May 31, 1946

MONTHLY REVIEW

FEDERAL RESERVE BANK OF ATLANTA

Volume XXXI | Atlanta, Georgia, May 31, 1946 | Number 5

Increasing the Value of the South's Forest Resources through Research

ANOTHER addition has recently been made to the growing number of industrial-research institutions in the Sixth Federal Reserve District. The organization of the Wood Research Institute, Incorporated, of Atlanta, in September 1945 was one more result of a growing recognition on the part of the South's leaders that industrial research will influence increasingly the direction of the region's economic future.

The Wood Research Institute is the fruit of an idea nurtured by the founder, Don Gavan. His idea was to make the benefits of industrial research accessible to the lumber industry of the whole South. The significance of the institute can be appreciated only against a background that points out the changing emphasis science has given to factors of industrial location, the importance of the lumber industry to the South, the importance of science in industry, and the ability of science to change the physical and chemical characteristics of wood.

That the industrialization of the area will not depend solely on the advantages of natural resources and an abundant labor supply is receiving more and more emphasis. Traditional factors affecting industrial location do not influence the location of an industry born out of a test tube in a scientific laboratory to the extent that they influence the location of those industries which merely change the form of raw materials without altering their structure. Since the former type of industry is becoming increasingly important, long-range plans for Southern industrial advancement must include extensive industrial research to provide the bases for new finished-goods industries. Aside from its importance to new industries, this application of science is one of the means by which existing industries learn to adapt their raw materials and products to the demands of an ever advancing technological market and thus retain their importance in the South's economy.

An individual manufacturing establishment encounters competition from similar establishments located not only in the region but in all parts of the country. Its ability to survive is determined by both changing market demands and costs of production. Many factors, including the cost of raw materials, labor costs, efficiency of management, financial costs, and transportation costs, influence the success of an individual establishment and whether or not it will be able to survive in any given location. The natural resources of the Sixth Federal Reserve District and its labor supply were among those important factors influencing the recent expansion of the area's manufacturing. Growing industrialization in the region will eventually reduce whatever differential advantage may exist in wage costs, and recent scientific and technological advances may reduce in some instances the differential advantages of abundant raw materials. In the future the industries of this region will probably compete more and more upon the basis of technological and managerial efficiency and an efficient utilization of resources. Scientific and technological developments make competitors out of industries that might at first sight seem competitive only in a remote sense.

At one time the petroleum industry would scarcely have been considered a competitor by the producers of natural rubber. Yet today, as the result of scientific and technological advances, synthetic rubber has become so improved and so much cheaper that it is doubtful if natural rubber will ever regain its prewar position.

That seawater would provide a source of raw materials seriously competitive with steel for a part of its market would at one time have been termed fantastic. Yet the production of magnesium derived from seawater has been so reduced in cost that the metal can now be used economically for many purposes traditionally confined to other metals. Costing $5 a pound in 1915, magnesium ingots were selling at 27 cents a pound in 1939 and recently have been selling at 20 cents. One company expects to be able to market magnesium at an even lower price, and the knowledge and fabrication skills gained during the war years will help to spread the use of the metal.

Plastics, the development of which has long appealed to the public imagination, have an advantage in that they can be specifically created for particular markets and particular uses. Various types have appeared as competitors of a wide range of conventional materials. Many other products that compete with the products of existing industries have already arisen, and they will probably continue to provide competition in the future.

Industrial research, according to many Southern leaders, is consequently essential to continued economic development in the region. Already the Southern Regional Research Laboratory at New Orleans, sponsored by the United States Department of Agriculture, has contributed importantly to the Southeast's economic progress. Private industry realizes, however, the necessity of carrying on independent research that will adapt the findings of Governmental agencies to commercial uses and will at the same time point the way to new scientific developments. One method of the pooling of private resources for industrial research is used by the Southern Research Institute in Birmingham, Alabama, which was discussed in the September 1944 issue of the *Review*. Now, this

new, wood research institute has been sponsored by private industry to enlarge the possible uses of the forest resources of the District.

The Sixth District's forest resources are the basis for one of its most important industries. Before the war the forests of the Sixth District states, it was estimated, covered 57 percent of the total land area of those states. Almost 98 percent of these resources were commercially owned. About one out of every three manufacturing workers in these states, Alabama, Florida, Georgia, Louisiana, Mississippi, and Tennessee, was employed in a forest industry. Before the war 20 percent of the total value of manufactured products in the District was contributed by the forest industries. Furthermore, the District's forest products constitute a resource that, by proper utilization, is constantly being renewed. Fire is the greatest enemy of sustained yield. Professor Edwin A. Ziegler of the University of Florida believes that if adequate fire protection combined with forest management were practiced, Florida, which is a net importer of wood now, would be able to produce eight times the amount of wood used in all its industries.

