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Industrial Research and Scientific Education

ECONOMIC progress of course requires change. There must be changes in the use of human and natural resources, including the proportions of such resources that are devoted to various types of production. Under the American system of free enterprise most of the responsibility for making these changes lies with private business. To make them business has during recent years increasingly sought the aid of science in the form of industrial research.

In the Sixth District two institutes of industrial research, at the Georgia School of Technology and the University of Chattanooga, demonstrate one way that colleges and universities can directly assist Southern industry to better economic conditions. That industrial research has grown as it has at the other District colleges and universities, where it greatly resembles the work of these two institutes, is additional proof that industry is increasingly taking advantage of this means of making required economic adjustments.

In the Sixth District states, according to the National Research Council, there were 129 research laboratories in 1946. This figure represented more than half again the number in 1938 and two and three quarters times the number in 1933. In the entire Southeast in 1920 there were only nine such laboratories. Although the rate of increase exceeded the rate for the United States as a whole, the number made up only 5.3 percent of all industrial-research laboratories in the United States. On the other hand, according to the Bureau of Labor Statistics, in November 1946 manufacturers in the Sixth District states employed 7 percent of all United States manufacturing workers. Many of the laboratories within the District, moreover, are relatively small. Therefore, on the basis of both number and size, many needs are still to be met.

In a private-enterprise economy, industry may choose from several different methods of conducting industrial research. Some large firms have developed their own industrial-research laboratories. Many problems, however, are too great for most private firms to seek solutions to them through their own research programs. Furthermore, the solutions of some problems of direct concern to business are so vital to the general welfare of the nation that they should be made available to the public and to industry in general. For problems such as these, research facilities have been developed and supported by the National and state governments.

The Southern Regional Research laboratory at New Orleans, described in the April 1945 *Review*, represents a type of industrial research supported by the Federal Government. Primarily its staff studies the problem of so utilizing the South's agricultural products that they will be more useful to industry. Both consumers and agricultural producers in the region also benefit by this program. The Government supports many other research institutions over the country.

More directly concerned with the solution of local and state-wide problems in the region are the research establishments at many universities and colleges in the Sixth District. The scope and nature of the work varies among these institutions with the type and extent of facilities available and the nature of the state's problems. A purpose fairly typical of the agencies at other state institutions is that of the Engineering Experiment Station at the Alabama Polytechnic Institute in Auburn. Its purpose is "to assist industry in the state in improving manufacturing processes and in reducing and utilizing waste products, to study undeveloped natural resources, and to suggest methods by which they may be converted into marketable products." In addition to the one at Auburn there is another in Alabama, the Engineering Experiment Station at the state university. Mississippi State College has a research laboratory. There are engineering experiment stations also at the University of Florida, Louisiana State University, the University of Tennessee, and the Georgia School of Technology. All of them were established to bring the assistance of scientific research to the industries of the respective states. These experiment stations not only have their own equipment and full-time staff members but, in addition, they can use both the teaching staffs and the scientific and technical apparatus of the other departments of the school.

The general type of Government research, however, does not always provide complete solutions to the problems of the businessman who is seeking aid through science and who does not have the financial resources for establishing his own research laboratory. Although industries may share generally the results of Government research and individual industries may secure general assistance, public research agencies in many cases cannot accept confidential projects nor will they always allow the industry to have the patent rights. In order to provide industrial-research facilities for small businesses in general and other businesses which want work done on special projects leading to patents, private research agencies like the Southern Research Institute, in Birmingham, have been established. The World Research Institute of Atlanta, described in the May 1946 issue of the *Review*, is an example of the more specialized type of research establishments.

Since industrialists know that the nation's universities and technical schools have provided much of the basic knowledge upon which industrial research is founded, they have often

turned to them for assistance. In addition they have tried to make arrangements by which industry might secure the research services of institutions of higher learning as they do the services of private research laboratories.

Many universities and colleges have developed policies under which they can do work for private industry. Patent arrangements differ among the various universities in the nation, but out of a total of 42 universities surveyed by Ralph A. Morgan, of the University of Florida's experiment station, 25 had made some provision for transferring patent ownership to private industry. In the District, the Board of Control of the University of Florida, for example, has instituted a policy of patent arrangements differing, in individual cases, with what it believes will best serve the public interest. Contracts are made directly with the university. At some of the other universities and colleges the contracts are made with separate corporations affiliated with the schools. All the plans, however, agree on the principle of seeking to assist the region's economic progress by improving its industries.

One of these institutes, the Industrial Research Institute of Chattanooga, is affiliated with a private university. The Georgia Tech Research Institute, on the other hand, represents the way a state-supported institute makes its research facilities available to industry. The latter is an outgrowth of the Georgia Tech Experiment Station; the former is a newly created organization. Though at both institutes industries must bear the expense of their own research, they have the advantage of already existing facilities. Both organizations believe that there are peculiar advantages to this type of an arrangement. Both institutes represent the fruition of plans that had been made several years previously.

Tech s Engineering Experiment Station

The State Engineering Experiment Station set up by the Georgia state legislature in 1919 at the Georgia School of Technology was the first to be established in the Southeast. It is the industrial and engineering agency of the University System of Georgia. Its purposes are to "aid directly in the development and integration of industrial and agricultural activities and the better utilization of resources in the South." The station is administered by a director and an advisory council of faculty members of the various units of the university system. In addition to the director, Gerald A. Rosselot, the staff is made up of an assistant director; full-time research fellows, assistants, and consultants; faculty advisors; research graduates; and technical assistants.

The experiment station, during its 27 years of operation, has made notable progress in fundamental research as well as in the practical applications of such research. Fundamental research, which is an accumulation of scientific knowledge upon which applied research is based, is necessary to a complete program of scientific education. It is, indirectly sometimes, the basis of scientific industrial developments.

Improved methods of making rayon from Georgia pine pulp, obtaining textile fibers from flax, and extracting the magnesium from olivine minerals found in the Augusta area are examples of the results obtained in the applied research that is being carried on by the staff. The new Georgia industries thus created are based on a background of technical information concerning manufacturing and on techniques developed to meet the economics of costs and markets. Another example of such applied research is the work now being carried on at the station in the processing of domestic flax for textile use.

Soon after its organization in 1933 the Tennessee Valley Authority became interested in the possibilities of developing flax as a new crop for the Tennessee Valley and the surrounding regions. Flax processing, it was believed, might provide a new industry for the region and new opportunities for Southern textile manufacturers. There was finally the possibility that there also might be economic potentialities in flax by-products. The many unique and superior qualities of linen were already widely known. If it could be produced inexpensively, flax might, therefore, fill the need of the South for new crops to take the place formerly filled by cotton. Because the price was high it limited the possible uses and thus narrowed the market. Technical methods then employed made production so expensive that the fibers could not be offered at a price low enough to widen the market. To explore the opportunities of lowering costs through technical improvements a co-ordinated program of investigation into the agricultural aspects was set up by the Georgia Experiment Station at Griffin and by the Georgia State College of Agriculture at Athens. During the same time research on the processing of flax straw and fiber and their utilization was under way at the State Engineering Experiment Station at Georgia Tech.

The Georgia Tech experiment station has published some of the results of its research in two bulletins. Developments in decortication, a process for removing the bark and the woody core from flax fibers, are fully described in one bulletin, and a processing of the fibers for textile use is explained in the other. Future bulletins will deal further with textile processing and economic considerations. Although conclusive answers have not been obtained for all the problems involved, J. L. Taylor, a faculty research associate of the station, says, "it is hoped that the information presented . . . will stimulate further considerations . . . and thus help to lead to the commercial development of an economic new industry for the South."

This is but one of many investigations in applied research that have been conducted or are now being carried on. Recent issues of the *Research Engineer,* which is published by the State Engineering Experiment Station, report such projects as investigations for food-freezing improvements, a determination of atomic weights from density and X-ray data, and engineering control of welding apparatus. One issue describes a portable photofluorographic X-ray machine developed at the station for making rapid X-rays in tubercular-case finding programs.

In addition to making scientific investigations, the station has undertaken a number of industrial studies. Two studies have recently been prepared under the direction of Joseph B. Hosmer, industrial economist. Mr. Hosmer describes opportunities for the manufacture of more paper in Georgia and explains the need for more peanut-processing plants in the state. Economic studies for seven different Georgia areas have been completed, the latest of which describes the economic problems in Northeast Georgia and the existing economic opportunities capable of development.

This extensive research program requires a great deal of scientific equipment. Nor would it be possible to carry on the program without the assistance of the faculty at Georgia Tech and the equipment used in instruction and research.

