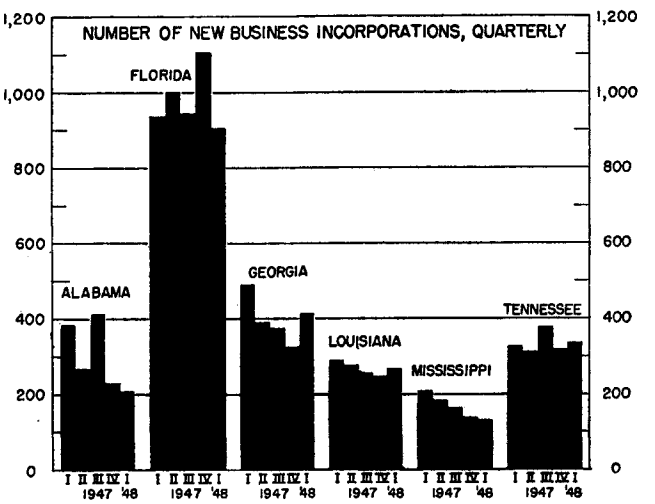
Purchasing power in the hands of business concerns and individuals as represented by their demand deposits in District member banks declined somewhat between the end of last year and the middle of this year. Member-bank demand deposits adjusted decreased 123 million dollars or 3 percent, the greatest monthly decline occurring in March when income-tax payments were made. Although deposits were declining, those remaining in the District's banks were being used more intensively. Demand deposits at banks in leading cities of the District were being spent, on an average, at a seasonally adjusted rate of 18.5 times a year last December. At the end of June this year they were being used 19.6 times a year. On the average, therefore, a dollar was performing in June the work that required $1.06 last December.

A more effective test of the bankers' ability to restrain voluntarily the expansion of bank loans will occur during the remainder of this year. A number of factors may combine to stimulate an expansion in loans as great or greater than the 17-percent expansion at Sixth District member banks during the last half of 1947. The demand for loans usually increases during the latter half of the year. In addition to this normal seasonal increase, however, the demand for loans may be stimulated by other factors. With wholesale prices at almost the highest point in history and with wage rates and other costs increasing, higher operating costs may increase the need for credit by many businesses. Continued expansion of consumer borrowing also creates the possibility that more retailers will need bank credit to finance their accounts receivable and inventories.

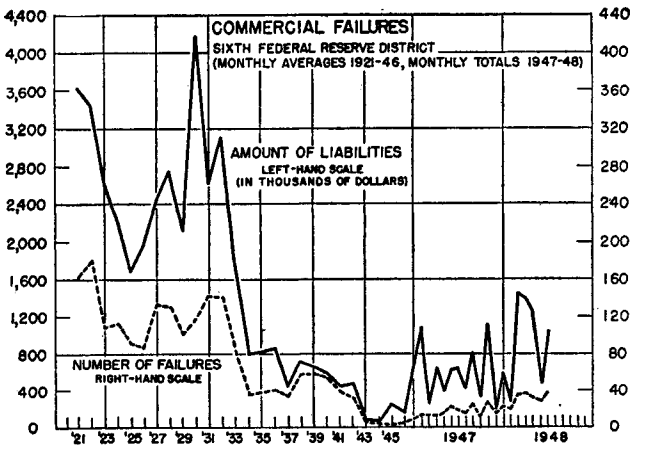
Recent tax reductions offer the possibility that the Treasury's net receipts may be less in the next fiscal period than in the one just passed. Meanwhile expenditures will probably be larger. If the result of this situation is not the complete elimination of the Treasury's debt-retirement program for the remainder of the year, the amount of retirement is almost certain to be substantially reduced. Should the banks then feel impelled to expand their lending operations, they might still increase their reserves by selling their Government securities. Against these expansionary factors there is a chance that budgetary surpluses together with accumulated

SIXTH DISTRICT COMMERCIAL FAILURES

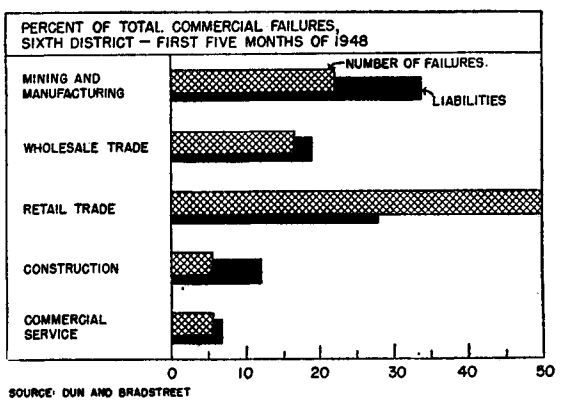
1. New business incorporations this year in most Sixth District states are fewer than during 1947.



