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Synthetics and the Cotton Textile Industry

TECHNOLOGICAL progress in the development of synthetic fibers is proceeding at such a pace as to foreshadow a radical change in the cotton textile industry, the largest integral part of the Southeast's industrial structure. To rayon, which is the oldest synthetic fiber of importance and which has itself recently experienced tremendous technological improvements, have now been added several different types of nylon as well as a dozen or more other synthetic fibers. Some of these have definite revolutionary qualities. Indeed, now looming on the horizon are several new synthetic fabrics which require no spinning or weaving but are manufactured by extrusion in sheets. If these new fibers and fabrics are developed to their full potentialities, the effect upon existing textile manufacturing capacity will be very far-reaching.

Up to the present time production of no other synthetic fiber has approached rayon output, although nylon manufacture has been expanded at a tremendous rate since its commercial introduction in 1938. American plants in 1944 produced 724 million pounds of rayon filament and staple. This amount represents an increase of 9 per cent over the 1943 production and contrasts with an output of 128 million pounds as recent as 1930. Consumption of rayon exceeded that of wool during 1944 and in recent years has averaged around 10 per cent of total textile fiber consumption.

Rayon is derived from cellulose. Two chief sources of cellulose have been used by the rayon industry—cotton linters and wood pulp. From 1900 to about 1925 viscose rayon was manufactured from wood pulp exclusively. After 1925 there was a period during which the viscose rayon manufacturers used varying mixtures of cotton linters and wood pulp, but in the last few years no linters have been used in the common grades of viscose rayon because qualitative improvements in wood pulp and rising prices of cotton linters have made it uneconomic to use linters in the process. More cotton linters, however, have been used in the manufacture of high-tenacity viscose rayon since 1937. Prior to 1940 the acetate and cuprammonium rayon producers used linters exclusively. In the last few years these producers also have tended to use larger and larger amounts of wood pulp of special highly purified grades. Of the 367,000 tons of cellulose pulp consumed by the industry in 1944, 78 per cent was wood pulp and 22 per cent linter pulp.

The first method of manufacture used by the rayon industry on a commercial scale was the nitrocellulose process. But this method now has been virtually abandoned in favor of three newer processes—viscose, acetate, and cuprammonium. Because the cuprammonium process accounts for only a small part of American rayon output, statistics for this method as well as those for the nitrocellulose process are commonly lumped with figures for the dominant viscose process.

Of the filament yarn produced in 1944, 69 per cent was made by these processes and 31 per cent by the acetate process. Prior to about 1930 rayon was produced principally as a continuous filament. Since that year a rapidly increasing proportion of rayon production has consisted of staple fiber, and in 1944, 555 million pounds of filament yarn and 169 million pounds of staple fiber were produced. An estimate is that about one fourth of the staple fiber produced in the United States is acetate rayon and the remainder is viscose. Staple fiber rayon is composed of fibers of equal length, usually from one to eight inches, depending upon the spinning system on which it is to be made into yarn.

A new form of rayon, distinct from both filament yarn and staple fiber, is now attracting considerable attention. Called rayon tow, it is, basically, uncut staple fiber stock. Tow, which looks something like untwisted rope and which is made up of a large number of parallel continuous filaments, is now used in the manufacture of spun yarns. Spun rayon yarn can probably be reduced in cost and improved in quality with the development of tow, which eliminates carding and combing operations. New processes cut or break the filaments into the length desired and manipulate them into spun yarn, while maintaining the parallelism of the filaments.

The number of filaments composing a rayon yarn of a given size determines, in part, its strength, its pliancy, and certain fabric characteristics. The trend over the last two decades has been to increase the number of filaments. Different types of rayon vary greatly in elasticity, but apparently little improvement has taken place in the low elasticity of rayon in general.

The successful commercial production of nylon, rayon's closest competitor among the synthetics, was first announced in 1938, and since then its growth has been remarkably rapid. Nylon is the generic name applied to a wide range of polyamides developed by the E. I. DuPont de Nemours Company. Ten different types of nylon have been placed in commercial production, but the first type developed, fiber 66, is still the

most widely used for textile purposes. In counterdistinction to rayon, nylon is a completely synthetic material. Whereas rayon is derived from natural cellulose, nylon is chemically synthesized. The basic materials used are simple ones—coal, air, and water—but a series of complex chemical processes is involved in the manufacture. Nylon is found to be particularly suitable where high elasticity is desired, such as in hosiery, parachute fabrics, and glider tow ropes. It has also a potentially wide range of industrial uses.

New Synthetic Fibers

Within the last few years a number of other synthetic fibers have reached the stage of commercial production, but none of them have yet acquired a large market. These include Vinyon and Vinyon E, which are derived from a vinyl resin, a copolymer of vinyl chloride and vinyl acetate. Vinyon's most important use so far has been in industrial filter cloths because of its unusually high resistance to acids, alkalies, and other liquids and gases. Vinyon E, with its high elasticity, has been used chiefly as a substitute for rubber in such products as suspension cords for jungle hammocks. These two fibers are manufactured by the American Viscose Corporation.

A similar synthetic fiber derived from petroleum and salt is manufactured by the Dow Chemical Corporation, the Firestone Industrial Products Company, and Pierce Plastics, Inc., under the names of Saran, Velon, and Permalon, respectively. This fiber has been found to be particularly useful where low water absorbency, high resistance to chemicals and abrasions, great strength, and elongation are required.

Still another fiber is Aralac, manufactured from casein, a precipitate of skim milk, and introduced by Aralac, Inc., some years ago. It has been found useful for blending with other fibers in fabrics where its low wet strength would not be a handicap. The Owens-Corning Fiberglas Corporation has produced Fiberglas both as a continuous filament and as a staple fiber. Each of these is derived from glass marbles remelted in small electric furnaces. Various other fibers have been produced on an experimental basis from peanuts and corn meal, and for a time soybean fiber was manufactured on a semicommercial scale by the Ford Motor Company, which has relinquished the process to the Drackett Company of Cincinnati.

Several different synthetic rubber yarns have been produced on an experimental basis, and the U. S. Rubber Company and the B. F. Goodrich Company, which manufactures Ameripol, have such yarns on a commercial production basis at present. Under the trade name of Plexon, various plastic-coated yarns are manufactured by Freyberg Brothers & Strauss, Inc. These are cotton, rayon, and other yarns coated with such plastics as cellulose acetate and cellulose acetate butyrate.

So far the manufacturers' plans in the development of synthetic textile materials have been formulated with the established textile industry in mind. An attempt has been made, in other words, to sell rayon and nylon to firms already processing cotton, wool, and silk. With minor adjustments to the machines already installed in their mills, cotton textile manufacturers have for years been successfully processing rayon into fabric. With one exception, the producers of rayon have carefully avoided competition with their own customers—the established cotton-spinning mills — although several of the producers make woven or knitted goods from their own filament yarn. Moreover, by the development of rayon staple fiber since the early 1930's, they have provided the established cotton manufacturers with a synthetic fiber material that must be spun as well as woven and that thus fits almost precisely into the established cotton-processing pattern.

Beginning about 1920, but more apparently since 1930, fluctuating cotton prices in conjunction with falling rayon prices; the increasing technological advance that has given rayon more quality and style advantages than it formerly had; and the increasing importance of rayon staple have caused cotton processors to turn, in part, to the fabrication of rayon. This trend has been accelerated since 1940. It has, nevertheless, been obscured by the large wartime cotton consumption and an over-all textile shortage so great that on July 1, 1944, all spindles in the cotton industry, both Northern and Southern, were reported in use.

A postwar possibility, however, is that technological advances in synthetic fibers, rayon, nylon, Vinyon, and other materials will progressively displace cotton in textile manufacture. Moreover, this trend is likely to go a considerable distance before a new equilibrium between the different fibers is reached. Now, so long as staple rayon took the place of cotton in the processing plants of the cotton textile industry, cotton mill operators had no cause for real alarm except insofar as the development of new spinning and weaving machinery, adapted primarily to rayon utilization, meant more rapid obsolescence of the existing plant and earlier expenditures on new machinery. Rayon filament, of course, does not need to be spun, and its use thus short-circuits the spinning process essential in cotton manufacture, although weaving is still necessary.

Declining Rayon Prices

One of the most remarkable occurrences in the history of rayon development has been the rapid price reduction. In 1920, 150-denier filament yarn was at its all-time peak of $6.00 a pound. The price fell to $2.80 in 1922, to $1.25 in 1929, to 60 cents in 1932, and to 55 cents in 1934. It fluctuated around the last figure until November 1941 when 55 cents was made the ceiling price. Viscose staple fiber, which was 60 cents a pound as late as 1931, is now only 25 cents a pound. Because much less waste is involved, rayon staple fiber is cheaper than cotton at present prices. Staple fiber is less costly to manufacture than is continuous filament yarn, because it can be manufactured in larger units and because it involves less cost for inspection and packaging.