Though the experiment station is housed in a research building erected in 1939, its activities are campus-wide. Its staff uses the equipment of such departments as those of aeronautical engineering, architecture, biology and public-health engineering, ceramic engineering, chemistry, civil engineering, economics and social science, geology, mathematics, and psychology.

Georgia Tech Research Institute

Since the experiment station had a background in scientific investigations, many industrialists and other persons turned to the staff for help in solving their individual problems. Recently, for example, a young man devised a product that had promise. He was unfamiliar with the means of securing a patent and manufacturing the product. The staff at the station told him what to do to apply for his patent and, in addition, suggested improvements in methods of production. During the war a manufacturing plant in Atlanta found difficulty in maintaining its production under the methods it was using. Under contract, the staff at the station developed new machinery and devised better production methods for the plant. With these improvements the firm not only overcame its immediate problems but found new market opportunities open to it. A newly developed plastics concern went through the headaches of preliminary production at the station while awaiting delivery on factory equipment. Recently a new ceramics plant was started at Marietta, Georgia, on the basis of experimental work carried on with Georgia Tech scientists.

The increasing number of requests and the many opportunities that an expanded program would offer the area led in the early part of 1946 to the formal establishment of a central agency under a charter granted by the state. The need for such an agency had, however, been recognized a number of years before. In 1937 the late Preston S. Arkwright, president of the Georgia Power Company; M. E. Ferst; and Fuller E. Callaway, Jr., received a charter from the state for the Industrial Development Council. Though the objectives of the council were much the same as those of the institute, a shortage of funds somewhat limited the council's activities. The charter of this council furnished the basis for the Georgia Tech Research Institute. A nonprofit corporation, the institute is organized "to implement and coordinate the utilization of Georgia Tech research facilities by industries, associations, and Government agencies, or individuals who may require these services in the search for better products, in the development of technical processes, or in the prosecution of fundamental research."

It is governed by a board of 12 directors, with representation equally divided among the alumni, the faculty, and industry. The officers are Mr. Callaway, chairman of the board; Blake R. Van Leer, vice chairman of the board and president of Georgia Tech; Harry L. Baker, Jr., president; Dr. Rosselot, research director and secretary; and Cherry L. Emerson, treasurer and dean of engineering at the school. Industrialists in the state contributed the original funds for the institute.

As a corporation it is able to make contracts, with persons and industries, that it could not assume under a different type of organization. These contracts have doubled in value since 1945 and expanded a hundredfold since 1937.

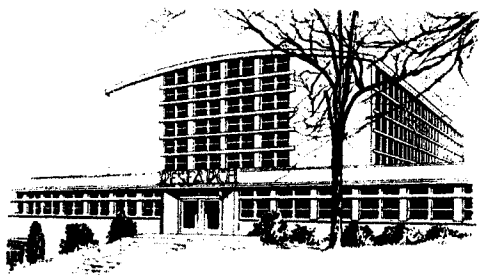
Industrialists or other persons who request the service of the scientific staff are referred to the institute and the experiment station. There they talk over their problems with the director of research, who may suggest conferences with the staff of scientists or with faculty members who are specialists. Sometimes, as the result of a conference, it may be decided that an idea has already been fully developed or that it is impracticable. Where a program of industrial research seems to be worth while and feasible the staff of the institute estimates its cost and enters into a contract with the sponsoring person or firm.

Under the terms of the contract the sponsor of the individual research project agrees to pay the salaries of the staff members employed on it, the cost of special equipment bought for it, and overhead expense in a designated sum. Charges, which are payable monthly, may not exceed the amount agreed upon. Each month it submits a report on the progress of the work. The sponsor of the project is aided in securing patent rights. Each person working on the project is required to sign an agreement that he will not disclose any information concerning the project and that he will claim no patent rights for himself. Further protection is given the sponsor by a provision in the contract that the institute will carry on no investigations of a similar nature for other persons during the term of the contract. On the other hand, the sponsor is forbidden to use the name of the institute in its publicity without permission.

In turn, the institute has an arrangement with the experiment station. Through this arrangement the institute's activities are carried on at no expense to the state. Permanent staff members may be assigned to the project, and in some cases, at additional cost to the sponsor, specialists from the faculty may be employed.

One piece of equipment the institute has use of merely because it is affiliated with an engineering college, according to the director, is an electron microscope recently acquired by the experiment station. Only 200 of them have been built, and fewer than that are in the United States. The instrument has revealed details of particle sizes, shapes, and distribution that until the time of its development were unknown. In contrast with the optical microscope which can, through photomicroscopy, make enlargements of 2,000 to 3,000 times, the electron microscope makes pictures more than 100,000 times the original size.

Since it reveals viruses invisible through other instruments, it is of great value in public-health work. In the ceramics industry, where particle sizes are important, the electron microscope reveals many unknown details. It is helpful to pulp and paper processing, in metallurgy, and in textile and chemical work. Despite its many uses, it is not an instrument that would ordinarily be used in a manufacturing plant even if the manufacturer were able to secure one. It is also unlikely that an operator of the necessary skill could be obtained. Under the plan of the Georgia Tech Research Institute, however, the instrument can be used there whenever it may be of help in any research project.



Georgia Tech Research Building

Another recent acquisition of the experiment station is the A.C. network calculator now being installed in a special new building, at a total cost of a quarter of a million dollars. With this equipment laborious computations to determine the effects that changes for improvement would have on a power system are no longer necessary. Instead, since each component of a power system has its counterpart in the calculator, engineers can set up a miniature system and see for themselves the actual effects of the changes. A system that spreads over several states, for instance, can be compressed within the confines of one room and its operations observed on the master instruments. There are only 17 of these calculators in the United States, but through the Georgia Tech Research Institute the power companies in the Southeast now have access to the services of one.

Thus the institute can serve both large and small industries. The individual inventor with a really good idea is given aid just as valuable as the largest industry is given.

University of Chattanooga

The accomplishments of the Industrial Research Institute at the University of Chattanooga demonstrate how a private university that is not primarily a technical school can contribute to the industrial research. The University of Chattanooga is a coeducational institution tracing its origin to the East Tennessee Wesleyan University, established in 1866. During the years its student body, endowment, and equipment have grown steadily. Approximately 2,800 students attend its day, evening, and summer classes. As it is at other primarily liberal-arts schools, training in the sciences is an integral part of the work.

The people in charge of the university during its more-than-80 years of operation have from time to time adapted its policies to better serve the community and the region. In recent years the aid that science might give to industry in the section has become more and more apparent to them. As a consequence a number of persons both in the university and outside worked for the creation of the industrial research institute.

This institute is a nonprofit corporation set up to provide four types of services: performing research for industries, conducting studies in pure and applied science, training scientists and scientific workers, and maintaining an up-to-date science library with a reference service. It is governed by a board of directors and an advisory committee. David A. Lockmiller serves in a dual capacity as president of the university and the institute. S. F. Bretske is vice president and comptroller, John S. Fletcher legal counselor; and Raymond B. Seymour director. Two scientists and the presidents of seven manufacturing companies make up the advisory committee.

Contributed funds made it possible to erect a modern research building on the campus and to furnish the building with the necessary scientific and technical apparatus in time to begin operations in the fall of 1945. In addition to using the buildings and equipment of the institute, which are valued at a quarter of a million dollars, the staff may employ the library, laboratory, and business-office facilities of the university.

The officers and staff of the institute report important accomplishments during its first year of operation. It has become self-supporting in that short period. Thirty-seven contracts for scientific investigations were made. Six patents for processes developed at the institute were applied for, the patents being assigned to the sponsoring firms. Two processes developed by the institute's staff have already been placed in production. Apparently a combination of factors contributed to this progress. They are the institute's plan of organization, the increasing awareness by Southern industrialists of the opportunities provided by research, and the type of staff selected to carry on the work.

Although the institute is a nonprofit corporation, it expects the industries that reap the advantages of industrial research to bear the immediate costs. Contracts between sponsoring firms and the institute provide, therefore, that the sponsoring firm shall pay the cost of the research personnel employed on the projects and a fair share of the overhead. As in other research institutes, provisions are made to protect the confidential nature of the project and patent rights are assigned to the sponsor.

A staff possessing the qualifications that are required for key personnel at the institute is difficult to secure. Dr. Seymour, who has a Ph.D. degree in organic chemistry, has had a great deal of experience in modern industrial research. Dr. Seymour says a keyman at the institute must have, as qualifications for that position, a Ph.D. degree, teaching experience at a university, and five-years' practical experience in research. In addition to having on its staff men qualified for many fields of industrial research, the institute has available the services of the scientists on the faculty.