Lumber's Role in the War

Wartime shortages of metal made the forest-products industry a leading contributor to victory. Engineering and technological advances during the war not only increased the value of wood in its traditional roles but expanded its economic possibilities. The industry's expansion in the District was limited by the availability of labor and other factors. Still, employment in the industry was considerably higher during the war years than in 1939 before the influence of the European conflict was felt. In Alabama, Florida, and Georgia, for which states monthly data are available, the peak of employment in lumber and timber basic industries was reached in 1943, according to the Bureau of Labor Statistics. As indicated on the chart, employment in other forest-products industries also made wartime gains. Lumber production in the Sixth District states during 1945 amounted to more than 380 million board feet, or 20 percent of all lumber production in the United States.

Present shortages of building materials would apparently insure sufficient demand at present for all the lumber the industry could produce. Though the chief concern at present is with production difficulties caused by labor shortages and price problems, it is these difficulties that will stimulate the manufacture of additional wood substitutes, some of which might permanently displace lumber in many of its present uses.

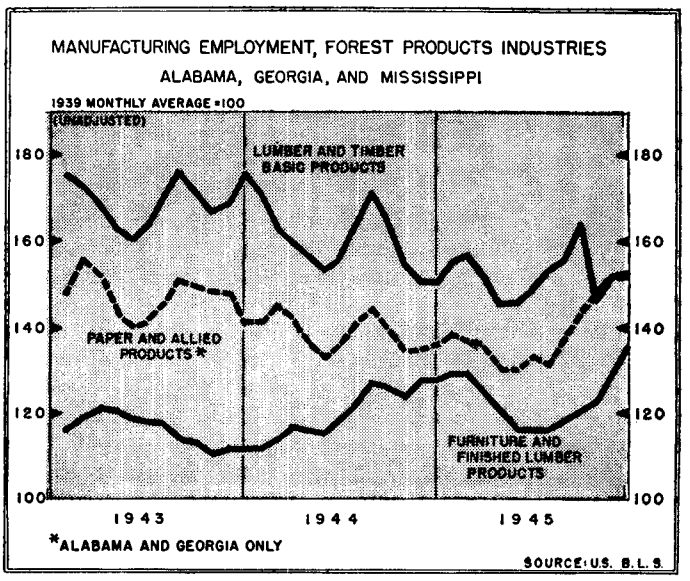
Retention of already-existing markets for wood products is not the only benefit resulting from scientific research. The new processes make it possible to utilize the inferior grades of trees that formerly were considered to have no commercial value. Scientific research makes possible sustained forestry practices. Moreover it increases the value of the region's timber resources by making selective cutting profitable. For example, an owner of a tract of timber will, if the market exists, receives a greater return by selling part of the timber for poles, part for saw logs, and part for pulpwood than he will by selling the timber for any one purpose alone.

A utilization of the waste products of the lumber industry also represents one of the greatest challenges. It has been stated that only about 25 percent of a tree is used in the materials that go into a house. The branches, slabs, bark, sawdust, and other wastage are not only an economic loss to the industry but an expense in themselves because of the disposal problem they present. The pulp industry probably utilizes more of the forest material than other forest industries do, but still it rejects the bark, branches, and stumps. If this material could be utilized at a profit, the region's forest resources would provide a much greater return than they do now. Already one company has found it possible to utilize the stumps of trees from which it obtains wood oils and materials for paints, road stabilizers, and explosives, but for the most part the wastage constitutes a liability rather than an asset.

The Development of Wood Research

Modern wood research in the United States owes its beginning to the establishment in 1910 of the Forest Products Laboratory of the Forestry Service at Madison, Wisconsin. In the South forestry research has been undertaken by the Southern and Appalachian Forest Experiment Stations, by the Herty Foundation, and by private enterprises. A school of forestry was accredited at the University of Florida in 1943. Research is also being carried on by the region's pulp companies and other organizations. The Wood Research Institute, Incorporated, will receive its support from private industry through a pooling of the resources of individual firms and will in no way compete with existing organizations. Rather, the institute should be able to adapt scientific and technological discoveries to the practical requirements of commercial operation, as well as to create new processes that will utilize the region's timber resources. The accomplishments of the past illustrate some of the possibilities of research in this field.