Though with many textile applications price is not the determining factor in the selection of the fiber to be used, quite clearly declining rayon prices, coincident with rising cotton prices, have contributed in recent years to the increased use of rayon. Furthermore, much progress has been made in improving the uniformity of its tensile strength, diameter, and denier. The tensile strength has been greatly increased, and although, generally speaking, standard grades of rayon are weaker than cotton, nylon, or the better grades of silk, their dry tensile strength is greater than that of wool. The saponified acetate rayon, however, is as strong as any other textile fiber now in commercial use, or stronger. It is still true that rayon suffers a greater loss of strength when wet than do any of the other fibers except those derived from casein and soybeans.

Different types of rayon vary greatly in elasticity, but apparently little improvement has taken place in the low elasticity of rayon as a whole. A further handicap for a long while was that rayon's glossiness was undesirable in some uses, although in others its silk-like appearance was an asset.

Recently, processes of manufacturing dull and semidull rayons have been greatly improved, thus extending the area in which rayon is competitive with other fibers. Its dyeing properties and color fastness have been improved. Moreover, rayon can now be made water repellent. Better handling techniques in manufacturing rayon fabrics have also been developed. All these factors make the use of rayon less costly and more advantageous to the textile manufacturer than it was formerly.

It seems certain that in the immediate postwar years there will be little real danger that the cotton textile industry will be by-passed on any large scale in the manufacture of fabrics from synthetic materials. In the first place, cotton still supplies 67 per cent of all textile needs in the United States, and not for many years, if ever, will the bulk of this market be lost by the cotton textile industry. It is well within the realm of possibility, however, that 10 years or so after the war sheet plastics will begin to make real inroads in markets now supplied by fabrics spun and woven from natural fibers, such as cotton and wool, as well as those made from regenerated cellulose fibers, such as rayon.

Sheet Plastics

Just as the possibilities of improvement in the natural fibers through research are limited by the nature of the fiber, so the possibilities of improvement in regenerated cellulose fibers are limited by the chemical nature of cellulose. Only within the realm of completely new synthetic materials, of which nylon, Vinyon, and sheet plastics are merely the first examples, is the textile chemist almost entirely free to build a material that will fit the particular end use in mind. Already sheet plastics are competing with woven textiles in the manufacture of such products as raincoats and shower curtains, and it is at least reasonable to assume that research will widen their field of usefulness rather rapidly in the coming years.

Spinning, knitting, and weaving processes are age old, and the latest spindle, loom, and knitting machines merely represent modifications in these processes and the application of mechanical power to them. Many persons argue that the production of sheet textiles will never be a serious threat to the cotton textile industry for health requires air vents in fabrics and that such vents can be economically secured only by spinning, knitting, and weaving. The argument loses a good deal of its cogency with the realization that air vents are hardly necessary in some industrial and household fabrics and that, furthermore, the solving of this problem economically for clothing fabrics would not appear to be nearly so difficult as many of the solutions achieved in a short time under the spur of wartime necessity.

In the cotton textile industry, capacity is commonly measured by the number of spindles in place. On July 1, 1944, there were 26 million spindles in the cotton mills of the United States. Of this number, 74 per cent were in the six Southeastern states of Alabama, Georgia, North Carolina, South Carolina, Tennessee, and Virginia. Sixty-one per cent of all spindles in place in American cotton mills are located in the three states of North Carolina, South Carolina, and Georgia, chiefly in their western areas. The cotton textile industry is the largest employer of industrial labor in those states during peacetime.

Developments that would tend to make obsolete a large part of the spinning and weaving capacity of Southern cotton textile mills would also intensify the problem of providing employment for displaced war workers and returning servicemen in the area. In Alabama, Georgia, North Carolina, South Carolina, Tennessee, and Virginia, 1,046,200 persons were employed in manufacturing establishments in 1939. Of these, one third were engaged in the spinning of cotton yarn and the weaving of cotton cloth. In that same year 30,900 persons were employed in the manufacture of rayon broadwoven goods and 1,500 in the manufacture of rayon yarn and thread. In Virginia and Tennessee during 1939 plants engaged in the manufacture of rayon itself employed 23,200 persons, more than were engaged in spinning and weaving cotton in those two states.

Cotton Textile Costs

Unit labor costs in Southern cotton mills have probably risen as much as 50 per cent during the war. Obviously, the more costly the production of fabrics by established methods becomes, the greater is the incentive for manufacturers of clothing and producers of household goods to turn to the use of sheet plastics, which short-circuit the spinning and weaving processes. The design of more efficient spinning and weaving machinery would tend to retard a trend toward the use of sheet plastic instead of spun and woven fabrics. The cotton textile industry, as well as some manufacturers of rayon filament and staple, is now designing better machinery, which will probably reduce unit labor costs appreciably.

A large cost item in many mills is materials handling. The installation of mechanical handling devices, conveyor belts, and similar equipment will be carried forward in many of the larger mills in an attempt to cut production costs. But the possibilities of cost reduction in the cotton textile industry by these methods are limited because, for example, a conveyor system reaches its top efficiency only when it is installed at the time the plant is built. Proper plant design now gives greater attention to materials flow, but for mills built some years ago the possibilities of cost saving through the mechanization of materials handling are definitely limited.

Since the cost of cotton to the mill can be reduced by improvements in marketing practices, attention is being given to this problem. The elimination of excessive marketing costs, however, will always be simpler with synthetics because they are manufactured by a few large companies whereas cotton is produced by thousands of individual growers.

A great deal of effort is currently being expended in attempts to improve the quality of cotton textiles, and this effort will no doubt serve to retard the advance of the synthetic fibers relative to cotton. That the advance can be halted entirely, however, seems quite unlikely. The Department of Agriculture's ginning laboratory at Stoneville, Mississippi, is carrying forward a series of experiments directed toward improving the handling of cotton. At Stoneville attempts are being made to develop machinery to remove the dirt picked up by the mechanical harvesters. Work is also being carried forward on methods of removing the seed with less damage to the lint. Better baling developments include new ginning processes in which the cotton is compressed to 22 pounds per cubic foot without the necessity of sending the ginned cotton to special compressing centers.

This list of technical and mechanical improvements in cotton is by no means exhaustive. Many agencies are giving a great deal of thought to the problem of making further improvements, but the fact remains that the characteristics of a natural fiber will always be limited by the nature of the fiber,

Sixth District Statistics

DEPARTMENT STORE SALES AND STOCKS

Place	SALES: No. of Stores Reporting	SALES: Per Cent Change Mar. 1945 from Feb. 1945	SALES: Per Cent Change Mar. 1945 from Mar. 1944	INVENTORIES: No. of Stores Reporting	INVENTORIES: Per Cent Change Mar. 1945 from Feb. 1945	INVENTORIES: Per Cent Change Mar. 1945 from Mar. 1944
ALABAMA						
Birmingham	5	+ 29	+ 17	4	+ 2	— 2
Mobile	4	+ 31	+ 10	..	....	.....
Montgomery	4	+ 42	+ 38	3	+ 1	— 2
FLORIDA						
Jacksonville	4	+ 36	+ 32	..	....	.....
Miami	3	+ 16	+ 11	..	....	.....
Tampa	5	+ 30	+ 19	..	....	.....
GEORGIA						
Atlanta	6	+ 29	+ 33	5	+ 9	+ 13
Augusta	3	+ 49	+ 60	..	....	.....
Macon**	3	+ 95	+ 62	3	+ 7	— 9
LOUISIANA						
Baton Rouge	3	+ 30	+ 33	..	....	.....
New Orleans	4	+ 36	+ 23	3	— 5	— 27
MISSISSIPPI						
Jackson	4	+ 35	+ 27	..	....	.....
TENNESSEE						
Chattanooga	3	+ 42	+ 31	..	....	.....
Knoxville	3	+ 30	+ 31	..	....	.....
Nashville	6	+ 42	+ 28	4	— 2	— 3
OTHER CITIES*	24	+ 35	+ 27	24	+ 4	— 1
DISTRICT	85	+ 33	+ 27	46	+ 3	— 2

*When less than 3 stores report in a given city, the sales are grouped together under "other cities."
**One firm included last three days of February in March sales report.