The ability of the institute to acquire qualified men is in part explained by the professional environment which is maintained. During the short period of the institute's operations, the relatively few staff members have presented more than 30 scientific papers to technical societies and published more than 15 technical papers in addition to making numerous talks to scientific groups throughout the South.

The staff at the institute uses such instruments as the Dietert Emission Spectrograph, Sargent Recording Polarograph, Aminco High Pressure Hydrogenator, Rockwell Hardness Tester, Dillon Universal Tester, Bausch and Lomb Metallograph, Magnaflux, high-frequency heaters, and other very specialized equipment. Many of the practical results obtained in the use of these instruments are more comprehensible to the layman.

A Southern textile firm saw that there was a good opportunity for an improved disposable diaper. Its executives went to the research institute for help.

Consumers want something that is cheap, absorbent, soft, has a high wet strength, and a clean-white appearance. The scientists knew that a cotton fabric would be too expensive. Paper could be too stiff, insufficiently absorbent, or low in tensile strength. They then decided to explore the possibility of bonding cotton in a weblike form together with a plastic in such a way that the product would be as strong as necessary and still be absorbent. They found that they would need at least two plastics, one that would bond the material together on one side and another that would make the opposite side water repellent. In the end six different plastics had to be used, two of which were not produced commercially. The staff secured patents on the process and assisted the manufacturer to get into production.

Though the part science has played in the development of plastics is widely known, the importance of science in the

improvement of older familiar products is sometimes overlooked. A nationally advertised product must nowadays have uniformity of quality in order to maintain its consumer acceptance. The manufacture of candy years ago was somewhat akin to the making of candy at home. Only by experience could the maker learn to keep fudge from crystallizing at times and taffy from sometimes being too soft. With long practice candy makers developed the skill and judgment necessary to make the required adjustments in operations. In those days they also depended upon the reliability of raw-material suppliers and were able to turn out a product of somewhat uniform quality. Under present conditions because of the lack of uniformity in raw materials and the shortage of skilled candy makers, uniform quality is difficult to achieve under old production methods.

One large candy company in the region, a client of the institute, is anticipating the time when consumers will use more selection in their buying and will no longer overlook product deficiencies. The institute advised the company in the development of economical procedures for a laboratory, in the selection of supplies, and in the training of technicians. At the same time the company is sponsoring a research project for additional improvements in its candy.

The staff of the institute is also investigating many other practical problems. Projects now being sponsored by industries cover pharmaceuticals, textiles, foods, horticulture, metals, ceramics, paper, sugar, wood, space heaters, plastics, dye-stuffs, and fine organic chemicals. Various sponsors have made grants to the institute for fundamental research that total more than $50,000. In projects of the latter type, several firms can band together to sponsor research that will benefit industry generally.

Research and Scientific Education

During the war it became apparent to everyone that science was vitally essential to national security. The opportunities science opened for economic advancement were also made clear. But this same war deprived the nation of a large number of people who would have been qualified to carry on the scientific and technical work necessary for this progress. Vannevar Bush, director of the Office of Scientific Research and Development, reported to the President recently that 150,000 scientific and technological students failed to receive their bachelor degrees because of the war. Dr. Bush estimates that even by 1955 the deficiency in the number of scientists holding graduate degrees in chemistry, engineering, geology, mathematics, physics, psychology, and the biological sciences would amount to 17,000. And merely maintaining the 1940 ratio of engineers to population would require an increase of 76,000 by 1950. The increasing use of science will raise the demands still further. In the South, where there was a comparatively small number of scientists before the war, the needs are even greater.

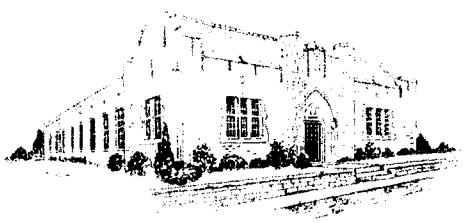
If a dearth of scientific personnel is troubling the industry, the colleges and universities are feeling the lack acutely. Necessary training of scientists and technicians to overcome the deficit is handicapped by shortages of teaching personnel and funds. James R. Killian, Jr., vice president of the Massachusetts Institute of Technology, recently wrote, "Industry can always outbid the colleges on a salary basis, but I believe it would be an extremely shortsighted policy for industry at the present time to draw men from the colleges at the expense of the present effort to increase the nation's reservoir of trained personnel." Schools that have established research institutes believe they have devised a way by which industry in the region can reap the benefits of research and at the same time assist in the region's scientific training.

The sponsors of the research projects at the Georgia Tech institute agree in their contracts that the scientists who are conducting their research may, in addition, teach provided teaching time does not exceed two hours a day. This plan works to the advantage of the sponsor, for a scientist who is teaching is more likely to remain alert to new developments not directly in his field than is one who spends all his working time in his laboratory. The advantage to students is readily apparent because of their contacts with men performing research in practical problems. For the graduate student, who himself does research work, such an arrangement is of even greater importance than it is to the undergraduate.

Through arrangements like these, the schools are able to attract to their campuses specialists who would ordinarily be on the faculties of only much larger colleges and universities. At the Chattanooga institute, where an arrangement in regard to teaching similar to that at Georgia Tech is in effect, members of the staff are offering advanced courses in spectrography, thermodynamics, plastics, cellulose, and carbohydrates. Money has been subscribed for the erection and equipment of a new chemistry building that will greatly increase the university's facilities for training future scientists.

Even though not all the graduates of such school as Georgia Tech are science graduates and even though the majority will not be doing research work, the attitudes they acquire at the school greatly influence the attitude of the industries in which they are afterward employed toward research. Dr. Rosselot believes that one result of the Tech institute's program will be the development of a body of research-conscious graduates. A. R. Gardner of *Modern Industry* recently advised the industrialist to "Make sure that someone in the company takes full responsibility for directing research." The person placed in such a position should be fully aware of both the potentialities and limitations of industrial research. He should understand the "research language".

Since economic progress involves change, it requires a recognition of the need for change. It next requires the setting up of the organization and machinery to make the necessary advances. Southern industry has already progressed beyond the first stage. Agencies such as the research institutes at Georgia Tech, at the University of Chattanooga, and at other Southern educational institutions and such as other private and educational foundations furnish the organization through which the advances that can come from industrial research are accomplished.



Industrial Research Institute, University of Chattanooga

CHARLES T. TAYLOR

Bank Financing of Sixth District Business

PART of the postwar need for business financing has been met by using the bank deposits and other liquid assets that business and industry accumulated during the war. Business financing needs, however, are continuous, and many businessmen and industrialists have found they needed even greater amounts to carry on their expanded operations than they had accumulated. The increased amount of loans made by Sixth District member banks during 1946 indicates the extent to which Sixth District member banks have been meeting this postwar need. By November 20, 1946, member banks were helping to finance industries, trades, and services with loans amounting to 565 million dollars. These loans were at their 1946 peak during November.

Questions about the types of businesses to which this sum was loaned, the number of these loans, their amounts, maturities, interest rates, repayment methods, and securities are answered by the member banks in a survey made recently by the Federal Reserve banks. In the Sixth District 128 member banks whose loans accounted for approximately three fourths of the dollar volume of all Sixth District member-bank loans answered questions about approximately 7,500 loans. Because these banks make up a representative sample it is possible to estimate with a high degree of accuracy the numbers, amounts, and the characteristics of such loans at all District member banks.

Member banks had more than 45,000 business loans on their books on November 20, ranging in individual amount all the way from $28 to more than a million dollars. These loans were those made to commercial and industrial concerns and those made for business purposes on real estate. They included neither open-market paper purchased nor Commodity Credit Corporation loans.

The diversity of the District's economic life is strikingly revealed in an analysis of these bank loans. Because practically every type of business and industry finances through banks, a description of the kinds of borrowers, their assets, and their type of business organization is also a description of the general characteristics of the District's businesses.

Because retail establishments are the most numerous businesses in the District, they constitute the largest group of borrowers at the banks, accounting for 37.7 percent of the total number of business loans. Retailing is also more likely to be a comparatively small-scale operation than are most other kinds of business. Although there are some retail firms of relatively great financial size the commoner type consists of smaller stores such as the corner grocery, drug store, filling station, jeweler, furniture store, and the like. Out of the more-than-17,000 loans made to retailers by the banks, therefore, about 72 percent were to stores whose total assets were less than $50,000 and 96 percent were to businesses with assets of less than $250,000. The comparatively few giants in the retail business having assets of more than five million dollars each constituted less than one tenth of one percent of the total number of borrowers.