2. Commercial failures so far this year have exceeded those of the corresponding period last year in both number and liabilities. Liabilities were up 63 percent, and their monthly average was higher than the average for any year since 1932.

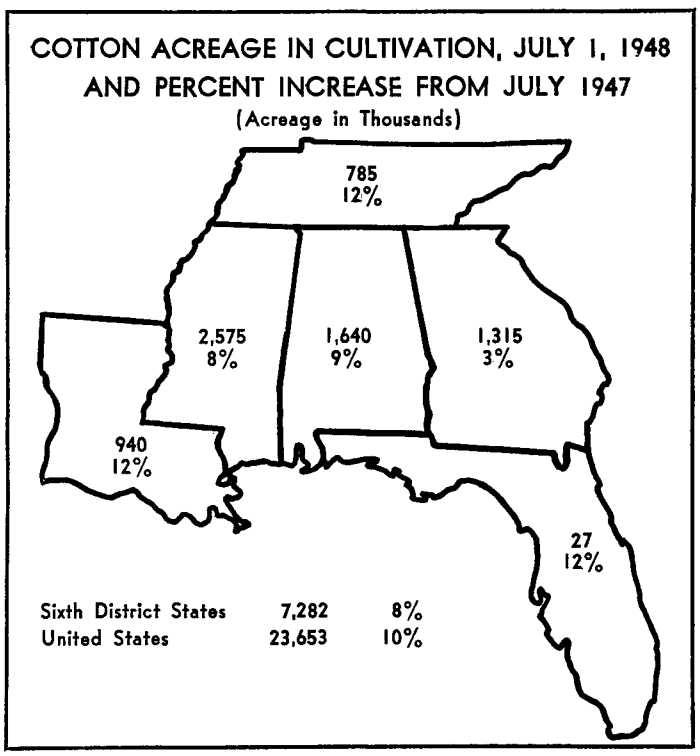


3. The number of failures this year has been greatest among retail trade concerns. More important, however, have been the liabilities represented by the failed manufacturing and mining concerns.



Treasury balances may be sufficient to reduce member-bank reserves and purchasing power in the hands of individuals, but most of the reduction may not take place until the first quarter of 1949.

Whether or not an expansion of loans will actually occur during the rest of the year will depend, therefore, primarily upon the actions of individual bankers. Under what will undoubtedly be great pressure to expand their loans, they have the opportunity now to demonstrate whether or not the program of voluntary restraint makes the granting of further powers to the Federal Reserve System unnecessary. C.T.T.



Agriculture

Cotton growers have a larger acreage planted in cotton this year than last, but the increase in the Sixth District is less than it is in other areas. According to the July 8 cotton forecast, the acreage in cultivation on July 1 was 23,653,000 for the nation, a gain of 10 percent over the acreage planted in cotton on the same date last year. The corresponding gain for District states was 8 percent. The extent of the increase is not surprising since private estimates forecast a 10-to-12-percent increase.

No official forecast of cotton production will be made before August 8, but indications thus far point to an increase in production of about the same extent as that in planted acreage. Weather, of course, can greatly affect yields, but to date weather conditions have been favorable for the growing of cotton in most parts of the District. The Weather Bureau crop-condition report of July 13 showed that in each of the Sixth District states cotton was in good condition.

The accompanying table shows that although District states increased their 1948 planting over 1947, the downward trend in cotton production has not been completely reversed. Of the six states, only Tennessee planted more acreage this year than in either the 1935-39 or 1937-46 period. The first of these periods, a five-year average, gives a fairly accurate prewar picture. The second period was added because a 10-year average of prices will be used in computing parity prices beginning in January 1950. Moreover, should acreage controls again become necessary, there is a possibility that the preceding 10-year average acreage will be used as a base.