DEBITS TO INDIVIDUAL BANK ACCOUNTS
(In Thousands of Dollars)

Place	No. of Banks Reporting	Mar. 1945	Feb. 1945	Mar. 1944	Per Cent Change Mar. 1945 from Feb. 1945	Per Cent Change Mar. 1945 from Mar. 1944
ALABAMA						
Anniston	3	19,891	16,704	18,466	+ 19	+ 8
Birmingham	3	204,624	185,165	192,664	+ 11	+ 6
Dothan	2	8,010	7,320	7,260	+ 9	+ 10
Gadsden	3	11,010	10,730	10,104	+ 3	+ 9
Mobile	4	124,035	108,285	113,118	+ 15	+ 10
Montgomery	3	40,280	35,892	37,408	+ 12	+ 8
FLORIDA						
Jacksonville	3	191,739	170,664	174,300	+ 12	+ 10
Miami	6	159,908	129,662	148,905	+ 23	+ 7
Greater Miami*	10	219,872	176,340	199,450	+ 25	+ 10
Orlando	2	39,562	29,453	31,005	+ 34	+ 28
Pensacola	3	25,580	24,893	25,026	+ 3	+ 2
St. Petersburg	3	32,394	28,185	26,900	+ 15	+ 20
Tampa	3	89,846	79,659	83,166	+ 13	+ 8
GEORGIA						
Albany	2	10,041	8,729	9,568	+ 15	+ 5
Atlanta	4	514,895	448,263	471,140	+ 15	+ 9
Augusta	3	40,231	29,461	37,583	+ 37	+ 7
Brunswick	2	15,366	13,931	13,262	+ 10	+ 16
Columbus	4	36,242	37,495	33,174	— 3	+ 9
Elberton	2	2,040	1,802	1,855	+ 13	+ 10
Macon	3	44,010	36,764	39,542	+ 20	+ 11
Newnan	2	5,759	3,666	4,799	+ 57	+ 20
Savannah	4	87,330	74,221	81,410	+ 18	+ 7
Valdosta	2	7,097	5,918	5,571	+ 20	+ 27
LOUISIANA						
Baton Rouge	3	42,926	46,649	39,580	— 8	+ 8
Lake Charles	3	17,547	15,274	24,263	+ 15	— 28
New Orleans	7	446,086	397,138	433,753	+ 12	+ 3
MISSISSIPPI						
Hattiesburg	2	13,136	11,991	12,900	+ 10	+ 2
Jackson	4	70,873	56,792	57,571	+ 25	+ 23
Meridian	3	18,472	15,598	15,643	+ 18	+ 18
Vicksburg	2	18,807	16,966r	20,523	+ 11	— 8
TENNESSEE						
Chattanooga	4	91,274	78,168	83,556	+ 17	+ 9
Knoxville	4	135,291	121,854	100,000	+ 11	+ 35
Nashville	6	177,771	162,128	168,027	+ 10	+ 6
SIXTH DISTRICT 32 Cities	114	2,742,073	2,409,420r	2,522,042	+ 14	+ 9
UNITED STATES 334 Cities		81,068,000	70,250,000	76,090,000	+ 15	+ 7

*Not included in Sixth District total
r=Revised

whereas synthetics can be given virtually any characteristic desired.

Though cotton still has certain advantages over the synthetic fibers, in spinnability and strength-retaining absorptivity for instance, these advantages will probably be met in large part by technical research in the synthetics industry. Synthetics, on the other hand, have the advantage of dependability of supply, uniformity of production, and stability of price that can probably never be met by any natural fiber whose production is conditioned by vagaries of the weather and other natural hazards.

At the present time, the American synthetics industry, including producers of nylon and Vinyon, consists of 16 companies that operate 29 plants. Of these, 21 plants manufacture rayon by the viscose process, 6 plants manufacture it by the acetate process, and 2 plants use the cuprammonium process. Of the 29 plants, 7 are located in Virginia, 4 in Tennessee, 1 in North Carolina, and 1 in Georgia.

To be sure, a partial offset to the potential loss in cotton textile employment in the South is the increasing employment in plants manufacturing rayon and other synthetic fibers and the continued employment in those cotton mills now spinning and weaving synthetics. Compared with the cotton textile industry, rayon is a high-wage industry because of its higher skilled labor requirements. In December 1944, the latest month for which such figures are available, average hourly earnings in plants manufacturing rayon and allied products were 92 cents whereas average hourly earnings in cotton textile manufactures, except smallwares, were 65 cents. During the same month there were 54,200 persons employed in manufacturing rayon and allied products in the United States and 433,700 wage earners in cotton manufacturing, smallwares excepted.

Rayon Production Capacity

At the present time the projected capacity of the rayon industry is 810 million pounds annually. More than one fourth of this, 240 million pounds, is tire yarn capacity. The outlook for rayon tire cord is not entirely clear. Authoritative sources have estimated that the amount of rayon tire-yarn capacity in operation after the war will be from 160 million to 200 million pounds. That there are less than a half dozen large tire companies and that they are extremely price conscious, plus the fact that some of these rubber companies own cotton tire-cord plants, cast some doubt on the future of rayon tire-cord production.

Perhaps the over-all conclusion to be drawn from an analysis of the present and potential threat to the cotton industry from synthetics is simply that change, rapid and in some respects unpredictable, will be the order of the day. It follows from this conclusion that alert, forward-looking management will be more essential in the cotton textile industry than ever before. Postwar years will be years of great opportunity for those firms in the industry best able to gauge accurately the type of product that will most readily satisfy consumers' desires and at the same time lend itself to profitable manufacture within the existing competitive structure. Many cotton textile firms failed during the years when routinized operations were possible in the industry. A routinized approach to textile manufacturing from here on out will be almost certainly suicidial for the firms practicing it. Depreciation policy, machinery replacement policy, integration possibilities, and inventory policy—all must be carefully examined in the light of the changing situation.

BUFORD BRANDIS.

Bank Announcements

IN APRIL, the Federal Reserve Bank of Atlanta announced the admission of a state bank to membership in the Federal Reserve System and also announced the addition of two nonmember banks to the Par List.

New Member Bank

The Little River Bank and Trust Company, Miami, Florida, was admitted on April 23 to membership in the Federal Reserve System as a state member bank. Officers of the bank are Edward C. Romfh, president; Laurence Romfh, vice president and assistant trust officer; Alec Baker, vice president and assistant trust officer; Clifford H. Reeder, vice president; Clarence S. Rye, vice president; Charles E. Buker, executive vice president; Frank L. McMillan, vice president and trust officer; Walter W. Asmus, vice president, secretary, and treasurer; John M. Frohock, assistant secretary and treasurer; Violet H. Reid, assistant secretary and treasurer; and Marie Moir, assistant secretary and treasurer.

Directors of the bank are Edward C. Romfh, Laurence Romfh, Alec Baker, Charles E. Buker, William C. Hill, Carl Meeks, Clifford H. Reeder, William H. Gragg, Lucien L. Renuart, J. Law Davis, Hugh P. Emerson, James G. Garner, and Charles B. Rose.

The new member bank has common stock of $150,000, surplus of $150,000, and total deposits of $12,000,000. The bank was originally organized in 1926. Through stock ownership, it is associated with the First National Bank of Miami, The Coral Gables First National Bank, and the First Trust Company, Miami, Florida.

New Par List Banks

The Alabama City Bank, Gadsden, Alabama, was placed on the Par List effective April 1, 1945. Officers of the bank are F. A. Bloodworth, Jr., president; W. E. Hockensmith, vice president and cashier; and Nell Jo Reagan, assistant cashier. Directors of the bank are F. F. Beckert, F. A. Bloodworth, Jr., Thomas Cousins, A. P. Hamilton, Allan Little, James B. Little, L. E. Lokey, W. D. McNair, Charles H. Moody, John I. Smith, Julius S. Swann, and Jack L. Martin.

At the close of the year, the Alabama City Bank, which was organized in 1922, had total deposits of $2,247,000, capital of $25,000, surplus of $40,000, and undivided profits of $24,000. The bank is named for Alabama City, which was annexed by Gadsden a number of years ago.

Gadsden, with a 1940 population of 36,975, is Alabama's fourth largest city and the seat of Etowah County. It is located on the Coosa River and is an important railroad center and manufacturing point.

Scheduled to go on the Par List on May 1 is the State Bank of Apopka, Apopka, Florida. Officers of the bank are W. G. Talton, president; W. T. Champneys, vice president; Frank L. Burgust, cashier; and Thomas W. Swanner, Jr., assistant cashier. In addition to Messrs. Talton, Champneys and Burgust, the board of directors includes R. T. Carleton and E. W. Fly. On December 30, 1944, the bank had total deposits of $1,900,000, capital stock of $40,000, surplus of $28,500, and undivided profits of $15,000. The State Bank of Apopka was organized on February 12, 1912, and is the oldest bank in Orange County.