Because a retail establishment is usually a small business, it is also more often an unincorporated concern owned by a single individual or by partners than it is a corporation. Therefore, of the total amount of money loaned to retailers 71.4 percent was loaned to unincorporated businesses. The comparatively small size of the business and the frequency of needs for financing in comparatively small amounts, also help to explain why, although the retailers were the most frequent borrowers, the total amount they borrowed made up only 16 percent of the total amount of member-bank loans.

Manufacturing concerns usually carry on their operations on a larger scale than do retailers and, consequently, usually require financing in larger amounts. Even in this field of lending, however, the banks reported that loans to smaller manufacturing concerns were many times greater in number than were those made to the larger concerns. Manufacturing and mining firms having assets of less than $50,000 accounted for 45.9 percent of the total number of loans in this category. Ten percent of these loans, however, were made to concerns whose assets were more than $750,000, and 2.7 percent went to those with assets of more than five million dollars. Moreover, because of their greater needs for financing on a larger scale, those companies with assets of more than five million dollars borrowed almost three times the amount borrowed by the concerns whose assets amounted to less than $50,000. In manufacturing as well as in retailing, however, the majority of the borrowing concerns were unincorporated, and such concerns accounted for 59.6 percent of the total amount of manufacturing loans.

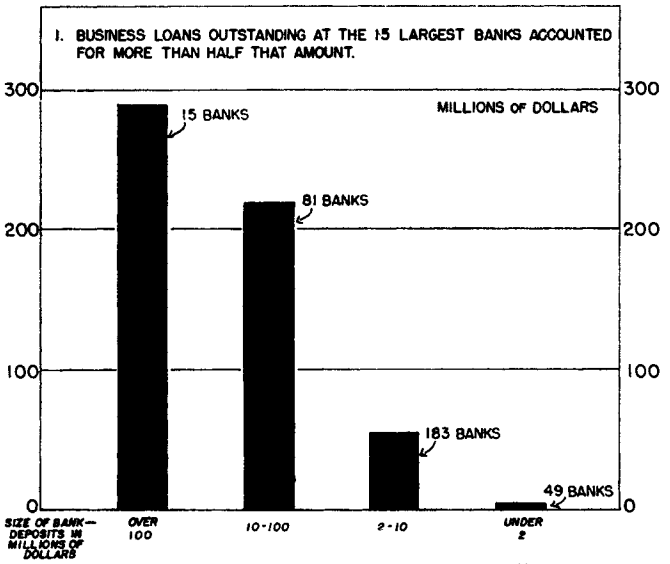
Large size was more characteristic of public-utility borrowers than it was of any other type. This category includes such firms as the railroads, the telephone and telegraph, power, and gas companies as well as such small firms as local hauling and transportation concerns and public warehouses. Those concerns with assets of more than five million dollars accounted for 54.5 percent of the total amount of loans to all utilities. The 6.2 percent of the total recorded as loaned to public utilities having assets of less than $50,000 each is explained by the inclusion of cotton warehouses in the classification.

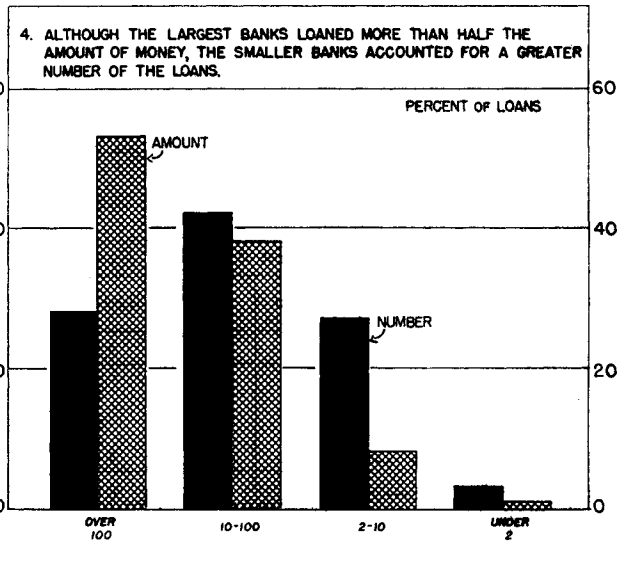
Next to retailers in the number of loans, were the wholesalers whose borrowings constituted 14.9 percent of the total number. Manufacturing and mining concerns accounted for 14.7 percent of the total number. Because of the different characteristics of the various kinds of business, however, the order of their importance as measured by dollar volume was different. Loans to manufacturing and mining concerns made up 27.4 percent of the total dollar volume, followed by those to wholesale-trade concerns of 23.4 percent and those to retail-trade concerns of 15.6 percent. Details are shown in Table I.

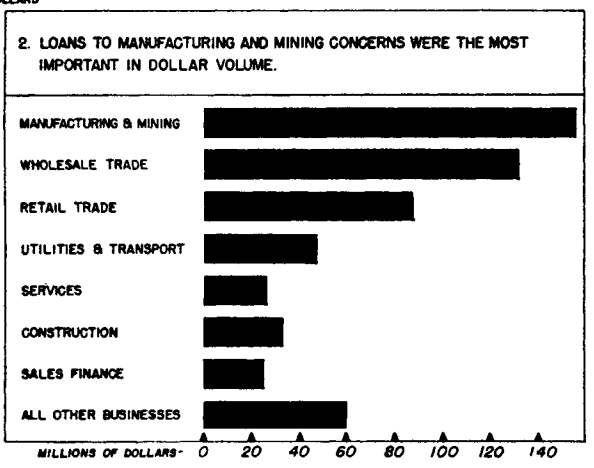
Because there are many small concerns of modest financial requirements in almost every type of business and industry, small banks can diversify their loans. The overwhelming number of small concerns even in the manufacturing field is partly accounted for by the inclusion of sawmills. It helps to explain why the smallest banks, those with assets of less than two million dollars, made 31 percent of the amount of their loans to manufacturers, whereas all member banks made 27.4 percent of their loans to manufacturers. Even at the largest banks, those with deposits of more than 100 million dollars, loans made to manufacturing and

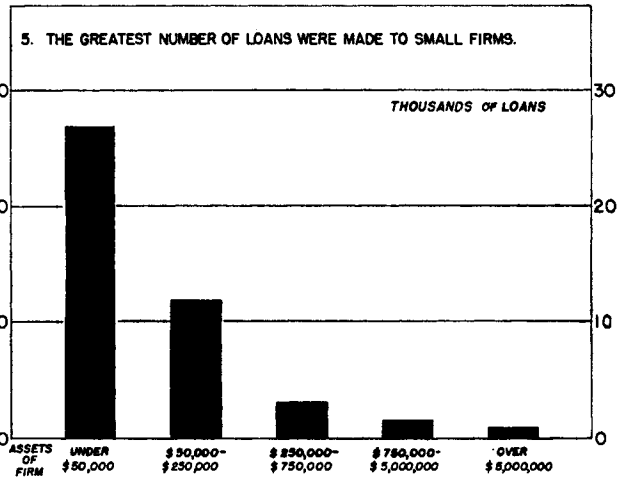
BUSINESS FINANCING BY SIXTH DISTRICT MEMBER BANKS

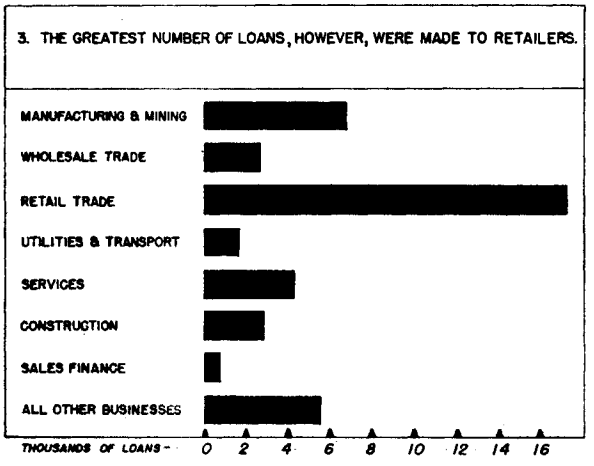
Sixth District member banks were meeting the many-sided financial requirements of industry, trade, and services with loans, which on November 20, 1946, amounted to 565 million dollars.