ACRES IN COTTON, JULY 1
(In Thousands)

	By States and United States					Sixth District*
				Percentage Change		
	5-Yr. Av. 1935-39	10-Yr. Av. 1937-46	1948	1935-39 to 1948	1937-46 to 1948	1948
Georgia	2,274	1,775	1,315	— 42	— 26	1,315
Florida	85	58	27	— 68	— 53	27
Tennessee	778	718	785	+ 1	+ 9	71
Alabama	2,244	1,839	1,640	— 27	— 11	1,640
Mississippi	2,988	2,580	2,575	— 14	— 0	695
Louisiana	1,417	1,070	940	— 34	— 12	226
Total	9,786	8,040	7,282	— 26	— 9	3,974
United States	28,496	23,274	23,653	— 8	+ 2	....
Percent of U. S.	34	35	31	.....	.....	17

*Estimated. Based on 1946 county data: All of Georgia, Florida, and Alabama; 8.8 percent of Tennessee; 27.3 percent of Mississippi; and 23.0 percent of Louisiana cotton acreage is in the District.

Georgia has reduced cotton acreage more than any other state in the District. The July 1948 acreage in Alabama is also off considerably from that in either base period. Mississippi, the leading producer among the states, has an acreage in cultivation equal to the average of the last 10 years and only slightly under the prewar figure. Total cotton acreage is declining in the six states, but in the District itself, which includes only a portion of three of the states, the decline is even more rapid. In the 1935-39 period, the part of Mississippi lying within the Sixth Federal Reserve District, roughly the southern half, planted 33 percent of the state's cotton acreage. In 1946, however, only 27 percent of Mississippi's cotton acreage was planted in that part of the state. Approximately 55 percent of the cotton grown in the six states is grown in the District. The less-than-average increases in Alabama and Georgia over 1947, together with the shift in acreage from South Mississippi to the northwestern part of that state, indicate that cotton production is becoming less important to District farmers.

The growing of cotton continues its historic westward movement. This year, even though planting conditions were unfavorable, California has increased her cotton acreage 51 percent over last year. New Mexico and Arizona have increased their cotton acreage 37 and 22 percent over last year's figures. The 1.3 million acres now planted in cotton in these three states is approximately equal to Georgia's acreage, but their yield per acre in 1947 was 603 pounds of lint compared with 246 for Georgia. The production of these Western states would therefore equal that of 3.2 million Georgia cotton acres at 1947 yields. These newly developed cotton states are producing almost as many bales of cotton as are produced in the Sixth District.

This trend of cotton growing away from the six states of the District is seen more clearly when the 1948 acreage is compared with the average planted acreage in the years 1937-46. In the District states this year's planting is 9 percent

lower than the 10-year average, while that for the United States is 2 percent higher. During the last 10 years District states planted an average of 34.5 percent of the nation's cotton acreage. This year, however, they have planted only 30.8 percent.

With good prospects for a larger cotton crop, growers are speculating as to what cotton prices may be this fall. Among the factors influencing the price of cotton will be: (1) its support price under the parity program, (2) the amount of cotton that will be exported under the Economic Co-operation Administration program, and (3) the competition of foreign production.

The official support price for cotton has not been announced, but it will be higher than last year's floor price. The parity price, and hence the support price, will depend on the movement of the index of prices paid by farmers, including interest and taxes. On June 15 this index was 251 percent of the 1910-14 average compared with 230 on the same date last year. The third round of wage increases which has been granted in many industries recently will likely result in higher prices for the things that farmers buy, thus tending to push the index, and the support price, upward.

Exports of cotton under the ECA program will depend upon the amount of money made available and upon the need of the co-operating countries for many goods and services. Cotton will have to compete with other commodities for ECA dollars. Some of the products and materials needed for rebuilding the economic life of European countries can be obtained only from the United States, but cotton can be obtained from several sources. The participating countries would prefer to pay for their cotton imports with exports and thus conserve dollar exchange. Since most of the markets for European industrial products are in countries which are primarily agricultural, it seems reasonable to expect that those countries will receive preference as sources of cotton and other raw materials.

For the most part, cotton growers can look forward to a good year. They will have more cotton to sell than they had last year and even if they have to accept the support price, that price will be high in comparison with other years. Should it become necessary to support prices, however, the Government may be faced with a cotton problem of serious proportions. J.L.L.

Trade

Consumer expenditures at Sixth District department stores during the first half of this year amounted to 256 million dollars, which is larger than they have been during any comparable period on record. Estimated sales for January through June exceeded the estimate for the corresponding period of last year by 8 percent. If conditions during the first two weeks of July have continued through the rest of the month, July sales were 6 percent above those for July 1947.

This year, except in January when the seasonally adjusted sales index was the same as in January 1947, each month's index exceeded that of the corresponding month last year. The seasonally adjusted index, however, has only one time this year exceeded the record high set in December 1947 when it was 394 percent of the 1935-39 average; the June index this year was 397, compared with 365 for June last year.