Apopka at the time of the 1940 census had a population of 1,312. It is located in the center of Florida's citrus industry; and it is the largest fern and allied plant shipping point in Florida.

Sixth District Indexes

DEPARTMENT STORE SALES*

	Adjusted**			Unadjusted		
	Mar. 1945	Feb. 1945	Mar. 1944	Mar. 1945	Feb. 1945	Mar. 1944
DISTRICT	273	274	228r	281	235	221r
Atlanta	288	302	233r	303	265	236
Baton Rouge	305	325	239r	292	252	221
Birmingham	238	265	211r	253	221	216r
Chattanooga	262	281	208r	275	218	211
Jackson	274	294	221r	274	229	216
Jacksonville	361	368	279r	368	303	278
Knoxville	326	327	257r	327	283	248
Macon	349	267	220r	353	204	218
Miami	211	201	189r	265	256	238
Montgomery	280	274	210r	276	218	199
Nashville	298	291	239r	314	248	246
New Orleans	260	246	214	246	203	200
Tampa	308	314	261r	326	282	271

DEPARTMENT STORE STOCKS

	Adjusted**			Unadjusted		
	Mar. 1945	Feb. 1945	Mar. 1944	Mar. 1945	Feb. 1945	Mar. 1944
DISTRICT	177	178	184	180	174	188
Atlanta	268	265	237	274	252	241
Birmingham	132	138	135	136	133	138
Montgomery	177	189	180	187	185	190
Nashville	259	282	268	270	276	278
New Orleans	100	111	136	105	111	144

	COTTON CONSUMPTION*			COAL PRODUCTION*		
	Mar. 1945	Feb. 1945	Mar. 1944	Mar. 1945	Feb. 1945	Mar. 1944
TOTAL	162	165	161	163	162	177
Alabama	172	174	169	171	163	179
Georgia	158	162	159	...	...	...
Tennessee	141	144	136	146	158	171

CONSTRUCTION CONTRACTS

	March 1945	February 1945	March 1944
DISTRICT	170	70	101
Residential	44	42	93
Others	231	83	106
Alabama	348	74	88
Florida	61	99	123
Georgia	110	52	156
Louisiana	317	81	72
Mississippi	62	86	82
Tennessee	112	102	101

	MANUFACTURING EMPLOYMENT***			GASOLINE TAX COLLECTIONS		
	Feb. 1945	Jan. 1945	Feb. 1944	Mar. 1945	Feb. 1945	Mar. 1944
SIX STATES	151	154	162	95	107r	90
Alabama	184	186r	191	97	111	95
Florida	150	161r	188	94	101	91
Georgia	142	145r	150	91	101r	85
Louisiana	156	162r	168	91	116	93
Mississippi	140	143r	149	81	114	91
Tennessee	132	133r	139	113	108	91

COST OF LIVING

	Feb. 1945	Jan. 1945	Feb. 1944
ALL ITEMS	131	132	128
Food	144	145	142
Clothing	141	141	134
Rent	114	114	114
Fuel, electricity, and ice	109	109	109
Home furnishings	141	142	126
Miscellaneous	127	127	123

CRUDE PETROLEUM PRODUCTION IN COASTAL LOUISIANA AND MISSISSIPPI*

	Mar. 1945	Feb. 1945	Mar. 1944
Unadjusted	207	206	195
Adjusted**	207	203	195

ELECTRIC POWER PRODUCTION*

	Feb. 1945	Jan. 1945	Feb. 1944
SIX STATES	287	293r	264
Hydro-generated	274	277	236
Fuel-generated	305	314r	300

ANNUAL RATE OF TURNOVER OF DEMAND DEPOSITS

	Mar. 1945	Feb. 1945	Mar. 1944
Unadjusted	15.2	15.9	17.2
Adjusted**	15.6	15.8	17.6
Index**	60.2	61.1	68.1

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

The Southern Regional Research Laboratory

SCIENTIFIC research has in the last decade or two come to be one of the most characteristic adjuncts of business enterprise. In the field of industry its fruits are evident in the fantastic array of new and unusual products that pour from the privately supported laboratories of many of the nation's most important concerns. Its fruits in agriculture are equally evident in the increased yields, the improved methods of cultivation, the development of farm machinery, and the biological improvement of crops and livestock that have resulted from work done in the laboratories of land-grant colleges and various Federal agencies, as well as at state experiment stations and on experimental farms.

Typically, industrial research has been carried on for the direct and immediate benefit of industry and agricultural research has been carried on for the direct benefit of agriculture. In the Agricultural Adjustment Act of 1938, however, the Federal Government took a somewhat unusual step by making provision for industrial research that should have the benefit of agriculture as its chief aim.

Congress provided in section 202 of the Agricultural Adjustment Act of 1938 that "the Secretary [of Agriculture] is hereby authorized and directed to establish, equip, and maintain four regional research laboratories, one in each major farm producing area, and at such laboratories, to conduct researches into and to develop new scientific, chemical, and technical uses and new and extended markets and outlets for farm commodities and products and by-products thereof. Such research and development shall be devoted primarily to those farm commodities in which there are regular or seasonal surpluses, and their products and by-products."

Pursuant to this act of Congress, four laboratories were established, the Eastern Regional Research Laboratory in Philadelphia; the Northern Regional Research Laboratory in Peoria, Illinois; the Western Regional Research Laboratory in Albany, California; and the Southern Regional Research Laboratory in New Orleans. These laboratories are operated by the Bureau of Agricultural and Industrial Chemistry of the Agricultural Research Administration of the United States Department of Agriculture.

The Physical Plant

Ground was first broken for the New Orleans laboratory in June 1939, and the building was accepted by the Government in June 1941. The main building of the laboratory is a three-storied, U-shaped structure with a basement. The base of the U is 211 feet long and 63 feet wide. Each leg is 306 feet long and 66 feet wide, one housing 72 research laboratories and the other a pilot plant and textile mill. The base, or front unit, contains the administrative offices of the laboratory. In addition to the main structure is a service building, which houses the steam-generating equipment, ammonia compressors, incinerator, and other service utilities. There is also a small building for the storage of inflammable solvents, such as alcohol, ether, and petroleum naphtha. The Government has invested almost 1.5 million dollars in the buildings of the New Orleans laboratory, exclusive of equipment.

Under D. F. J. Lynch, director, a staff of 269 persons is employed in the laboratory. Of these, 153 are professional and sub-professional members of the technical staff, 40 are clerical workers, and 76 are craftsmen and protective and custodial employees. A total budget of approximately one million dollars is set up annually for the support of the laboratory and its staff.

These four regional laboratories are organized on a commodity basis, each laboratory giving the major part of its attention to those crops in its region that are most subject to surplus conditions. Cotton, sweet potatoes, and peanuts are the commodities with which the New Orleans laboratory is chiefly concerned, and the organization of the laboratory reflects this specialization. Within the laboratory seven research divisions are set up, three of them dealing with cotton; one with sweet potatoes, one with oils, fats, and proteins; one with engineering and development projects; and one with more or less general analytical, physical chemical, and physical investigations into the properties of the three basic commodities and their derivatives. The last of these also renders specialized chemical and physical services and conducts investigations for the other divisions.

Research Divisions

The Sweetpotato Products Division is primarily interested in the production of starch from sweet potatoes. Research is directed toward improvement in the yield and quality of the starch, the chemical and microbiological control of manufacturing processes, and the properties of sweet potato starch and its derivatives relative to utilization. Problems of production, properties and applications of other sweet potato derivatives and by-products also fall within the field of this division, as do those of the preservation of sweet potatoes for industrial use.

Investigations of the Oil, Fat, and Protein Division are directed toward a determination of the properties and composition of cottonseed and peanut oils and on the chemical modification of these oils to increase their industrial utility and improve their odor and flavor stability. Improvement in yield and quality of oil and proteins by better processing is another field of investigation in this division, as is the industrial use of protein as a raw material for the production of adhesives, fibers, paper coating materials, and water paint.

The Engineering and Development Division carries on investigations in the processing and storing of cottonseed, sweet potatoes, and peanuts. In addition it makes pilot plant studies on a semicommercial scale of processes and products that have been developed on a laboratory scale. This division also designs equipment and large-scale apparatus and furnishes engineering and consulting services to the laboratory as well as to co-operating agencies.