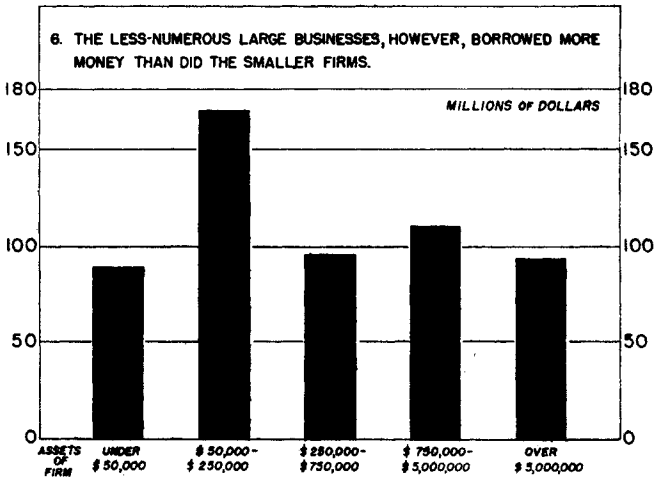












mining concerns constituted only 29.1 percent of their total business loans. Because of their greater financial requirements, the larger firms naturally met their needs at the larger banks. No business loans to firms with assets of more than $250,000 were reported by the smallest of the banks, whereas the loans to manufacturing and mining concerns with assets of more than five million dollars constituted about one third of the industrial loans made by the largest banks. These factors also explain the greater concentration both of loans to retailers through the small banks and of loans to public utilities through the larger banks.

Table I
BUSINESS LOANS OUTSTANDING ON NOVEMBER 20, 1946, AT ALL SIXTH DISTRICT MEMBER BANKS

Business of Borrower	Amount of Loans		Number of Loans	
	Millions of Dollars	Per-cent	Number	Percent
Mfg. and Mining—Total	155.0	27.4	6,664	14.7
Food, liquor, tobacco	50.8	9.0	1,403	3.1
Textiles, apparel, leather	23.9	4.2	564	1.2
Metals & prod., machy., trans. equip.	18.6	3.4	802	1.8
Pet., coal, chems., rubber	12.4	2.1	424	.9
All other	49.3	8.7	3,471	7.7
Wholesale Trade—Total	131.9	23.4	6,804	14.9
Food, liquor, tobacco, drugs	52.8	9.4	2,611	5.7
Apparel, dry goods, shoes & raw mtrls.	32.8	5.8	688	1.5
Hsfshngs. appliances; machy. & metal products; hdwe.; bldg., plumbing & htg. mtrls	26.4	4.6	1,673	3.7
Autos, and parts, petroleum	5.5	1.1	672	1.5
All other	14.4	2.5	1,160	2.5
Retail Trade—Total	88.1	15.6	17,184	37.7
Food, liquor, tobacco, restaurants, drug stores	21.1	3.7	5,524	12.2
Apparel, dry goods, dept. stores, mail order	16.3	2.8	2,154	5.8
Hsfshings. & appliances, bldg. mtrls. & farm implements, plumbing & heating equip.	28.4	5.1	4,208	9.2
Autos & accessories, filling stations	12.4	2.1	2,775	6.1
All other	9.9	1.9	2,023	4.4
Other—Total	190.2	33.6	14,904	32.7
Utilities	46.6	8.3	1,608	3.5
Services	26.2	4.6	4,321	9.5
Building and constr.	33.5	5.9	2,845	6.2
Sales finance	24.5	4.3	655	1.4
All other	59.4	10.5	5,475	12.1
All Business	565.2	100.0	45,556	100.0

Bankers apparently considered the general character and credit standing of their borrowers to be sufficient security for more than one third of the amount they loaned to borrowers. Personal security, either by an endorsement or by a comaker, was considered sufficient for about 10 percent more of the total amount.

Nor was this borrowing on unsecured loans confined to large businesses. Retailers, the majority of which are small firms, were able to borrow 35.5 percent of their total funds without specific security. An endorsement or a comaker was sufficient security for 15.9 percent more of their total borrowings. Loans without specific security were, however, more important in dollar volume to the manufacturing and mining concerns than they were to any other class of business.

For the borrowers as a group the most important general type of security offered consisted of liens on so-called liquid assets, which include Government and other readily marketable securities, accounts receivable, life insurance, savings accounts, and Government claims. Such liens secured 18.5 percent of the total volume of loans made by all member banks, but there was a general tendency for them to be used less frequently at the smaller banks than they were at the larger ones. This type of security was more important to construction concerns.

Next in importance as security for all the borrowers were liens on inventories through such instruments as trust receipts, assignments of title, and warehouse receipts. Contrary to what might ordinarily be expected, inventory liens were not used to a great extent by retailers, but they were used to secure one third the total amount of loans made to wholesalers. Because these borrowers included a number of cotton merchants whose loans were secured largely by warehouse receipts, this security was very important to the smaller banks in the cotton-growing sections of the District.

Real estate was used as security for about 13 percent of the dollar volume of all business loans. Loans to construction concerns were more often based on this type of security than were loans to other types of businesses. Although liens on equipment secured 6.4 percent of the total loans made by Sixth District member banks, this type of security was of major importance only to public utilities, 43.3 percent of whose loans were secured by liens on equipment through assignments of title or chattel mortgages.

Government guarantees either through RFC participation and blanket guarantees or war-contract loans were the least important of any of the major types of security. For all the banks they secured only 1.7 percent of the total amount that had been loaned to business. They were used to the greatest extent by the construction industry.

Table II
SECURITY FOR BUSINESS LOANS SIXTH DISTRICT MEMBER BANKS ON NOVEMBER 20, 1946

Type of Security	Percent Distribution of Dollar Amount of Loans							
	All Bus.	Mfg. & Mining	Whsle. Trade	Retl. Trade	Pub. Util.	Serv-ices	Constr.	All Other
Unsecured	34.2	46.5	32.7	35.5	35.0	27.8	23.7	18.0
Secured:								
Endorsement or comaker	9.7	9.6	9.1	15.9	4.9	13.7	9.7	5.7
Liens on Invts.	13.1	11.3	33.3	6.7	1.1	1.6	1.0	5.8
Liens on equipment	6.4	2.1	1.3	4.4	43.3	5.6	11.0	2.4
Liens on R. E.	13.0	9.1	5.9	14.0	2.9	18.3	18.6	31.9
Liens on stocks and bonds, accts. rcvbles., life ins. & other liq. assets	18.5	15.9	15.5	18.9	11.6	27.9	28.0	24.0
Govt. guarantee	1.7	3.0	1.2	.5	.8	2.6	3.7	1.0
All other	3.4	2.5	1.0	4.1	.4	2.5	4.3	11.2
All loans	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The type of business appears to be of more importance in determining the period for which the loan is granted than does the size of the business. The banks reported that 86 percent of their business loans were made for periods of less than one year. Almost all their loans to sales-finance companies are made for one year or less. Only about 10 percent of the loans to manufacturing and mining concerns and wholesale- and retail-trade concerns were made for periods of more than one year. There are, however, exceptions to this general rule.

Bank Announcements

THREE banks became members of the System during February. The first of these new members was the Blackshear Bank, Blackshear, Georgia, which was admitted to membership on February 5. Organized in 1891, it now has capital stock amounting to $50,000, surplus of $50,000, and undivided profits of $116,000, and deposits of more than $2,000,000. The officers are Leo J. Allen, president; S. F. Memory, vice president; George D. Walker, cashier; and Jeannette Purdom, assistant cashier.

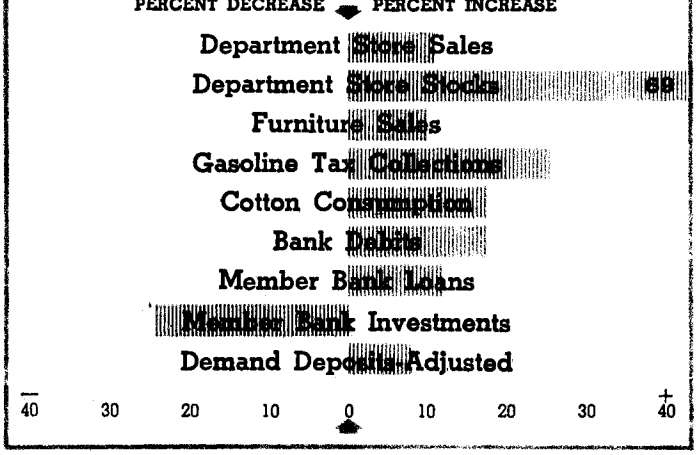
The second bank to be admitted to membership was the Citizens Bank, Colquitt, Georgia, which came into the System on February 6. This bank was organized in 1924. It now has common stock of $40,000, surplus of $40,000, and total resources of more than $2,000,000. G. C. Jinks is president, Mrs. Dola Bush vice president, D. B. Bell cashier, and H. L. Harrell assistant cashier.