The general picture as shown by total figures, however, is a composite of experiences that have varied from city to

Sixth District Statistics

INSTALMENT CASH LOANS

Lenders	No. of Lenders Reporting	Volume: Percent Change June 1948 from May 1948	Volume: Percent Change June 1948 from June 1947	Outstandings: Percent Change June 1948 from May 1948	Outstandings: Percent Change June 1948 from June 1947
Federal credit unions	44	+ 8	+ 37	+ 5	+ 55
State credit unions	24	— 3	+ 63	+ 9	+ 49
Industrial banking companies	11	+ 6	+ 21	+ 1	+ 12
Industrial loan companies	20	+ 8	+ 8	+ 1	+ 17
Small loan companies	44	— 3	+ 6	+ 1	+ 9
Commercial banks	34	+ 6	+ 25	+ 4	+ 44

RETAIL FURNITURE STORE OPERATIONS

Item	Number of Stores Reporting	Percent Change June 1948 from May 1948	Percent Change June 1948 from June 1947
Total sales	85	— 10	+ 5
Cash sales	77	— 22	— 29
Instalment and other credit sales	77	— 11	+ 10
Accounts receivable, end of month	84	+ 2	+ 39
Collections during month	84	— 5	+ 9
Inventories, end of month	63	— 2	+ 22

WHOLESALE SALES AND INVENTORIES*

Item	SALES: No. of Firms Reporting	SALES: Percent Change June 1948 from May 1948	SALES: Percent Change June 1948 from June 1947	INVENTORIES: No. of Firms Reporting	INVENTORIES: Percent Change June 30, 1948, from May 31 1948	INVENTORIES: Percent Change June 30, 1948, from June 30 1947
Automotive supplies	3	+ 11	+ 8	3	+ 2	— 22
Electrical group						
Wiring supplies	5	+ 9	+ 15	5	— 8	+ 4
Appliances	3	— 5	+ 5	.	. .	. .
General hardware	10	— 2	+ 13	4	+ 0	+ 18
Industrial hardware	4	+ 15	+ 22	.	. .	. .
Jewelry	3	— 17	— 3	.	. .	. .
Plumbing and heating supplies	4	— 3	+ 18	3	+ 5	+ 66
Confectionery	6	— 1	+ 30	.	. .	. .
Drugs and Sundries	6	— 1	+ 8	3	— 1	+ 9
Dry goods	17	— 2	+ 10	10	+ 2	+ 12
Groceries						
Full lines	24	+ 3	+ 8	14	— 1	— 2
Specialty lines	6	+ 4	+ 16	4	— 9	+ 3
Tobacco products	8	— 0	— 4	.	. .	. .
Miscellaneous	17	+ 2	+ 24	19	— 6	+ 12
Total	116	+ 2	+ 13	65	— 2	+ 10

*Based on U. S. Department of Commerce figures

DEPARTMENT STORE SALES AND INVENTORIES

Place	SALES: No. of Stores Reporting	SALES: Percent Change June 1948 from May 1948	SALES: Percent Change June 1948 from June 1947	INVENTORIES: No. of Stores Reporting	INVENTORIES: Percent Change June 30, 1948, from May 31 1948	INVENTORIES: Percent Change June 30, 1948, from June 30 1947
ALABAMA						
Birmingham	4	— 15	+ 15	3	— 3	+ 31
Mobile	5	— 10	+ 4	.	. .	. .
Montgomery	3	— 13	+ 3	3	— 4	+ 30
FLORIDA						
Jacksonville	4	— 15	+ 6	3	— 9	+ 21
Miami	4	— 5	+ 10	3	+ 33	+ 49
Orlando	3	— 13	+ 30	.	. .	. .
Tampa	5	— 1	+ 19	3	— 15	+ 23
GEORGIA						
Atlanta	6	— 15	+ 12	5	— 10	+ 15
Augusta	4	— 7	+ 11	3	— 16	+ 3
Columbus	3	— 9	+ 24	.	. .	. .
Macon	4	— 15	+ 3	4	— 11	— 11
Rome	3	— 23	— 1	.	. .	. .
Savannah	4	— 13	+ 3	.	. .	. .
LOUISIANA						
Baton Rouge	4	— 19	+ 6	4	— 3	+ 31
New Orleans	5	— 9	+ 9	4	— 1	+ 26
MISSISSIPPI						
Jackson	4	— 10	+ 9	4	— 7	+ 22
Meridian	3	— 21	— 10	.	. .	. .
TENNESSEE						
Bristol	3	— 7	+ 11	3	— 9	+ 5
Chattanooga	4	— 9	+ 14	3	+ 15	+ 35
Knoxville	4	— 9	+ 43	.	. .	. .
Nashville	6	— 15	+ 20	5	— 5	+ 24
OTHER CITIES*	19	— 11	+ 4	22	— 1	+ 19
DISTRICT	104	— 11	+ 13	72	— 3	+ 22