Research dealing with cotton is divided among three divisions—the Cotton Fiber Research Division, the Cotton Chemical Finishing Division, and the Cotton Processing Division. The first of these is concerned with the relationship of the chemical and physical structure of cotton fiber to technically significant properties, the improvement of cotton fiber properties, the nature and prevention of degradation of cotton fiber, and the chemical modification of the fiber. The second of the cotton divisions works to develop new and improved finishes for cotton textiles in order to increase their utility and suitability for special uses. It also determines the serviceability of various finishes and finished textiles and studies ways and means of increasing the efficiency and reducing the

cost of finishing operations. The third cotton division works primarily to develop new and improved cotton products that will meet the requirements of specific end uses and to develop new and improved cotton-processing machinery that will lower the cost and improve the quality of cotton products. A section of the division collects, analyzes, and interprets technical and economic information relating to the manufacture and use of cotton and competitive products. The work of this section is valuable as an aid in the selection of new research projects and in the appraisal of the commercial value of research results.

The Cotton Processing Division has for its use an experimental cotton textile mill in a part of one wing of the main building. This mill is 95 feet long and 62 feet wide, occupying space on three floors. Each floor is individually air-conditioned, so that all conditions of temperature and humidity that may be found in actual practice can be duplicated in any section of the mill. Modern standard machinery used in all steps of cotton-fabric manufacture, from opening through weaving, is found in this mill, together with the necessary auxiliary equipment for winding and warping, as is also a testing laboratory with machines for making a wide variety of physical tests on textiles.

Wartime Projects

The four regional research laboratories were originally designed to play a peacetime role. The outbreak of war in Europe, however, just at the time construction was beginning, and the entry of the United States into the world conflict, when operations were just getting under way, may have profoundly influenced the work of these laboratories. Inevitably the research projects undertaken were those that appeared most urgent in view of wartime necessities. In all the laboratories, certain aspects of the research program thus came to be emphasized, whereas other aspects were minimized or held in abeyance.

Military secrecy prevents any detailed description of much of the wartime work of the New Orleans laboratory. Some of the things that have been attempted, however, and some of the results that have been achieved are matters of public knowledge.

The research of the Sweetpotato Products Division during the war has been primarily directed toward the manufacture of starch from sweet potatoes. In carrying on this work the Sweetpotato Products Division has held the unique position of consultant on technical operations to the sweet potato starch plant of Sweetpotato Growers, Inc., a co-operative organization, at Laurel, Mississippi. This plant has been producing high-quality starch, for special wartime uses, from a new high-starch variety of sweet potato that was developed in co-operation with the Louisiana Agricultural Experiment Station. It was also found feasible to manufacture starch from sweet potatoes containing a high proportion of Porto Rico sweet potato culls obtained from a plant dehydrating sweet potatoes for food use. The improved methods of factory control developed or adapted by the Southern Regional Research Laboratory greatly facilitated adjustment of processing conditions to the different grades of new material.

Investigations in starch by-products showed that at the Laurel factory there was a possibility of recovering 60 per cent or more of the sweet potato protein ordinarily wasted in a starch factory's "fruit water" and using the sugars found in that waste for the production of feed yeast. Use of the protein-recovery process at the Laurel plant would save daily about a ton of crude protein now wasted and would raise the protein content of sweet potato pulp, the by-product feed, from between 2 and 4 per cent to perhaps 16 per cent. An application of the yeast-production process would yield a ton or more of high-protein, vitamin-rich feed supplement per day. Almost another ton of yeast per day could be produced from the wasted starch tailings after concentration and conversion of the starch to sugars.

The results of the work in sweet potato starch in the laboratory and at the Laurel plant are now in process of being translated into a large-volume, streamlined manufacturing operation at Clewiston, Florida, where the United States Sugar Corporation is erecting under WPB authorization a multimillion-dollar starch plant. This plant will have a daily capacity of about 240,000 pounds of finished starch and an estimated annual output of 50 to 75 million pounds.

Substitute Oils

During the war the attention of the Oil, Fat, and Protein Division has been directed chiefly to the development of oils and fats as substitutes for those from which the country was cut off by the exigencies of war. In this field of research, a substitute for palm oil, an oil that is used extensively in the manufacture of tin- and terne-plate and in the making of sheet steel by the cold reduction process, was found in a properly hydrogenated cottonseed oil. This discovery has given the tin and steel industries a "tailor made" substitute oil that is said to surpass in some respects the original oil formerly imported from the Dutch East Indies.

Similarly, from peanut oil was derived an olive-oil substitute for use as a worsted spinning lubricant in the textile industry. After testing a sample of this substitute, the National Wool Manufacturers' Association pronounced it not only equal but actually superior to olive oil.

From cottonseed oil has also been developed a substitute for cocoa butter. This substitute can be used both in confectionery and pharmaceutical products.

In order to relieve wartime shortages of gums and other adhesives that are suitable for use in bookbinding and in making gummed tape, gummed paper, and set-up boxes, the New Orleans laboratory has endeavored to develop such products from cottonseed and peanut meals. Results have proved that it is possible to prepare peanut protein glues of good adhesive quality suitable for such uses as those mentioned. Special characteristics of peanut protein glues, particularly their tackiness and fluidity at room temperature, make them suitable for certain gluing operations for which vegetable proteins have heretofore been considered unsuitable. Since these glues become tacky as soon as moistened and require no heating, they can be used in the paper-box and bookbinding trades with less difficulty than is encountered with certain other types of glue.

Experiments have also been conducted in the production of a textile fiber from peanut protein. Just before the outbreak of the war, a peanut protein fiber was developed in England under the name of Ardil. This was a wool-like fiber that seemed to hold great promise as a substitute for wool, wholly or partly, in the manufacture of men's and women's clothing. The experiments in the Southern laboratory, however, have been directed toward producing a type of fiber somewhat different from that developed in England. It was found that a fiber equal to soybean and casein fibers, or superior to them, could be produced from peanut protein. The pressure of more urgent war work has prevented concentra-

tion on this project. It promises, however, to be again a very fruitful line of investigation after the war.

Cotton Research

Regardless of the importance of other commodities as objects of investigation, cotton and cottonseed have remained in war as in peace the major concern of the Southern laboratory. The overwhelming importance of cotton is indicated by the allocation of approximately 80 per cent of the laboratory's budget to research in this field.

One of the earliest and most outstanding wartime projects in the field of cotton research has dealt with the preservation of sandbag, camouflage, and other military fabrics against damage by weather and micro-organisms. This research has involved the development of new testing methods, extensive laboratory and service tests of commercial preservatives, and the development of new treatments. One of the last, a process developed for rotproofing cotton goods, has turned out to be more effective than any other known treatment for the same purpose. Cloth samples treated by this process have retained more than 80 per cent of their strength after having been buried for an entire year in damp, warm soil known to be rich in micro-organisms. In contrast, untreated goods rot in one week.

The need for cotton fabrics that are adequately flameproofed has become more apparent than ever since the beginning of the war, and a co-ordinated program of research involving the efforts of several agencies has been conducted with this need in mind. Although effective flameproofing treatments have been available for a number of years, they have usually had the disadvantage of being easily washed out or making the fabric too stiff and heavy. Recent research at the Southern laboratory has produced a treatment that preserves the fabric's resistance to flame even after many launderings yet alters its physical characteristics only moderately. By this process the flameproofing of outer garments has been made more practical.

Since the outbreak of the present war, an increasing amount of research has been directed toward improving the water resistance and water-holding properties of fabrics. As a result of research by the Shirley Institute in England, by the War Department, and by the Southern laboratory a new type of water-repellent fabric has been developed. This fabric is made in such a way that when it is wetted, the fibers and yarns swell, thus closing the interstices and making the cloth water-repellent. As the fabric dries, the pores open, permitting it to "breathe" freely. This treatment has been found useful in the making of fire hose and tenting, and it is now being considered for military clothing. The Southern laboratory's particular contribution to this development has been the application of a supplementary swellable substance that furthers the swelling action and thus makes the fabric capable of withstanding high water pressures such as those to which fire hose are subjected.

Another wartime development has been that of a machine for cutting lint cotton into lengths comparable to those of linters, the short fuzzy fibers adhering to cottonseed. At the beginning of the war when the country faced a shortage of linters for making cellulose for smokeless powder, it was proposed that lint cotton be used as a supplementary source of supply. Existing types of cutting machines, however, proved inadequate for this purpose. A new high-capacity, disc-type cutting machine was therefore designed and a full-sized model was built under a special appropriation from Congress. Through the co-operation of a large purifier of linters this machine is now being tested, and in a recent trial run 1,200 pounds of cotton were satisfactorily processed to the proper length in eight minutes, or at the rate of approximately 18 bales an hour. The increased tempo of the war in Europe, with a consequent increase in the consumption of linters and the decline in the supply of this raw material, has given this machine renewed importance.