The last of the three banks was the Citizens National Bank of Orlando, Orlando, Florida. This is a newly organized bank which opened for business on February 17 with common stock of $200,000, surplus of $175,000, and other capital accounts of $25,000. Its deposits at the close of business on the opening day totaled $756,000. The officers are Carl C. Hall, president; W. L. Hart, vice president; and E. E. Leggett, cashier.

A new addition to the Par List during the month was the Peoples Bank, Blackshear, Georgia, a nonmember bank which began remitting at par on February 10. The Peoples Bank opened for business on July 13, 1946, and operated as a private bank until August 5 of that year, when its status was changed to that of a state bank. It has capital of $50,000, surplus of $50,000, undivided profits of $5,838, and deposits of $600,374. The officers are J. Bruce Truett, chairman of the board; John Schreiber, vice president; N. W. Burt, executive vice president and cashier; and Carl E. Glenn, assistant cashier.

Reconnaissance

Sixth District Statistics for January 1947 compared with January 1946



Sixth District Statistics

CONDITION OF 20 MEMBER BANKS IN SELECTED CITIES
(In Thousands of Dollars)

Item	Feb. 19 1947	Jan. 22 1947	Feb. 20 1946	Percent Change Feb. 19, 1947 from Jan. 22 1947	Percent Change Feb. 19, 1947 from Feb. 20 1946
Loans and investments—Total	1,912,336	1,926,107	2,330,206	— 1	— 18
Loans—total	581,409	584,750	498,451	— 1	+ 17
Commercial, industrial, and agricultural loans	340,096	336,450	241,895	+ 1	+ 41
Loans to brokers and dealers in securities	5,824	7,894	10,438	— 26	— 44
Other loans for purchasing and carrying securities	76,393	79,272	128,547	— 4	— 41
Real estate loans	44,363	43,559	24,834	+ 2	+ 79
Loans to banks	4,143	4,038	1,139	+ 3	+264
Other loans	110,590	113,537	91,598	— 3	+ 21
Investments—total	1,330,927	1,341,357	1,831,755	— 1	— 27
U. S. direct obligations	1,171,322	1,181,971	1,680,178	— 1	— 30
Obligations guaranteed by U. S.	1,465	1,113	1,451	+ 32	+ 1
Other securities	158,140	158,273	150,126	— 0	+ 5
Reserve with F. R. Bank	353,739	377,430	380,200	— 6	— 7
Cash in vault	30,973	31,358	29,016	— 1	+ 7
Balances with domestic banks	161,119	156,627	156,415	+ 3	+ 3
Demand deposits adjusted	1,357,954	1,379,996	1,300,117	— 2	+ 4
Time deposits	459,128	457,549	427,820	+ 0	+ 7
U. S. Gov't deposits	51,038	43,192	469,794	+ 18	— 89
Deposits of domestic banks	465,882	483,577	583,683	— 4	— 20
Borrowings	.....	.....	3,000	.....	.....

DEBITS TO INDIVIDUAL BANK ACCOUNTS
(In Thousands of Dollars)

Place	No. of Banks Reporting	Jan. 1947	Dec. 1946	Jan. 1946	Percent Change Jan. 1947 from Dec. 1946	Percent Change Jan. 1947 from Jan. 1946
ALABAMA						
Anniston	3	21,444	20,983	18,705	+ 2	+ 15
Birmingham	6	291,956	300,345	234,066	— 3	+ 25
Dothan	2	11,875	11,508	10,627	+ 3	+ 12
Gadsden	3	17,124	16,635	11,747	+ 3	+ 46
Mobile	4	115,948	121,880	98,162	— 5	+ 18
Montgomery	3	74,535	65,989	51,463	+ 13	+ 45
FLORIDA						
Jacksonville	3	243,591	262,591	210,817	— 7	+ 16
Miami	8	230,243	224,022	214,807	+ 3	+ 7
Greater Miami*	13	336,379	307,714	306,039	+ 9	+ 10
Orlando	2	50,722	52,284	50,814	— 3	— 0
Pensacola	3	30,091	31,888	29,797	— 6	+ 1
St. Petersburg	3	53,584	51,029	45,749	+ 5	+ 17
Tampa	3	109,423	111,740	95,419	— 2	+ 15
GEORGIA						
Albany	2	16,928	17,211	14,286	— 2	+ 18
Atlanta	4	712,936	773,935	581,977	— 8	+ 22
Augusta	3	56,880	54,347	42,559	+ 5	+ 34
Brunswick	2	8,891	9,705	7,685	— 8	+ 16
Columbus	4	58,528	58,406	41,347	+ 0	+ 42
Elberton	2	3,519	4,151	2,797	— 15	+ 26
Gainesville*	3	11,469	12,843	8,699	— 11	+ 32
Griffin*	2	10,258	11,289	7,565	— 9	+ 36
Macon	3	56,377	63,305	51,448	— 11	+ 10
Newnan	2	9,664	9,430	6,670	+ 2	+ 45
Rome*	3	19,340	21,531	15,849	— 10	+ 22
Savannah	4	85,200	93,892	87,918	— 9	— 3
Valdosta	2	10,752	11,384	8,802	— 6	+ 22
LOUISIANA						
Baton Rouge	3	72,554	71,991	55,638	+ 1	+ 30
Lake Charles	3	26,468	27,067	22,888	— 2	+ 16
New Orleans	7	564,174	609,068	492,278	— 7	+ 15
MISSISSIPPI						
Hattiesburg	2	16,450	15,702	14,703	+ 5	+ 12
Jackson	4	114,747	98,336	95,268	+ 17	+ 20
Meridian	3	26,029	27,007	21,874	— 4	+ 19
Vicksburg	2	21,383	29,426	26,363	— 27	— 19
TENNESSEE						
Chattanooga	4	144,845	137,691	116,174	+ 5	+ 25
Knoxville	4	129,115	119,803	122,502	+ 8	+ 5
Nashville	6	261,224	275,259	222,731	— 5	+ 17
SIXTH DISTRICT 32 Cities	109	3,647,200	3,778,010	3,108,081	— 3	+ 17
UNITED STATES 334 Cities		93,417,000	103,894,000	89,142,000	— 10	+ 5

* Not included in Sixth District total

District Business Conditions

THOUGH the seasonally adjusted index of daily sales in Sixth District department-stores in January was much higher than the January 1946 index, it was the lowest in seven months. For this month, however, sales made in the first two weeks indicate a rise. Growth of the District's labor force is again causing simultaneous employment and unemployment increases. The peak of farm-land prices has apparently been reached, but there is still need for great caution in buying and selling.

Trade

The total of 31 million dollars spent in department stores by Sixth District consumers in January lifted the stores' sales to a level about 10 percent above that of January 1946. This was, of course, a decline from the record dollar volume of December 1946, when sales were boomed by the holiday trade. After seasonal factors had been eliminated, the seasonally adjusted index of daily average sales was 342 percent of the 1935-39 average—the lowest it had been since May 1946. The adjusted index was 308 for January 1946 and 363 for December.

If consumers continued to buy during the remainder of February as they did during the first two weeks of the month at the weekly reporting stores, the seasonally adjusted index would be 351, compared with 331 in February 1946. Sales in January at reporting furniture stores were 10 percent higher than they were in January 1946, and sales at reporting jewelry stores were 11 percent lower.

These figures confirm the opinions both of those who predicted that the beginning of 1947 would bring no diminution in retail-trade activity and of those who have predicted that there would be at least a slight recession in trade. Such differences in opinion are largely accounted for by the degree of emphasis given to the accompanying price changes. The dollar volume, of course, has continued at a high level. Compared with any but the record months of 1946, sales during the first two months of 1947 were extremely high. On the basis of the preliminary estimate of daily average sales at department stores in February, sales in the District, for example, were 31 percent above the February level of 1945, 56 percent above that of 1944, 64 percent above that of 1943, and over three times that of 1940. With business at this high level some persons contend that a continuous upward trend cannot be expected and that maintaining the present levels of business would assure sustained economic activity.