*When fewer than three stores report in a given city, the sales or stocks are grouped together under "other cities."

city, from store to store, and from department to department within the stores. Sales have ranged in various cities from an increase of 28 percent for the first six months in one city to a decrease of 4 percent in another. In three of the District's 21 cities for which data are released, the increases were over 15 percent. Three cities reported decreases.

The greatest gains in sales over 1947 so far have been reported by stores that specialize in consumer durable goods. The experience within the stores that report their sales and stocks by departments shows the same trends. During the first five months of this year, for example, sales of piece goods and household textiles were the same as they were during the corresponding period last year; sales of women's and children's shoes were down 4 percent; and men's and boys' clothing sales were down 6 percent. On the other hand, sales of house furnishings were up 9 percent including a 40-percent increase in sales of major household appliances.

Because sales figures are reported in dollars, comparisons made from the reports do not necessarily indicate changes in the actual volume of merchandise sold unless price changes are also taken into account. Although an exact measurement is impossible, a rough adjustment, made through a weighted average of the District consumers' price indexes for clothing and house furnishings, indicates that if prices had been the same this year as they were last year instead of advancing, sales would have amounted to only 231 million dollars instead of to 256 million.

Price increases are also reflected in the reported increase in inventories. Department-store inventories were reported to be higher at the end of each month this year than they were at the end of the corresponding months last year. At the end of June the seasonally adjusted index was 343 percent of the 1935-39 average, compared with an index of 280 for June 1947 and 368 for May this year. Because the increase in inventories has been somewhat greater than the increase in sales, inventories for the first six months averaged 2.7 times monthly sales, compared with 2.5 times monthly sales in the first six months of 1947. Outstanding orders at the end of June, however, were only 1.5 times June sales, compared with a ratio of 1.6 for June 1947.

Changes in department-store sales, of course, do not give a complete picture of what is happening in retail buying. In each of the District cities for which the Department of Commerce reports changes in sales by type of retailer, percentage gains in sales of the lumber-building-hardware group of stores were higher than those of any other group. The next highest increase was reported by automobile dealers and was followed by food stores in most cities. In Miami, for example, during the first five months of 1948 the sales of the lumber-building-hardware group were up 20 percent from those of the corresponding period in 1947. Automotive sales were up 17 percent, whereas sales at food stores were up 11 percent. Department-store sales reported to this bank for the same period were up 6 percent. C. T. T.

Industry and Employment

Building and construction activity in the Sixth District, as in the rest of the country, continues at a rapid pace, and there appears to be no evidence of an early change. In this district, on the basis of statistics compiled by the F. W. Dodge Corporation, construction contracts awarded in the first five months of this year have amounted to more than 433 million dollars. This total is larger by nearly one half than the amount of contract awards during the corresponding period last year and is larger than that for the entire year 1945. Residential awards amounted to 190 million dollars of the construction contracts, which is a 46-percent increase over those of the same period last year. Other awards, amounting to 243 million dollars, were up about 51 percent. Contracts awarded in May amounted to 97.6 million dollars, about a fifth less than the unusually large amount reported for April, but, with that single exception, the largest monthly figure reported in nearly five years.

The increase over May last year was shared by all six states of the District, and for the January-May period the increase over the corresponding months was shared by five of the states. In Mississippi total awards for the five-month period were 15 percent less than they were a year ago. A part of the increase is due, of course, to the continued rise in construction costs. In the latter part of June the index of wholesale prices for building materials as compiled by the Bureau of Labor Statistics was 12.5 percent higher than it was at the same time last year. The index of over-all construction costs prepared by the American Appraisal Company and based on figures for 30 cities throughout the country was 16 percent higher in April this year than it was a year earlier.

A review of the figures for the various states of the Sixth District indicates that Florida is leading the other five states not only in residential construction but in the total value of all construction. In the January-May period, according to the F. W. Dodge Corporation figures, more than 109 million dollars in residential contracts had been awarded in Florida. That is not only larger than the total residential awards for any of the other five states but is 49 percent of the total residential awards for all six states. In total construction awards the five-month figure for Florida, 166 million dollars, is about 40 percent of the aggregate for all six District states. In the past 12 years the value of residential contracts awarded in Florida has, in each instance, been larger than that in any of the other five states in the District. In that period, too, the value of total construction awards in Florida has been the largest in the District except in 1945, 1943, and 1941.