Wood research has resulted, first of all, in overcoming some of the inherent faults of wood that new materials purport to correct. Wood rots; it shrinks; it swells; it warps; it burns; and it is difficult to dry and bend. Other types of research have enlarged the number of uses for wood without transforming its basic structure. A third type has transformed wood completely, turning it into such products as pulp, paper, rayon, industrial alcohol, and various types of plastics. One of the most recent developments makes wood through impregnation into something better than it was before without changing its essential nature.



Through chemical processes it is possible to treat wood so that it resists fire, termites, and decay. Wood treated against decay was in wide use before the war for dock and railway structures, railway ties, telegraph poles, and bridge foundations. By applying Wohlman salts, it is possible to create an odorless product that is easily painted. Recent improvements utilize other types of chemicals to meet the specific requirements of the market. The war stimulated wood preserving, with special emphasis upon flameproofing. Almost 75 million board feet were so treated in 1943 by the 229 United States wood-preserving plants, 84 of which were in the South.

Enlarging the number of uses to which wood may be put is equally as important as overcoming what are considered to be the inherent defects of wood. Laminated wood, which is made by gluing pieces of wood together with their grains parallel, has been increasingly incorporated in arches for buildings. The idea was gaining acceptance in the United States before the war, since these arches, when treated for insects, fire, and decay, meet many of the requirements of steel and at a lower cost. The use of laminated wood expanded during the war and because of recent technological improvements will probably continue in the postwar period.

In contrast with laminated wood, plywood is made by sandwiching thin sheets of wood together, each sheet laid crosswise to the grain of the other. Relatively little waste results from its manufacture, and it can utilize logs of small size and of a quality not suitable for ordinary lumber. When bound with resinous glues and water the plywood can be molded into many shapes. The manufacture of a waterproof plywood is possible. Plywood tubing was employed extensively during the war for antennas, masts, reinforcing members, large rafts, and various sectional types of construction. A plywood mast produced by one manufacturer can be extended to 90 feet but can be telescoped to eight or six feet. Plywood, it is expected, will be incorporated to a considerable extent in prefabricated homes.

The growth of the pulp-and-paper industry in the South is a direct result of the type of scientific research that transforms the products of Southern forests completely. Chemistry has made it possible to utilize Southern timber in the manufacture of paper, rayon, and other materials. The pulp-and-paper industry was advancing rapidly prior to the war. In the Sixth District states 2.9 million tons of wood pulp were produced in 1945, approximately 29 percent of the total United States production. An expansion of existing pulp mills and the erection of new ones have constituted one of the most important factors in the postwar growth of the District's industry. If the wastes and by-products of the pulp industry could be profitably employed, however, an even greater return would be realized. Though many possible uses for these by-products have been explored, much additional scientific research will be required before the scientific discoveries become commercially feasible.

Out of experiments originating at the Forest Products Laboratory have grown the processes by which woods, though not transformed completely into other substances, are so improved that they are able not only to compete with modern materials but to enter new fields. A whole new series of words created to describe the products such as impreg, compreg, staypak, papreg, pregwood, superwood, indurated wood, transmuted wood, asidbar, urwood, and uraloy may yet become common words in the layman's vocabulary.

Impregnated Woods

The "preg" family of woods originated at the Forest Products Laboratory. Treating wood with resin so that the resin actually penetrated the wood cells produced a material called impreg. This material was found to be almost swellproof, shrinkproof, and decayproof. Compression of the wood to about half its size during the heating process created a hard dense substance called "compreg." Further improvements resulted in "staypak" and eliminated the springback and swelling of the former types and the brittle qualities of compreg.

A search for a cheap chemical suitable for treating refractory woods prior to the drying process revealed that wood soaked in urea and placed in a drying oven became plastic. It was found that this plastic could be rendered stable when treated with formaldehyde. It was also discovered that after the wood was soaked it was as pliable as a piece of heavy rubber and when dry retained its molded shape permanently. This process in addition made the wood resistant to water. weather, acids, alkalies, insects and fire. Commercial companies have further developed the science of impregnating or transmuting wood.

Each of these processed woods has its own particular advantages for particular uses, but they all have qualities that point to manifold possibilities for the further use of the District's wood resources. So hard are compreg and staypak that they take on some of the qualities of steel. It has been stated that one of the impregnated woods is to ordinary wood what steel is to iron. Through this process such woods as maple become as hard as ebony. Since the process may be applied to soft woods, it makes the little-used woods competitors of such hard woods as oak, walnut, and hard maple. The wide range of uses for these new woods, combined with the abundant supply of raw materials in the South, point to the value that industrial research in this field will have if commercial production is possible.