Also developed by the Southern laboratory during the war is an improved cotton bandage fabric. This new fabric has interesting and valuable properties, including a high degree of stretchability that makes the bandage partially self-fitting, some elasticity that makes it self-tightening to a certain degree and very flexible when in place, and a roughened surface that keeps it from slipping. All these properties are retained after the usual sterilization necessary for products of this kind. Clinical tests have demonstrated the advantages of this bandage in head, knee, arm, and elbow dressings, and the laboratory has produced many thousands of yards of this material for the armed forces.

Among other wartime developments in the field of cotton research has been a new process for preparing cellulose nitrate, which is used in making smokeless powder. This process represents a saving of one third to one half the time required by present operations. Still others have been a resinous treatment that increases by many times the life of cotton fish nets; a process that by reducing the inflammability of cotton heightens its utility as an insulating material; and a special treatment for cotton thread that will resist deterioration from the acid present in fertilizer bags.

Tire Cord

The most important cotton utilization project thus far developed at the Southern Regional Research Laboratory has been the tire cord project. This was begun shortly after the outbreak of the war and following statements made in certain quarters that cotton cord was not as suitable as rayon for certain types of military and essential civilian tires. The objective of this research has been the development of an improved type of cord, first, through the experimental selection of the best varieties of cotton commercially available with respect to this use, and, second, through chemical and mechanical treatments and changes in cord construction. Much of this research is being conducted with the co-operation of tire and tire cord manufacturers, and it involves service tests conducted by, and through the co-operation of, the War Production Board and the Office of the Chief of Ordnance. So far no details of the results of these service tests have been released for publication. It has been demonstrated, however, that tires made with cord manufactured from certain varieties of commercially available cotton with which the Southern Regional Research Laboratory has been working will give appreciably longer service life in certain classes of use than will tires made from those types of cotton cord produced today.

The rubber emergency that threatened the nation during the early years of the war led to the co-operation of the Eastern and Southern laboratories with other bureaus of the Department of Agriculture in an investigation of the possibilities of recovering rubber from domestically grown plants such as koksaghyz, cryptostegia, guayule, and goldenrod. Experiments in connection with the first three were carried on at the Eastern laboratory, whereas those in connection with

goldenrod were conducted at the Southern laboratory in New Orleans. The goldenrod for this experiment came from plantings on approximately 670 acres near Waynesboro, Georgia.

From the 1943 crop of goldenrod more than 800 pounds of rubber were produced at the laboratory. Vulcanizates of this goldenrod rubber had a high ultimate elongation, good rebound and resilience, excellent resistance to abrasion and good resistance to the deterioration that usually results from age. Goldenrod rubber was comparable to hevea in low hysteresis (heat build-up), and indications were that the addition of goldenrod rubber would materially reduce the hysteresis of synthetic rubber.

One of the larger rubber manufacturing companies undertook a factory processing test based upon the encouraging results of laboratory milling and vulcanizing experiments. More than 40 plied-fabric bicycle tires were produced by regular manufacturing operations. A wheel test on three of these goldenrod-rubber tires averaged 1,362 miles, compared to approximately 700 miles for a prewar hevea-and-reclaim tire of similar construction, and approximately 450 miles for all-reclaim wartime tires.

Although it has been demonstrated that a good quality of rubber can be made from goldenrod on an experimental basis, it does not follow that the cultivation of this particular source of rubber would be economically justifiable, as a practical matter, when hevea and synthetic rubber were available at a much lower cost. Similarly, it might be justifiable to cut lint cotton to linter length in a wartime emergency, but such a practice would scarcely be economical under ordinary circumstances.

Economic Aspects of Research

Considerations of this kind call attention to one factor that must always be borne in mind in the appraisal of any research laboratory's work, namely, the gap that always exists between what is technically possible and what is economically feasible. It is easy to be dazzled by the endless array of products that can be produced in a laboratory by the modification of the chemical and physical properties of almost any agricultural raw material. To expect these products to enter the stream of commerce quickly, however, would be quite unfair. Whether or not experimentally produced commodities become commercially available depends to a large extent upon their costs as these are related to the costs of competing products. The achievements of the laboratory can be translated into the achievements of industry only when the cost of processing the raw material can be kept below some allowable maximum and when an adequate supply of raw material, produced at sufficiently low cost, is available from the farm.

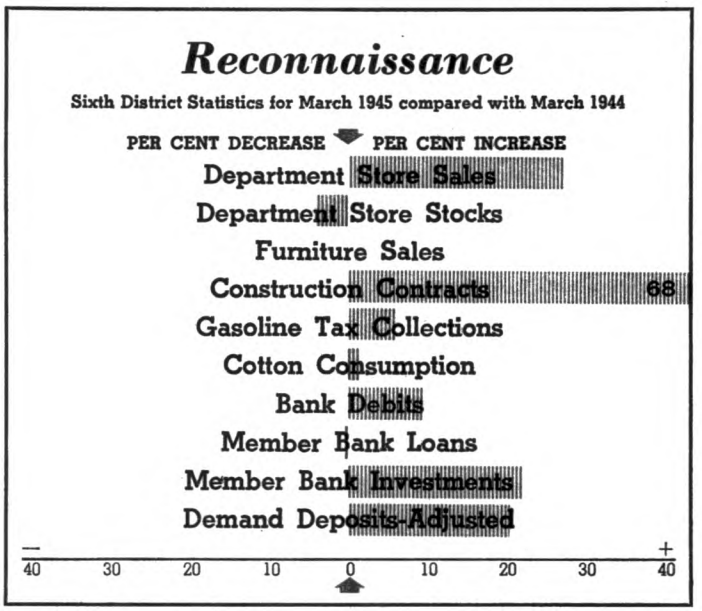
Cost problems of the first sort tend to find a solution in the Southern laboratory's pilot plant and textile mill as well as in the plants of co-operating industries. There the technical problems of production on a semicommercial scale can be worked out, cost data accumulated, and cost-saving practices developed and evaluated. An opportunity also exists for affecting raw-material costs through the close liaison of the laboratory with the region's state experiment stations, whose representatives meet annually at the laboratory for consultation. Only as the cost problems at the agricultural end, as well as at the industrial end, of the sequence find solutions can the laboratory make its full contribution to the economy of the region. Even though progress in this direction is slow and unspectacular, that contribution is fundamental.

One of the fundamental characteristics of agricultural commodities that are raised primarily for food, feed, and fiber is that large variations in price are accompanied by relatively small changes in the quantity that the market will absorb. More cotton, for example, will of course be absorbed at a low price than at a high price, but perhaps not much more. It is quite possible, therefore, that a large supply of such a commodity will bring the producers as a group a smaller total amount of money than would a smaller supply.

In the case of industrial products such a relation between price and the quantity that the market will absorb is not nearly so common. A small variation in the price of these products is frequently accomplished by large inverse differences in the quantity that can be sold. Under such circumstances a larger quantity would sell for a larger total amount of money than would a smaller quantity. Insofar, therefore, as the Southern Regional Research Laboratory successfully develops industrial uses for Southern farm commodities, it tends to remove them from a less favorable to a more favorable price-quantity relationship. In doing this, it would spare the farmer the wide fluctuations in price that ordinarily accompany small variations in supply. Furthermore, farmers as a whole would be benefited rather than injured by an abundant supply.

The research work of the Southern Regional Research Laboratory is also of fundamental long-run importance to industry as well as to agriculture. The growth and progress of industry depends to a large extent upon an expanding field of new industrial opportunities that can absorb investible capital and employ available workers. The development of new products and the improvement and modification of old products, as the result of scientific research, open up precisely the kind of opportunities that business requires for healthy and vigorous survival. The future shape of Southern agriculture and industry may therefore depend to a large extent upon the patient work of scientists in such institutions as the Southern Regional Research Laboratory.

EARLE L. RAUBER.



The District Business Situation

THE USUAL business indicators as yet give no signs that business activity within the Sixth District is approaching a climax as the war in Europe nears its end. Department store sales continue to reach new highs in dollar volume over the previous year. Furniture sales and life insurance sales also find new highs in dollar volume. Even construction contracts and consumption of cotton were higher in the District for the month of March than they were for March of last year. Lumber production has improved, and about the only current index that has shown a downward trend is that of coal production, but in this instance the reduction is primarily the result of labor disputes rather than an underlying slackening in demand.