In nearly all areas in the District, employment in construction has been increasing since the arrival of spring weather. The one reported exception is in the Tampa area where the volume of all construction has recently declined somewhat because of the continued rise in costs and the increased caution being used in granting loans for construction purposes.

In the New Orleans area increased employment in food-processing and distributing establishments, in construction, and in the smaller shipyards handling pleasure craft and small work boats has offset in some degree the declines in employment accompanying the prolonged lull in establishments concerned with ocean-going commerce. Employment in shipbuilding and ship-repair establishments has also declined substantially in the Pascagoula and Mobile areas, and it is anticipated that this decline will continue into August. If the usual pattern is followed, however, employment should increase in the early fall, the extent of the increase depending upon the volume of shipping that develops during the fall and winter months.

Employment in the Birmingham area increased in food-processing plants and at blast furnaces and steel mills in

May. There was a decline, however, at iron and steel foundries and in fabricated metal products plants.

This is the season of the year when fertilizer plants and cottonseed-oil mills are operating at low levels, and employment at these establishments has therefore declined in recent months. The only reported increase in employment in the chemical group was in the Chattanooga area where the large new nylon plant of the du Pont Company recently began operations. In most areas employment at textile mills declined somewhat, but in the Macon area it increased. Increased employment in the Jacksonville area in construction and in food-processing plants, in the service industries, and at lumber and wood-products establishments was not sufficient to offset employment decreases in transportation equipment, chemicals, furniture and fixtures, and in trade. In the Tampa area there were seasonal decreases in citrus-food processing and, to a lesser extent, in cigar manufacturing as well as a decrease in construction. Employment increases in construction in the Miami area were more than offset by declines in food and apparel plants, and by substantial decreases at eating and drinking establishments and at hotels.

While there were increases in total non-agricultural employment during May in a number of areas in the District, this bank's index of manufacturing employment declined nearly one percent, the decrease being shared by all of the six states. The May index, however, was 1.4 percent above that for May 1947.

Cotton-textile mills in the District used 3 percent more cotton in June than in the preceding month, following a decline of 13 percent from the January peak through May. In 1947 the June consumption by these mills had been 13 percent lower than in the month before. The May-June increase for this year was at mills in Alabama and Tennessee; small decreases being reported for Georgia and Mississippi. June cotton consumption this year was 6 percent greater than it was last June.

Coal output in Alabama and Tennessee was up slightly in June, the weekly figures averaging 19 percent above those for the corresponding month last year. Steel-mill operations continued at 102 percent of rated capacity in June.

The production of electric energy by Sixth District public-utility plants declined in May. The daily rate of output was 5 percent below that for April but was 12 percent higher than for May last year. Because of the prolonged dry weather, output at hydroelectric plants declined about 23 percent in May and was about 4 percent lower than in May 1947. Production by plants that used fuels, however, was up about 16 percent from April and was 28 percent greater than it was a year ago. The decrease in the daily average rate of output in May from that of April is the first decline reported since last July.

Revenue freight loaded by Southern railroads declined about 2 percent in June, but was 4 percent greater than in June 1947. In the four weeks ended June 26 there were 20 percent more cars loaded with coal than in the same period last year. Loadings of coke were up 24 percent, and loadings of forest products increased 15 percent. Loadings of merchandise in less-than-carload lots were down 9 percent, and loadings of miscellaneous freight were off 3 percent. In the 26 weeks ended June 26 total revenue freight loaded by this group of railroads was about 1.5 percent less than in the first half of 1947, but was, nevertheless, larger than in the corresponding period of other recent years. D.E.M.