Some of the new woods have a finish which resembles that of polished marble and at the same time reveals the naturally beautiful grain of wood. Scratches can be removed from the surface by merely smoothing and rubbing, since the material has been impregnated all the way through. This type of lumber can be reduced to the desired thickness by pressure during processing, instead of by sawing, and made to hold that thickness permanently. If special colors are desired, they may be introduced along with the impregnating chemicals. A whole new range of colors is thus possible for furniture and interiors. Drawers and doors in furniture made of this type of wood will not swell and will operate under all types of climatic conditions. As the possibilities for this new type of material are fully explored additional ways in which it may be employed will present themselves.

Between the industrial laboratory and the factory, or mill, there is a large area of experimentation required. Adaptation of scientific developments to the lumber industry of the District and to the needs of an individual enterprise requires systematic and constant research. Since the greater part of the region's forest resources are commercially owned and, also, since the fabricating plants are privately owned and financed, the possibility of applying many of the recent scientific developments in wood inevitably hinges upon their commercial practicability. Whether or not he will utilize any given technique is, for an individual processor, governed by the possible

dollars-and-cents return. Research that will be specifically concerned with the commercial possibilities in the application of advances in chemistry and engineering to wood is therefore needed to supplement the work of public organizations.

The Wood Research Institute

For several years Don Gavan has been interested in the possibilities of wood research as a contribution to the region's industrial possibilities. About two years ago he became especially interested in the possibility of commercially adapting recent discoveries for impregnating wood. Since no research institute was then available, the Don Gavan Lumber Company began to explore the possibility of a commercial process for impregnation by the use of Arboneeld, the trade name of Du Pont's demethylolurea. Experiments on a pilot-plant scale were made in the impregnation of gum, poplar, cypress, persimmon, Southern pine, maple, birch, and sycamore.

As a test for the durability of the wood under varying conditions impregnated-wood floors were placed in several industrial plants. Tests were also made of other possible ways in which impregnated wood might be employed. A block of it, in one case, was used as a saw guide. In contrast to a hickory guide, which usually lasts only about 90 days under severe usage, the guide made of impregnated soft poplar was used for eight months. Other possible uses include textile spools and spindles, parts of instruments such as surveyors' transit tripods laundry machines, and tubs, in addition to its use for furniture.

The company became so interested in wood research that it entered into a contract with the Georgia School of Technology. Under this agreement, which was made for the period September 1944-September 1945, the school carried on other types of pilot-plant work.

Meanwhile other persons in the area became interested in the possibilities of wood research, and after preliminary discussions the Wood Research Institute was established. This institute, although aided by the efforts of Mr. Gavan, is entirely divorced from the Don Gavan Lumber Company. Any projects undertaken for that company will be on the same basis as those for any other firm.

The institute has been organized in close association with Oglethorpe University in Atlanta, and co-operation between the two institutions is expected. One of the directors, Dr. Phillip Weltner, is also president of the university. The university has agreed to provide the institute with the use of Faith Hall for a period of 15 years, with the privilege of renewal for another 15 years. Repairing and modernization of the building, 142 by 52 feet, has already begun. Half of the structure will consist of a room two stories high, and the other half will be made up of a main floor and a mezzanine. Conversion of the building should be completed shortly.

In the building the institute will set up pilot-plant equipment and a complete laboratory. Furthermore, it expects to install a number of woodworking machines common to the industry. A machine shop equipped for the building and servicing of laboratory and pilot-plant devices is included in the plans. The staff will have its own library of literature in the field of wood research.

Under the laws of Georgia the Wood Research Institute, Incorporated, has been organized as a nonprofit corporation governed by a board of trustees. The board now consists of seven individuals. As the work progresses it will be enlarged to include representatives of the various lumber, paper, and pulp industries in the Southeast. Present members of the board are Mr. and Mrs. Gavan, G. Tom Bailey, Bruce Anderson, Bruce Woodruff, Phillip Weltner, and Homer M. Meier. The directors of the institute, after consulting with the staffs of the principal schools of forestry and professional societies, have secured the services of S. M. Johnson as director.

Two Types of Problems

The new organization will devote its resources to two major types of problems. One class will concern long-range developments. The finances for carrying on this type of work will come from the institute's endowment and special grants. An initial endowment of $50,000 has been made by Mr. and Mrs. Gavan. The second type of project to be undertaken will be made at the specific request of individual businesses. These firms will have access to the services of the institute, but they will be required to meet the actual cost of the work involved in their particular projects.