Shipbuilding Cutbacks

To a very considerable extent the current business indicators reflect industrial and consumer demands that have been generated by the overwhelming requirements of the war. Major, even though temporary, reversals in the upward trends of most of these business indexes are certain to occur with the termination or cancellation of war contracts. Because of its heavy dependence upon shipbuilding activities, the Sixth District especially is vulnerable to terminations and cancellations. District shipyards are now employing somewhere around 150,000 workers. Even allowing for service and repair work it is probable that this number of shipyard workers will have been reduced by one half by the end of the year.

As revealed by a general roundup of press notices, the prospects of continuance of current income and employment levels are favorable in some of the shipbuilding centers and unfavorable in others. Barring the awarding of new contracts, a contingency that seems unlikely at present, the giant Delta Shipbuilding plant at New Orleans will complete its contracts by late summer. As the company is now employing some 11,000 workers, the closing of the plant might ordinarily be expected to create a serious unemployment situation for New Orleans, but there are relieving factors. In common with other war centers, New Orleans has an acute housing shortage and in general suffers from wartime boom conditions. Some reduction in shipyard employment would no doubt be welcomed, and it would seem that in the city's present overextended situation Delta's workers could be readily absorbed, for they number not more than 10 per cent of the workers now employed in the New Orleans area.

Owing a large part of its current prosperity to its shipbuilding activities, Tampa must expect eventual sharp contraction. The Tampa Shipbuilding Company, which employs about 10,000 workers, has been working on naval contracts and probably will continue its operations on about the present scale until some time next year. McCloskey and Company, however, is scheduled to complete its Maritime Commission contract for steel cargo vessels by the middle of the year and thus will release more than 4,000 workers unless new contracts for repair or building are obtained.

The Mobile area may also expect early readjustments. Located in this area are the giant yards of the Alabama Drydock and Shipbuilding Company, the Gulf Shipbuilding Corporation, and the Ingalls Shipbuilding Corporation. Alabama Drydock in recent months has already sharply reduced its working force, and the fear of continued reductions has complicated the problem of maintaining an adequate staff in the other yards. On April 21, the Maritime Commission canceled contracts for five tankers that were to have been constructed by the company. With a new contract for seven 18,000-ton all-welded cargo ships and for three large dredges, Ingalls is apparently assured of full operation for the remainder of the year, and Gulf promises to operate at its present scale for some weeks ahead.

Savannah and Brunswick have already experienced sharp reductions in shipyard employment, and apparently they may expect additional reductions in ensuing months. Having but recently started on a new contract for 25 large motor ships, the J. A. Jones Construction Company of Brunswick is assured of operations for some months but at a reduced scale. The Southeastern Shipbuilding Corporation of Savannah has been reducing its working force for some time, particularly since the launching in late March of the last of 25 mine sweepers built for the Navy.

The yards at Jacksonville and Panama City also are expected to contribute to a labor surplus as contracts for cargo vessels are completed. Having completed contracts for 82 Liberty ships, the St. Johns River Shipbuilding Corporation of Jacksonville is currently working on a contract for 12 tankers. The Wainwright yard at Panama City will complete its contracts by early fall, a contingency that will severely affect the local labor market, for the yards employ about 80 per cent of the workers in the area.

The end of the war in Europe, in addition to curtailing shipbuilding activities, is certain to result in a substantial termination and cancellation of other war contracts. In spite of the overwhelming military successes that have been achieved in Europe in recent weeks, war-contract cancellations in the region have so far been very minor in character. Contracts of the Higgins Plastics Corporation of New Orleans and the J. A. Jones Construction Company of Sheffield, Alabama, for the forging and machining of 105-mm. shells were canceled, as was a contract of the Rheem Manufacturing Company at Birmingham for 75-mm. shell forgings.

In contrast to the few cancellations were the public announcements during April of new war-contract awards. The Rust Engineering Company of Birmingham and Pittsburgh was awarded contracts for the design and erection of shell plants at Ensley and Sheffield. Air Products, Inc., at Chattanooga is currently considering a $500,000 expansion program, and the Armstrong Tire and Rubber Company at Natchez, Mississippi, is advertising contracts for buildings that will cost approximately $1,500,000.

Prospective Plantings

It seems probable that if Sixth District farmers carry out their March plans the total acreage planted in the more important crops this year will be smaller than last year's acreage by a little less than 3 per cent. The report on prospective plantings is prepared each year by the United States Department of Agriculture to assist growers generally in making such changes in their acreage plans as may appear to be desirable. Cotton is not included because of a legislative prohibition.

Nationally the report indicates that a near-record acreage of principal crops, about equal to the total acreage grown last year, is to be expected this year if the weather permits farmers to carry out their plans.

Plans reported in March for the six states that are situated wholly or partly within the Sixth Federal Reserve District indicate a prospective increase of 16 per cent in oats, an increase of 19 per cent in barley, and increases of 5 per cent in tobacco and something less than 1 per cent in tame hay. On the other hand, farmers planned to reduce their plantings of potatoes by 14 per cent, sweet potatoes 7 per cent, soybeans 11 per cent, corn 6 per cent, and peanuts 5 per cent. A decrease of 1 per cent also appears probable in the Louisiana rice acreage.

In Alabama, if farmers carry out their March 1 intentions, there will be an increase of 10 per cent in the acreage in oats, which will mean the largest such acreage since 1916, but there will be reductions in other principal crops. In Florida the prospective acreages in peanuts, tobacco, and tame hay will be the same that they were in 1944, with increases of 1 per cent in corn, 4 per cent in potatoes, and 41 per cent in oats and a reduction of 5 per cent in sweet potatoes. Georgia farmers planned to plant larger acreages this year in oats and barley, to make no change in the acreages for tobacco and tame hay, and to decrease other crops. Louisiana prospects are for larger acreages of oats, sweet potatoes, and hay but smaller plantings of corn, rice, Irish potatoes, soybeans, cowpeas, and peanuts.

Mississippi farmers planned larger acreages in oats and barley but reductions of 10 per cent in corn and 15 per cent in soybeans, peanuts, Irish and sweet potatoes. They made plans for the same acreage in tame hay that they had last year. In Tennessee reductions of 5 per cent in corn, 7 per cent in Irish potatoes, and 14 per cent in sweet potatoes are in prospect. The acreages in soybeans and peanuts are expected to be the same as those of last year, and intentions called for increases of 18 per cent in tame hay, 11 per cent in tobacco, and 15 per cent in oats and barley.

In most parts of the District farm work is well advanced. Temperatures during all of March and April, except for a few days early in the month, have been well above normal. In some localities work has been interrupted by rainfall, but in central and southern Georgia more rain is badly needed, and in Florida the February-March drought has continued into April. Citrus groves are suffering from lack of moisture where irrigation facilities are not available—leaves are curling, fruit is getting soft, and newly set fruit is dropping. Yield prospects for spring vegetables on unirrigated land are considerably under normal, and dry weather is interfering with the setting of tobacco and seeding of peanuts.

In the 10 Southern, early peach states the bloom was on an average two or three weeks earlier than usual and the set of fruit has been exceptionally heavy. Frost damage in the early April cold spell was light. The light winter rainfall, however, is giving growers concern, and continued below-normal precipitation would probably result in smaller sizes.