Sixth District Statistics

CONDITION OF 28 MEMBER BANKS IN LEADING CITIES
(In Thousands of Dollars)

Item	July 21 1948	June 23 1948	July 23 1947	Percent Change July 21, 1948, from June 23 1948	Percent Change July 21, 1948, from July 23 1947
Loans and investments—Total	2,296,303	2,288,499	2,291,111	+ 0	+ 0
Loans—total	810,429	810,811	703,888	— 0	+ 15
Commercial, industrial, and agricultural loans	491,043	491,106	397,235	— 0	+ 24
Loans to brokers and dealers in securities	5,700	6,862	6,836	— 17	— 17
Other loans for purchasing and carrying securities	58,886	58,804	81,050	+ 0	— 27
Real estate loans	63,006	73,641	55,657	— 14	+ 13
Loans to banks	6,855	5,364	6,331	+ 28	+ 8
Other loans	184,939	175,034	156,779	+ 6	+ 18
Investments—total	1,493,201	1,477,688	1,587,223	+ 1	— 6
U. S. direct obligations	436,520	425,689	380,719	+ 3	+ 15
Obligations guaranteed by U. S.	868,816	864,680	1,020,484	+ 0	— 15
Other securities	187,865	187,319	186,020	+ 0	+ 1
Reserve with F. R. Bank	418,445	425,194	433,516	— 2	— 3
Cash in vault	44,547	43,129	41,537	+ 3	+ 7
Balances with domestic banks	173,962	166,680	170,234	+ 4	+ 2
Demand deposits adjusted	1,775,517	1,746,329	1,761,551	+ 2	+ 1
Time deposits	538,194	540,496	547,837	— 0	— 2
U. S. Gov't deposits	40,101	36,248	15,242	+ 11	+163
Deposits of domestic banks	422,599	413,488	443,963	+ 2	— 5
Borrowings	5,500	9,500	6,000	— 42	— 8

DEBITS TO INDIVIDUAL BANK ACCOUNTS
(In Thousands of Dollars)

Place	No. of Banks Reporting	June 1948	May 1948	June 1947	Percent Change June 1948 from May 1948	Percent Change June 1948 from June 1947
ALABAMA						
Anniston	3	20,167	20,394	18,894	— 1	+ 7
Birmingham	6	326,095	307,473	274,394	+ 6	+ 19
Dothan	2	10,422	11,321	9,288	— 8	+ 12
Gadsden	3	17,012	17,530	14,847	— 3	+ 15
Mobile	5	140,743	137,158	123,052	+ 3	+ 14
Montgomery	3	65,535	71,366	62,537	— 8	+ 5
FLORIDA						
Jacksonville	3	257,965	253,305	235,573	+ 2	+ 10
Miami	7	238,152	233,333	195,914	+ 2	+ 22
Greater Miami*	12	320,237	322,606	268,310	— 1	+ 19
Orlando	3	48,623	52,184	40,408	— 7	+ 20
Pensacola	3	32,001	31,422	30,069	+ 2	+ 6
St. Petersburg	3	49,597	53,389	43,443	— 7	+ 14
Tampa	3	102,927	100,994	94,501	+ 2	+ 9
GEORGIA						
Albany	2	15,756	16,270	12,685	— 3	+ 24
Atlanta	4	794,887	803,176	676,146	— 1	+ 18
Augusta	3	52,708	51,233	45,831	+ 3	+ 15
Brunswick	2	9,812	9,437	7,818	+ 4	+ 26
Columbus	4	52,630	53,285	51,021	— 1	+ 3
Elberton	2	3,643	3,984	3,265	— 9	+ 12
Gainesville*	3	13,565	14,209	10,694	— 5	+ 27
Griffin*	2	10,541	11,258	9,951	— 6	+ 6
Macon	3	60,284	57,305	51,198	+ 5	+ 18
Newnan	2	7,864	8,038	6,446	— 2	+ 22
Rome*	3	19,340	21,020	16,992	— 8	+ 14
Savannah	4	91,295	96,115	81,198	— 5	+ 12
Valdosta	2	11,315	11,510	9,472	— 2	+ 19
LOUISIANA						
Baton Rouge	3	88,624	90,706	71,884	— 2	+ 23
Lake Charles	3	32,882	33,294	25,148	— 1	+ 31
New Orleans	7	618,744	614,634	555,219	+ 1	+ 11
MISSISSIPPI						
Hattiesburg	2	14,961	15,085	14,491	— 1	+ 3
Jackson	4	122,301	123,419	103,259	— 1	+ 18
Meridian	3	26,675	26,289	22,883	+ 1	+ 17
Vicksburg	2	23,086	22,766	20,950	+ 1	+ 10
TENNESSEE						
Chattanooga	4	140,919	135,555	127,879	+ 4	+ 10
Knoxville	4	109,645	109,241	99,813	+ 0	+ 10
Nashville	6	303,516	277,729	261,912	+ 9	+ 16
SIXTH DISTRICT 32 Cities	110	3,890,786	3,848,940	3,391,438	+ 1	+ 15
UNITED STATES 333 Cities		108,629,000	97,593,000	94,447,000	+ 11	+ 15

*Not included in Sixth District total

National Business Conditions

TOTAL output at factories and mines showed little change in June and the early part of July after allowance for seasonal influences. Department-store sales were at record levels for this season. Prices of meats and steel increased sharply in July, while cotton and grains declined.