The institute will lay special emphasis upon the practical solution of the industry's problems. One of its prime purposes will be to locate problems that are of direct interest to the industry itself. It is difficult for persons not in the industry to predict what type of work should actually bear the most fruit. Problems of industrial interest and the possible solutions to these problems, it is believed, can best come from the industry itself. Therefore, the policy of closely integrating the institute's activities with private industry is a sensible one.

As a purely hypothetical example, it might be supposed that a furniture-manufacturing company has a large amount of hardwood slab waste. It is impossible to sell the waste. It is inconvenient to burn it, and in addition, a sizeable expense is involved in disposing of the slab. In the hope of solving its problems the company might first consult with the institute's staff concerning the possible utilization of this waste in some form. The staff, being conversant with published literature and papers delivered at scientific societies and with experiments in the field, may be able to suggest methods of commercial utilization without further experimentation. On the other hand, it may be discovered that although laboratory experiments have suggested a solution it is not known whether this method is commercially feasible. Another possibility is that there is no known method of utilizing the particular type of waste this firm wants to dispose of.

All these possibilities are considered by the institute's staff, and the firm is requested to submit its problem in a complete form. The business firm enters into a contract with the institute under which the latter conducts the project for a specified period at no profit to the institute. The interested firm on its part agrees to finance the direct cost of the project, including payment for the technicians' time, the cost of materials used, and the costs of any special equipment required. Obviously, the institute cannot guarantee to produce a desired result in an exact period of time, but the company and the institute agree to review the progress of the project at specified intervals and to decide then whether to

continue or discontinue the work.

As the project develops, the company may find it desirable to have one of its own employees participate in the experiments. By this means the company would not only receive benefit from the scientific data derived from the experiment but would at the same time acquire the practical details necessary to apply the process to its own commercial needs. Any information gained from the investigation would be the company's own. The decision of whether or not the company will release the information to the industry generally is made by the company itself.

The availability of the institute's staff, equipment, and experience will, of course, be one of the chief advantages offered the individual firm. Such an institution may afford the only way possible for the relatively small firm to participate in industrial research. For the larger firm the institute's resources will constitute a valuable pool of experience from which it may draw.

Attention to the problems of individual companies will be only one phase of the institute's program. A considerable part of its work will be on various phases of a long-range program, which will change from time to time as problems arise. One of the immediate phases of this program will be an investigation into the chemical treatment of wood as a means of improving its dimensional stability. Another phase that has been suggested for the institute's program concerns the acetylation of wood. Although a great deal of work has been done on wood hydrolysis further work is required to adapt the processes to a commercial basis. Utilization of sulphite waste will also be investigated. There are so many aspects to the problem of complete wood utilization that the field of investigation will be limited only by the institution's resources. The institute will release to the industry generally results of the investigations concerned with its long-range program.

Since the institute is in a formative stage and it has as one of its purposes the creation of practical benefits to the industry, those people responsible for its organization hope that a great part of the program will be the result of suggestions made by the industry itself. The institute is open for the discussion of problems. It welcomes also any contributions in the way of suggestions and ideas that industry may make to it. Only by such close association will the institute fulfill its functions properly. Furthermore, the directors hope there will be close co-operation with other research agencies in the Southeast.

The South's industrial future is linked closely to that of the nation and depends upon a complex of factors, some of which are outside the control of the region's industrialists. Governmental policy, world conditions, the course of the national income, and other factors are matters with which individual industries have only indirect influence. The nation's success in overcoming economic problems on a national basis is, however, no insurance that the South will share in an expansion of the national income unless local problems receive a great deal of attention. The establishment of institutions like the Wood Research Institute, Incorporated, is one means by which the South may insure its full participation in the nation's economic development. Many more such institutions will be required before industry in the South not only will utilize fully its present resources of labor and raw materials but will continually renew itself.