Cash Income from Marketings

In January farmers in the six states of this District received 161 million dollars for the crops, livestock, and livestock products marketed in that month. This total represents a reduction of 14 per cent from the December figure, a decline

Sixth District Statistics

INSTALMENT CASH LOANS

Lender	Number of Lenders Reporting	Per Cent Change Feb. 1945 to Mar. 1945	
		Volume	Outstandings
Federal credit unions	44	+ 20	+ 1
State credit unions	25	+ 33	— 1
Industrial banking companies	10	— 5	+ 4
Personal finance companies	60	+ 26	— 0
Commercial banks	34	+ 27	+ 7
Industrial loan companies	16	+ 38	— 14

WHOLESALE SALES AND INVENTORIES* — MARCH 1945

Item	SALES			INVENTORIES		
	No. of Firms Reporting	Per Cent Change March 1945 from		No. of Firms Reporting	Per Cent Change March 1945 from	
		Feb. 1945	Mar. 1944		Feb. 1945	Mar. 1944
Automotive supplies	10	+ 12	+ 33	8	+ 6	+ 23
Clothing and furnishings	3	+ 14	— 7	..	.....	.....
Drugs and sundries	6	+ 12	+ 6	..	.....	.....
Dry goods	13	— 15	— 16	6	+ 6	— 28
Electrical goods	3	— 4	+ 9	..	.....	.....
Fresh fruits and vegetables	7	+ 17	+ 1	..	.....	.....
Farm supplies	3	+ 8	+ 17			
Confectionery	6	+ 7	— 23	..	.....	.....
Groceries—full line wholesalers	33	+ 11	— 7	15	— 5	— 16
Groceries—specialty line wholesalers	11	+ 12	+ 3	6	— 2	+ 5
Hardware—general	11	+ 13	+ 1	5	— 3	+ 3
Hardware—industrial	5	+ 15	+ 21	..	.....	.....
Paper and its products	3	+ 13	— 11	..	.....	.....
Tobacco and its products	9	+ 9	— 26	4	— 12	— 22
Miscellaneous	14	+ 5	— 5	15	— 0	— 20
TOTAL	137	+ 7	— 5	59	— 2	— 14

*Based on U. S. Department of Commerce figures

RETAIL FURNITURE STORE OPERATIONS

Item	Number of Stores Reporting	Per Cent Change March 1945 from	
		Feb. 1945	Mar. 1944
Total sales	107	+ 23	+ 22
Cash sales	96	+ 26	+ 39
Instalment and other credit sales	96	+ 23	+ 21
Accounts receivable, end of month	104	— 2	+ 11
Collections during month	104	+ 8	+ 15
Inventories, end of month	82	+ 9	+ 6

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

Item	April 18 1945	March 21 1945	April 19 1944	Per Cent Change Apr. 18, 1945, from	
				Mar. 21 1945	Apr. 19 1944
Loans and Investments—Total	1,821,206	1,826,669	1,531,175	— 0	+ 19
Loans—total	322,185	326,982	302,888	— 1	+ 6
Commercial, industrial, and agricultural loans	186,657	188,663	181,936	— 1	+ 3
Loans to brokers and dealers in securities	7,759	6,556	6,335	+ 18	+ 22
Other loans for purchasing and carrying securities	36,308	40,343	23,812	— 10	+ 52
Real estate loans	25,917	24,004	27,505	+ 8	— 6
Loans to banks	1,623	1,163	2,403	+ 40	— 32
Other loans	63,921	66,253	60,897	— 4	+ 5
Investments—total	1,499,021	1,499,687	1,228,287	— 0	+ 22
U. S. direct obligations	1,362,916	1,363,862	1,093,007	— 0	+ 25
Obligations guaranteed by U. S.	6,192	6,192	25,420	0	— 76
Other securities	129,913	129,633	109,860	+ 0	+ 18
Reserve with F. R. Bank	346,596	336,698	296,727	+ 3	+ 17
Cash in vault	28,349	29,636	25,444	— 4	+ 11
Balances with domestic banks	148,059	149,705	157,828	— 1	— 6
Demand deposits—adjusted	1,229,632	1,193,369	1,032,354	+ 3	+ 19
Time deposits	357,014	348,359	264,697	+ 2	+ 35
U. S. Gov't deposits	146,805	195,044	184,020	— 25	— 20
Deposits of domestic banks	505,977	501,354	434,262	+ 1	+ 17
Borrowings	.....	.....	.....	.....	.....

not much more than half that at the same time a year ago, and an increase of 4 per cent over the total for January 1944. In Florida income from crop marketings increased 15 per cent from December to January because of increased receipts from oranges, and there was a small gain in Mississippi. Receipts from marketings of livestock and livestock products increased somewhat in Georgia and Louisiana, but these gains were more than offset by decreases in the other four states.

January receipts from crop marketings in the six states this year totaled 118 million dollars and were 13 per cent greater than those of January 1944, but receipts from livestock and livestock products amounted to slightly less than 43 million dollars and were 13 per cent smaller than they were a year ago. Receipts from livestock and livestock products were smaller in January this year in all the Six States. Though receipts from crops were smaller in Alabama and Georgia, there were increases of 4 per cent in Louisiana, 17 per cent in Florida, 27 per cent in Tennessee, and 47 per cent in Mississippi.

Industrial Production

Lumber production in the eastern part of the District has improved somewhat in recent weeks as a result of more favorable weather conditions, although the mills and logging camps are still handicapped by labor shortages and difficulties in obtaining tires and parts, particularly for heavy trucks. In the lower Mississippi valley, however, most of the logging operations have been stopped by flood waters in the Mississippi and its tributaries. Particularly the Red and Ouachita Rivers in Louisiana have flooded many thousands of acres. In the second week of April it was estimated that almost 40 thousand families had been removed and that considerably more than 60 thousand families in the state had been affected in one way or another by the flood. Both pine and hardwood lumber continue in strong demand, with governmental agencies taking about 90 per cent of total output and leaving very little for retail yards.

Construction contracts awarded in the Sixth District during March amounted to almost 34.5 million dollars, a total about 20 million dollars greater than the small amount reported for February and about 14 million dollars larger than the total for March of last year. It was the largest figure reported for any month in about a year and a half. There were high increases in Alabama and Louisiana, a small gain in Tennessee, and decreases in Florida, Georgia, and Mississippi.

Consumption of cotton in March by textile mills in Alabama, Georgia, and Tennessee—308.5 thousand bales—increased over that in other recent months and was the largest in almost two years. The increases over the totals for February and January, however, were owing to the greater number of business days in March, and actually the daily rate of consumption was slightly lower than it was in those months.

Coal output in Alabama, at 1,697,000 net tons, and Tennessee, at 620,000 net tons, was slightly higher on a daily average basis in March than it was in February, but it was 8 per cent below the rate in March last year. In April, however, a reduction in output resulting from the strike at some of the company mines has seriously affected the area's industrial operations. Steel mill activity in the Birmingham-Gadsden area was reported by the *Iron Age* as having been at 99.0 per cent of capacity since the third week in February. For the week ended April 10, however, the rate dropped to 79.0 per cent, and for the following week it was reported as 75.0 per cent. A report in the press on April 14 indicated that the area had lost six blast furnaces and three open hearth furnaces.

Retail Trade

It seems probable, on the basis of reports submitted for the first two weeks in April by approximately 30 department stores in the larger cities of the District, that when figures for the full month are received from the 85 stores that report on a monthly basis they will disclose a decline from the high level of sales in February and March. Although sales made during the second week of April this year were 5 per cent greater than they were during the same week a year ago, sales in the first week were 11 per cent less than they were in the corresponding week last year. The drop was to be expected since the entire volume of Easter buying fell in March of this year, whereas last April seven business days, two of them Saturdays, preceded Easter Sunday. Another reason for a drop in April sales was that March this year was definitely the first month of spring rather than the last month of winter. Unseasonably high temperatures advanced spring buying several weeks at least.

In March the 85 reporting department stores sold 33 per cent more goods in actual dollar volume than they sold in February. Because March had three more business days than February, however, the unadjusted index of daily average sales advanced only 20 per cent. March volume this year was 27 per cent greater than it was in 1944. In the first quarter of 1945 total sales made by these 85 reporting stores averaged 22 per cent greater than those made in the corresponding period of 1944. The largest increase, 37 per cent, was reported by Augusta stores. Montgomery reported an increase of 36 per cent, and Atlanta one of 30 per cent. Although increases of between 20 and 30 per cent were reported by Macon, Knoxville, Chattanooga, Jacksonville, Jackson, Nashville, and Baton Rouge, gains of less than 20 per cent were realized at Birmingham, New Orleans, Tampa, Mobile, and Miami and at points with fewer than three reporting firms, which are grouped under the head "Other Cities." Accompanying the increased sales in March were improvements in collections against both regular and instalment accounts.

March department store inventories increased 3 per cent over the February inventories but dropped 2 per cent below figures for March of last year. Though stocks increased in March at Atlanta, Birmingham, Macon, and Montgomery, they declined at New Orleans and Nashville. At the end of March this year Atlanta stores had stocks 13 per cent larger than those they had a year ago. Decreases, however, were reported by other cities.

In spite of gasoline and tax rationing, gasoline sales continue to surpass the collections of the earlier war years. With no change in rates, tax collections for March of this year in the six states of the District were $8,540,559 as compared with $8,121,227 for March of last year and $7,483,042 for March of 1943. Expressed in millions of dollars, March collections on February sales in the Six States were as follows: Alabama, 1.2; Florida, 1.9; Georgia, 1.6; Louisiana, 1.3; Mississippi, 0.8; and Tennessee, 1.8. All of these states impose a tax of six cents a gallon with the exception of Florida which levies a tax of seven cents.