Industrial Production

Industrial production in June continued close to the May level, and the Board's seasonally adjusted index was 192 percent of the 1935-39 average as compared with 191 in May and 188 in April, when output was reduced by a strike at bituminous coal mines.

Output of durable goods increased further in June, reflecting mainly larger production of automobiles following settlement of an industrial dispute at the plants of a leading producer. Activity in the automobile industry reached earlier postwar peak rates in the first half of July.

Steel production in June continued at the May rate. Output of open-hearth steel was slightly smaller, while electric steel production increased further by 5 percent to a new record level, exceeding the wartime peak. Output of nonferrous metals was reduced somewhat owing largely to a curtailment of aluminum production during the Columbia River floods.

Production of nondurable goods in June continued at a seasonally adjusted level of 178 percent of the 1935-39 average. This level has prevailed, with slight variations, since the beginning of the year. Cotton consumption and paperboard production declined somewhat in June. Meat production, however, increased substantially following the end of a labor dispute which had curtailed packing operations since the middle of March. Activity in most other nondurable goods industries was maintained at the May rate or advanced slightly.

Minerals output declined 2 percent from the exceptionally high May rate, as bituminous coal output was reduced owing to the beginning of the miners' 10-day holiday on June 26. Crude petroleum production continued to advance.

Construction

About 93,500 dwelling units were started in June, according to preliminary estimates of the Bureau of Labor Statistics. This number was somewhat smaller than the postwar high of 97,000 in May, but still considerably larger than the 77,000 units started in June 1947. Dollar volume of all new construction put in place, according to joint estimates of the Departments of Commerce and Labor, continued to increase in June and reached a record amount of 1,600 million dollars.

Distribution

Value of department-store sales showed about the usual seasonal decline in June and the first half of July. The Board's adjusted index remained around a record level of 310 percent of the 1935-39 average, which was about 7 percent higher than in the corresponding period a year ago.

Rail shipments of grain and forest products were in substantially larger volume in June, while loadings of most other classes of freight declined somewhat from the May rate after allowance for seasonal changes. Total loadings in the first half of July were above the same period a year ago, reflecting mainly a larger volume of coal shipments.

Agriculture

Production of crops this year, as indicated by July 1 conditions, will be substantially larger than in 1947 and in record volume. The most important increase is forecast for corn, output of which is expected to be about 40 percent larger than last year's drought-damaged crop. Estimated wheat production, although smaller than last year's crop of 1.4 billion bushels, would still be the second largest crop on record. Cotton acreage is officially estimated to be up 10 percent from last year. Marketings of livestock have expanded following the end of the packing strike but the volume has remained 5 to 10 percent below year-ago levels.

Commodity Prices

The general wholesale price level rose further in July, reflecting sharp increases in prices of meats and steel products. Meat and livestock prices in mid-July were about 25 percent higher than a year ago. Prices of most other farm products and foods continued to show little change or declined in July. Cotton and grain prices were somewhat below year-ago levels.

Prices of most iron and steel products were raised by 10 percent or more in July. Coal prices were also advanced, while prices of petroleum products eased and prices of cotton goods declined somewhat further.

Bank Credit

Quarterly income-tax payments by businesses and individuals during the last half of June substantially increased Treasury deposits at Reserve Banks and reduced commercial bank reserves and deposits. Banks met the drain on reserve funds largely through sales of Government securities to the Reserve Banks and through reductions in their excess reserves. During the first three weeks of July, reserves at banks increased somewhat. The Treasury drew down its balances to retire bills. Federal Reserve Bank holdings of bills were thereby reduced, but the System made net market purchases of Government securities in approximately equal volume and thereby supplied banks with additional reserves.

Commercial and industrial loans increased moderately in banks in leading cities during June and the first half of July. Consumer and real-estate loans continued to expand. Banks reduced further their holdings of Government securities.

Security Markets

Common stock prices declined sharply in the third week of July, following four weeks of relatively little change. A substantial portion of the mid-March to mid-June gain in prices was lost.

Prices of Government bonds changed little in the first three weeks of July, following some decline in June, but prices of corporate bonds declined further.

THE BOARD OF GOVERNORS