CHARLES T. TAYLOR

Sixth District Statistics

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

Item	May 22 1946	April 24 1946	May 23 1945	Percent Change May 22, 1946, from April 24 1946	Percent Change May 22, 1946, from May 23 1945
Loans and investments—					
Total	2,214,435	2,251,677	1,840,600	— 2	+ 20
Loans—total	496,305	496,597	319,409	— 0	+ 55
Commercial, industrial, and agricultural loans	235,135	237,282	182,665	— 1	+ 29
Loans to brokers and dealers in securities	11,353	11,034	7,639	+ 3	+ 49
Other loans for purchasing and carrying securities	124,518	124,147	35,155	+ 0	+254
Real estate loans	28,232	27,034	24,435	+ 4	+ 16
Loans to banks	3,183	1,408	1,801	+126	+ 77
Other loans	93,884	95,692	67,716	— 2	+ 39
Investments—total	1,718,130	1,755,080	1,521,191	— 2	+ 13
U. S. direct obligations	1,558,096	1,600,518	1,379,622	— 3	+ 13
Obligations guaranteed by U. S.	1,652	1,676	6,192	— 1	— 73
Other securities	158,382	152,886	135,377	+ 4	+ 17
Reserve with F. R. Bank	363,185	363,785	349,031	— 0	+ 4
Cash in vault	29,178	30,427	30,116	— 4	— 3
Balances with domestic banks	147,029	146,333	128,828	+ 0	+ 14
Demand deposits adjusted	1,363,043	1,331,766	1,275,054	+ 2	+ 7
Time deposits	442,629	436,018	365,427	+ 2	+ 21
U. S. Gov't deposits	336,483	382,330	110,995	— 12	+203
Deposits of domestic banks	490,880	512,937	489,003	— 4	+ 0
Borrowings	1,500	12,200	3,500	— 88	— 57

DEBITS TO INDIVIDUAL BANK ACCOUNTS
(In Thousands of Dollars)

Place	No. of Banks Reporting	April 1946	March 1946	April 1945	Percent Change April 1946 from March 1946	Percent Change April 1946 from April 1945
ALABAMA						
Anniston	3	22,356	18,103	16,037	+ 23	+ 39
Birmingham	6	225,572	227,866	198,064	— 1	+ 14
Dothan	2	8,165	9,569	6,583	— 15	+ 24
Gadsden	3	12,616	12,927	9,781	— 2	+ 29
Mobile	4	93,908	98,985	103,173	— 5	— 9
Montgomery	3	52,367	56,596	36,015	— 7	+ 45
FLORIDA						
Jacksonville	3	202,061	212,463	170,029	— 5	+ 19
Miami	7	197,419	231,944	138,137	— 15	+ 43
Greater Miami*	11	289,919	336,340	197,229	— 14	+ 47
Orlando	2	45,437	46,714	35,507	— 3	+ 28
Pensacola	3	27,755	29,152	23,113	— 5	+ 20
St. Petersburg	3	46,072	47,577	30,523	— 3	+ 51
Tampa	3	97,631	98,610	85,222	— 1	+ 15
GEORGIA						
Albany	2	12,092	12,772	8,845	— 5	+ 37
Atlanta	4	586,495	613,913	457,599	— 4	+ 28
Augusta	3	45,776	43,747	34,042	+ 5	+ 34
Brunswick	2	9,640	8,306	11,955	+ 16	— 19
Columbus	4	42,013	42,202	33,718	— 0	+ 25
Elberton	2	2,883	3,093	1,744	— 7	+ 65
Gainesville*	3	9,732	10,865	**	— 10	**
Griffin*	2	8,341	8,067	**	+ 3	**
Macon	3	42,502	44,193	37,401	— 4	+ 14
Newnan	2	7,094	9,186	4,854	— 23	+ 46
Rome*	3	16,520	17,054	**	— 3	**
Savannah	4	78,658	80,023	87,518	— 2	— 10
Valdosta	2	9,414	8,803	6,637	+ 7	+ 42
LOUISIANA						
Baton Rouge	3	55,785	55,485	43,026	+ 1	+ 30
Lake Charles	3	20,032	21,086	15,391	— 5	+ 30
New Orleans	7	492,438	503,632	406,537	— 2	+ 21
MISSISSIPPI						
Hattiesburg	2	13,924	15,485	11,497	— 10	+ 21
Jackson	4	81,935	88,019	58,228	— 7	+ 41
Meridian	3	22,184	24,717	16,405	— 10	+ 35
Vicksburg	2	21,741	25,168	15,142	— 14	+ 44
TENNESSEE						
Chattanooga	4	100,589	104,404	83,112	— 4	+ 21
Knoxville	4	96,423	104,184	120,697	— 7	— 20
Nashville	6	227,174	209,879	172,973	+ 8	+ 31
SIXTH DISTRICT 32 Cities	108	3,000,151	3,108,370	2,479,505	— 3	+ 21
UNITED STATES 334 Cities	...	87,532,000	87,578,000	74,139,000	— 0	+ 18

*Not included in Sixth District total **Not available