Others may contend that such an analysis neglects important consideration of price change. Sales are reported in terms of dollars, and because of the increase in prices each dollar sale represents fewer actual goods sold. The Department of Commerce's latest monthly index of retail prices of all commodities, for example, showed that the prices measured were 21 percent above those of the same month in 1945. On this basis the increase of 6 percent in sales in February 1947 above those of February 1946 becomes a decline of 12 percent when deflated for price changes. Even with this removal of the effect of price increases, however, the estimated sales in February were above those of the same month in any year before 1946. On deflated basis, the increases in February sales in 1947 of 8 percent over those in 1945, of 24 percent over those in 1944 and 1943, of 68 percent over those in 1942, and 79 percent over those in 1940 were, however, considerably smaller than were the increases in actual dollar sales. That part of the increase in February sales attributed to increased prices may be overstated somewhat, of course, because the department stores marked down some prices during special sales.

C. T. T.

Employment and Textiles

Manufacturing employment in the six states of the Sixth District increased during December, but not as much as it did during November. Although preliminary estimates on employment during January indicated a slight dip in the number of workers in such cities as Columbus, Savannah, Knoxville, Chattanooga, and Nashville, most indications were that manufacturing employment in the first quarter of 1947 would continue to rise at a slow rate.

Total nonagricultural employment also increased in early winter, but seasonal influences had varying effects on employment in different industries. Trade and service establishments hired extra employees for the holiday rush, but construction concerns laid off workers as the cold weather set in. After the holidays nonmanufacturing employment began to decline slightly in the usual seasonal manner.

In apparent contrast with the rising employment figures the number of idle workers, it was also reported, are increasing in some localities, indicating that the labor force is growing at a faster rate than jobs are becoming available. The latest figures showed that insured unemployment rose in the Six States at the end of the year. Late in December 183,500 insured workers were unemployed, compared with only 172,200 on November 23. Veterans made up 64 percent of the December total.

Industries called for skilled workers whereas the available labor supply registered with state employment agencies consisted largely of unskilled and semiskilled workers. In some areas, particularly small towns in the agricultural sections of the District, unemployment remains a serious problem. In addition, unemployment in a few coastal cities was reported to be still at a rate above normal because of curtailment of war activities in shipbuilding.

Much of the present prosperity of District industry has been the effect of rapid postwar reconversion and heavy production in the textile mills. At the end of January, 24 percent of U. S. spindle capacity in cotton textiles was located in District states. A continuation of prosperous conditions in cotton textiles is shown by the recent report, of the Bureau of Agricultural Economics, that cotton-mill margins were 40.78 cents in November, the latest month for which statistics are available. The mill margin is a measure of the difference between the price of a pound of raw cotton and a pound of cotton fabric. Out of this spread, or margin, the manufacturer must pay the entire cost of processing the raw material and producing the cloth. The mill margin therefore sets the limits within which production costs must be met and its width determines the production potentials of the industry.

During the war the control over cotton-goods prices acted to stabilize the price of raw cotton, and the mill margin fluctuated less than three cents with a high of 22.17 to a

low of 19.28 cents a pound from June 1941 to August 1945. At the war's end, however, mills converted to civilian production once again and began to try to supply the pent-up consumer demand for textiles. At the same time readjustment began to take place in the industry's cost structure.

In March 1945, when continued control over finished-product prices prevented manufacturers from passing a new increase in production cost on to the consumer, the wholesale price of raw cotton began edging up. The result was a narrowing of the mill margin. From January 1945 until March 1946 the mill margin was at lower levels than it was in January 1945, except for two months when increases in OPA ceilings on cloth prices temporarily offset the increases in raw-material prices. In the spring of 1946, however, prices of fabric began to rise more rapidly than did those of raw cotton, and mill margins steadily widened except for a temporary lapse in June. Most of the largest increases in mill margins came after September when the wholesale prices of cloth rose and, in contrast, the prices of raw-cotton fell. The latest figure on mill margins is more than four times the low of 9.33 cents a pound in May 1939.

The increase in the mill margin in 1946 was followed by a comparatively smaller increase in mill activity and cotton consumption. In normal times this great increase in mill margins would have been followed by a major increase in production activity. This, however, did not happen in the fall of 1946, since the widening of mill margins then probably was caused by factors not operating before the war.

As a measure of production possibilities, the mill margin is probably a less accurate guide now than it was before the war. Operating costs in cotton textiles as in other industries rose sharply during and after the war, and mill margins remained relatively fixed until the lifting of price controls. Labor costs alone as represented by national figures of average hourly earnings in cotton manufacturing rose from 50.7 cents in January 1942 to 90 cents in December 1946, an increase of 78 percent. The gross margin therefore would have been expected to show some widening as soon as price controls were lifted to compensate for rising operational costs in the cotton-textile industry.

This current favorable margin situation in cotton textiles is indicated by an increase of 61,010 bales of cotton consumed in Alabama, Georgia, Mississippi, and Tennessee mills during December. T. R. A.

Agriculture

Production goals recently announced by the Department of Agriculture chart the broad outlines of a policy to be followed by the nation's farmers during the present crop year. Compiled after study and review by state and local farmers' committees, these goals include the quantities of principal agricultural products needed to meet domestic and foreign demands and to replenish those supplies of commodities that were depleted during the war. Although reductions in some commodities are requested, farmers are asked to continue production generally at near wartime levels.

The goals mean that in 1947 farmers of the Sixth District states should plant larger acreages than they did in 1946 to most of their leading crops. Specific recommendations include acreage increases of 19 percent for cotton, 20 percent for soybeans, 9 percent for sugarcane, and 9 percent for sweet potatoes. For peanuts and burley tobacco, however, the recommended 1947 acreage is appreciably smaller than

Sixth District Indexes

DEPARTMENT STORE SALES*

	Adjusted**			Unadjusted		
	Jan. 1947	Dec. 1946	Jan. 1946	Jan. 1947	Dec. 1946	Jan. 1946
DISTRICT	341	363r	308	273	570r	246
Atlanta	369	414	344	288	588	268
Baton Rouge	439	412	349	290	631	230
Birmingham	298	337	286	232	520	223
Chattanooga	342	375	318	274	577	254
Jackson	342	350	290	253	510	215
Jacksonville	396	445	372	325	694	305
Knoxville	305	335	304	256	510	255
Macon	318	327	289	216	571	196
Miami	325	395	292	338	655	304
Montgomery	329	355	289	250	562	220
Nashville	387	438	338	309	648	270
New Orleans	312	324	263	250	493	210
Tampa	475	493	387	385	769	313

DEPARTMENT STORE STOCKS

	Adjusted**			Unadjusted		
	Jan. 1947	Dec. 1946	Jan. 1946	Jan. 1947	Dec. 1946	Jan. 1946
DISTRICT	311	348	184	280	292	166
Atlanta	413	462	268	363	376	235
Birmingham	246	245	167	213	214	144
Montgomery	333	359	184	296	304	164
Nashville	516	523	329	421	444	268
New Orleans	256	305	121	222	267	106

LUMBER PRODUCTION*

	Adjusted**			Unadjusted		
	Dec. 1946	Nov. 1946	Dec. 1945	Dec. 1946	Nov. 1946	Dec. 1945
SIX STATES	147	140	71	116	143	56
Alabama	174	161	71	139	157	57
Florida	122	121	45	102	123	38
Georgia	171	173	89	130	183	68
Louisiana	93	96	64	81	101	56
Mississippi	136	128	67	118	133	58
Tennessee	210	171	92	130	181	57

	COTTON CONSUMPTION*			COAL PRODUCTION*		
	Jan. 1947	Dec. 1946	Jan. 1946	Jan. 1947	Dec. 1946	Jan. 1946
TOTAL	186	159	159	178	128	160
Alabama	198	170	165	180	130	162
Georgia	184	158	158	...	...	...
Tennessee	144	119	135	174	122	154

	MANUFACTURING EMPLOYMENT***			GASOLINE TAX COLLECTIONS		
	Dec. 1946	Nov. 1946	Dec. 1945	Jan. 1947	Dec. 1946	Jan. 1946
SIX STATES	146	145	133	165	168	132
Alabama	155	153r	136	174	168	133
Florida	131	131r	116	175	158	140
Georgia	140	140r	126	162	156	122
Louisiana	135	133r	135	148	152	126
Mississippi	155	154r	142	160	162	116
Tennessee	153	154	143	170	212	145

CONSUMERS' PRICE INDEX

	Dec. 1946	Nov. 1946	Dec. 1945
ALL ITEMS	159	159	134
Food	197	201	148
Clothing	172	164r	145
Rent	n.a.	n.a.	114
Fuel, Elec. and ice	119	116r	110
Home furnishings	169	166r	145
Misc.	139	136r	131
Purchasing power of dollar	.63	.63	.75

CRUDE PETROLEUM PRODUCTION IN COASTAL LOUISIANA AND MISSISSIPPI*

	Jan. 1947	Dec. 1946	Jan. 1946
Unadjusted	238	235	212
Adjusted	234	243	208

ELECTRIC POWER PRODUCTION*

	Dec. 1946	Nov. 1946	Dec. 1945
SIX STATES	291	290	241
Hydro-generated	268	272	260
Fuel-generated	323	313	216

ANNUAL RATE OF TURNOVER OF DEMAND DEPOSITS

	Jan. 1947	Dec. 1946	Jan. 1946
Unadjusted	19.0	20.3	17.2
Adjusted**	17.1	17.6	15.5
Index**	66.1	68.2	60.0

*Daily Average Basis
**Adjusted for seasonal variation
***1939 monthly average=100; other indexes, 1935-39=100
r Revised
n.a. Not available

the acreage planted in 1946. A slight reduction is also suggested for early potatoes.

If farmers respond to requests for greater production to the degree that they have responded in the past, the recommended increases in crop acreages will be achieved as closely as weather conditions and the availability of labor, fertilizer, and other production items will permit. On the other hand, the farmers' response to goals involving decreases in crop acreages may represent a real test of the efficiency of voluntary production adjustments. If the production of peanuts, burley tobacco, and potatoes appreciably exceeded the suggested goals, the result could easily be a recurrence of the familiar problems of surpluses and marketing difficulties. In the past the prospect of price declines for these crops might have prevented growers from producing quantities greatly in excess of prospective demands. Present legislation, however commits the Government to a price-support policy that could maintain price floors above future market prices. Thus, growers are being asked to make voluntary acreage reductions of important cash crops but are being offered a price that may well be an incentive to maintain, or even increase, acreages.

If educational efforts such as the production-goals program can bring about the needed changes in production patterns, the problem of agriculture's transition from war to peace will be minimized. If farmers respond instead to price supports by maintaining, or increasing, production of the commodities in which smaller quantities are needed the problem will be magnified.

There are now indications that District farm-real-estate prices are beginning to level off after the rapid increases of the war years. On November 1 the index of value per acre of farm land in the Six States, based on the 1935-39 period, had risen to 198. Since that date, the available evidence strongly suggests, activity in the land market has decreased with little change in land prices. The upward trend of land values may be continuing in some sections, but it appears that the peak of the land boom has been reached in the District as a whole.

Though each transaction which involves purchasing farm land or lending money on farm land must be evaluated on its individual merit, farm-land buyers and institutions that lend money on farm land will need to give more careful consideration to the effect that probable farm incomes will have on land values. During a period of rising land values errors in judgment will be rectified in many cases by the general increase in all values. In a land market where values are stable or falling, however, buyers who pay more than the probable future incomes will justify may suffer a serious reduction in their equities or incur a burdensome mortgage indebtedness. Lenders who advance funds with little regard for probable future farm incomes and values may find that such loans will not meet the test of security or principal and that incomes will not be high enough to offset reductions in the market value of the principal. Relaxation of caution by credit agencies and by farm-land buyers now might easily undo all the good accomplished by the restraint which they have used so far. The strong possibility that the upward trend in farm-land values has been halted certainly imposes greater responsibilities now on the institutions supplying farm credit than they have had at any time in recent years.

B. R. R.

Sixth District Statistics

INSTALLMENT CASH LOANS

Lender	No. Reporting	Volume: Percent Change January 1947 from Dec. 1946	Volume: Percent Change January 1947 from Jan. 1946	Outstandings: Percent Change January 1947 from Dec. 1946	Outstandings: Percent Change January 1947 from Jan. 1946
Federal credit unions	42	— 31	+ 40	— 1	+ 64
State credit unions	24	— 22	+ 25	+ 0	+ 48
Industrial banking companies	10	— 5	+ 25	+ 2	+ 65
Industrial loan companies	20	— 12	+ 41	+ 1	+ 29
Small loan companies	53	— 30	+ 1	+ 1	+ 29
Commercial banks	34	+ 4	+ 89	+ 3	+125

RETAIL FURNITURE STORE OPERATIONS

Item	Number of Stores Reporting	Percent Change January 1947 from December 1946	Percent Change January 1947 from January 1946
Total sales	98	— 35	+ 10
Cash sales	90	— 41	— 13
Installment and other credit sales	90	— 35	+ 15
Accounts receivable, end of month	97	— 5	+ 34
Collection during month	97	— 4	+ 19
Inventories, end of month	77	+ 3	+ 7

DEPARTMENT STORE SALES AND STOCKS

Place	SALES: No. of Stores Reporting	SALES: Percent Change Jan. 1947 from Dec. 1946	SALES: Percent Change Jan. 1947 from Jan. 1946	INVENTORIES: No. of Stores Reporting	INVENTORIES: Percent Change Jan. 31, 1947 from Dec. 31 1946	INVENTORIES: Percent Change Jan. 31, 1947 from Jan. 31 1946
ALABAMA						
Birmingham	5	— 54	+ 4	4	— 1	+ 47
Mobile	5	— 54	+ 1	..	.....	.....
Montgomery	3	— 54	+ 14	3	— 3	+ 81
FLORIDA						
Jacksonville	4	— 51	+ 9	..	.....	.....
Miami	4	— 46	+ 11	3	— 5	+ 86
Orlando	3	— 34	+ 15	..	.....	.....
Tampa	5	— 48	+ 21	..	.....	.....
GEORGIA						
Atlanta	6	— 49	+ 7	5	— 4	+ 54
Augusta	4	— 56	+ 1	3	— 2	+ 41
Columbus	3	— 53	+ 14	..	.....	.....
Macon	4	— 61	+ 10	4	+ 6	+ 59
LOUISIANA						
Baton Rouge	4	— 52	+ 33	4	— 1	+ 87
New Orleans	5	— 47	+ 19	4	— 17	+111
MISSISSIPPI						
Jackson	4	— 48	+ 18	3	— 5	+ 87
TENNESSEE						
Bristol	3	— 53	+ 19	3	+ 6	+109
Chattanooga	4	— 51	+ 8	3	+ 3	+ 93
Knoxville	4	— 48	+ 0	..	.....	.....
Nashville	6	— 50	+ 15	5	— 5	+ 57
OTHER CITIES*	18	— 50	+ 7	26	+ 0	+ 67
DISTRICT	94	— 50	+ 11	70	— 4	+ 69

* When fewer than 3 stores report in a given city, the sales or stocks are grouped together under "other cities."

WHOLESALE SALES AND INVENTORIES*

Items	SALES: No. of Firms Reporting	SALES: Percent Change Jan. 1947 from Dec. 1946	SALES: Percent Change Jan. 1947 from Jan. 1946	INVENTORIES: No. of Firms Reporting	INVENTORIES: Percent Change Jan. 31, 1947, from Dec. 31 1946	INVENTORIES: Percent Change Jan. 31, 1947, from Jan. 31 1946
Automotive supplies	7	+ 33	+ 4	5	— 13	+ 28
Shoes	3	+ 47	+ 35	..	.....	.....
Drugs and sundries	12	+ 21	+ 2	5	— 6	+ 5
Dry goods	9	+ 66	— 3	5	— 13	+ 77
Electrical goods	4	— 11	+ 27	..	.....	.....
Fresh fruits and vegetables	3	+ 4	+ 35	..	.....	.....
Confectionery	6	— 12	+ 14	..	.....	.....
Meat products	3	— 15	+ 52	..	.....	.....
Groceries						
Full lines	30	+ 14	+ 7	14	+ 6	+ 66
Specialty lines	10	+ 29	+ 9	6	+ 1	+ 58
Beer	3	— 29	— 30	..	.....	.....
General hardware	9	+ 9	+ 32	4	+ 10	+ 56
Industrial supplies	4	+ 64	+114	..	.....	.....
Lumber and building materials	4	+ 4	+103	..	.....	.....
Machinery, equip. and supplies	3	— 5	+ 31	..	.....	.....
Tobacco products	5	+ 4	+ 8	..	.....	.....
Miscellaneous	12	+ 9	+ 14	23	+ 3	+ 54
Total	127	+ 17	+ 20	62	+ 1	+ 53

*Based on U. S. Department of Commerce figures