

Monthly Review

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Pine, Pulp and Paper

WITH the discovery that the Southern pine tree provides an economic and renewable source of cellulose, the pulp, paper, and paper-products industry in the Southeast was elevated to an important place in the region's economy. The pulp industry in the South is relatively new. About 3.8 million short tons of wood pulp were produced in the United States in 1920, but the South was responsible for less than one-half million tons of that amount. By 1942, however, it was producing more than twice as much wood pulp as any other region in the country was; in that year approximately 4.6 million short tons of the nation's total 10.4 million were produced in this section of the country. The War Production Board has set a 1944 goal of 14 million cords for domestic pulpwood producers. Of this total, the Southern states from Virginia to Texas are expected to produce about 8 million cords. Thus, the increasing importance of the Southern forests in the production of pulpwood during the years since World War I has been accentuated during the present war.

Pulp mills have been established in each of the six states of the District. The Gulf States Paper Corporation established a pulp mill at Tuscaloosa, Alabama, in 1928. That same year, the Mobile Paper Mill Company established a mill at Crichton, Alabama. Three additional paper mills that came to the state were located in Mobile: the International Paper Company established a plant there in 1929; the National Gypsum Company, in 1938; and the Hollingsworth and Whitney Company, in 1940.

Although its progress has been rapid in the past few years, the development of pulp manufacture in Florida did not get under way until 1930. In that year the International Paper Company's plant at Panama City was built. Three more new mills were located in Florida in 1938. These were the Container Corporation of America plant at Fernandina; the National Container Corporation mill at Jacksonville; and the St. Joe Paper Corporation mill at Port St. Joe. In the following year, Rayonier, Inc., established a pulp mill in Fernandina. The Florida Pulp and Paper Company built a mill at Pensacola in 1941, and the Santa Rosa Pulp Company is now constructing another mill there.

Not until the middle 1930's did the Georgia development come. The Union Bag and Paper Corporation in 1936 established a mill at Savannah; in 1938, the Brunswick Pulp and Paper Company began operations at Brunswick; and in 1941, St. Mary's Kraft Corporation built a mill at St. Mary's.

Concentrated in the decade between 1918 and 1928, the development in Louisiana began with the construction of the Gaylord Container Corporation mill at Bogalusa during the first year of the period. The International Paper Company became the owner of two mills at Bastrop between 1921 and 1924, and the Brown Paper Mill Company, Inc., began operations in West Monroe in 1924. Two years later, the Calcasieu Paper Company built a mill at Elizabeth, and the Southern

Advance Bag and Paper Company began production at Hodge in 1928. Ten years passed before any additional pulp mills were established in the state. Then, in 1938, the International Paper Company built a pulp mill at Spring Hill.

Though pulp manufacture began in Mississippi before World War I with the establishment of an International Paper Company plant at Moss Point, subsequent development was sporadic. The Masonite Corporation began to manufacture pulp at Laurel in 1926, and within the next four years the United States Gypsum Company opened a mill at Greenville. Ten years later, in 1940, the Flintkote Company began operations at Meridian.

Three pulp mills are located in Tennessee, all established during the 1920's. The Mead Corporation built a mill in Kingsport in 1923, the Southern Extract Company began operations in Knoxville in 1925, and the Mead Corporation established a second mill at Harriman in the last year of the decade.

At the time of the last Census of Manufactures, 1939, the pulp and paper industry in the District had already reached major proportions, and some expansion has taken place since that year. The census figures for the year 1939 showed that manufacturers of paper, paperboard, and paper products employed 2,914 persons in Alabama. Total wages paid in the industry there during the same year were 2.9 million dollars. In Florida, 2,180 persons employed in the manufacture of the same products earned 2.5 million dollars. Earning 3.0 million dollars in the industry in Georgia were 3,192 employees. The industry in Louisiana paid 6.5 million dollars in wages to a total of 5,910 employees. Tennessee wage earners in the industry numbered 2,491 and earned a total of 2.5 million dollars during the year.

Similar figures for Mississippi are not available because the number of establishments in the state in 1939 was so small that release of the figures would indicate the size of individual plants. It is impossible to secure comparable figures for the woods' end of the industry in the District, but additional thousands of persons were employed in cutting pulpwood and transporting it to the mills, and their wages amounted to several million dollars. All these figures have risen substantially since that year.

When the pulp and paper industry began to come South early in the present century, wage costs were substantially lower in the Southern area than they were in the rest of the country. This differential has now been narrowed. The *Quarterly Labor Review* of the American Paper and Pulp Association reveals that in January 1944 the average hourly wage rate paid to male common labor in the South in the industry was 60.4 cents; in the country as a whole it was 67.2 cents. States included in the Southern region by the association are South Carolina, Georgia, Florida, Alabama, Louisiana, Mississippi, Arkansas, and Texas. Tennessee is classified by the

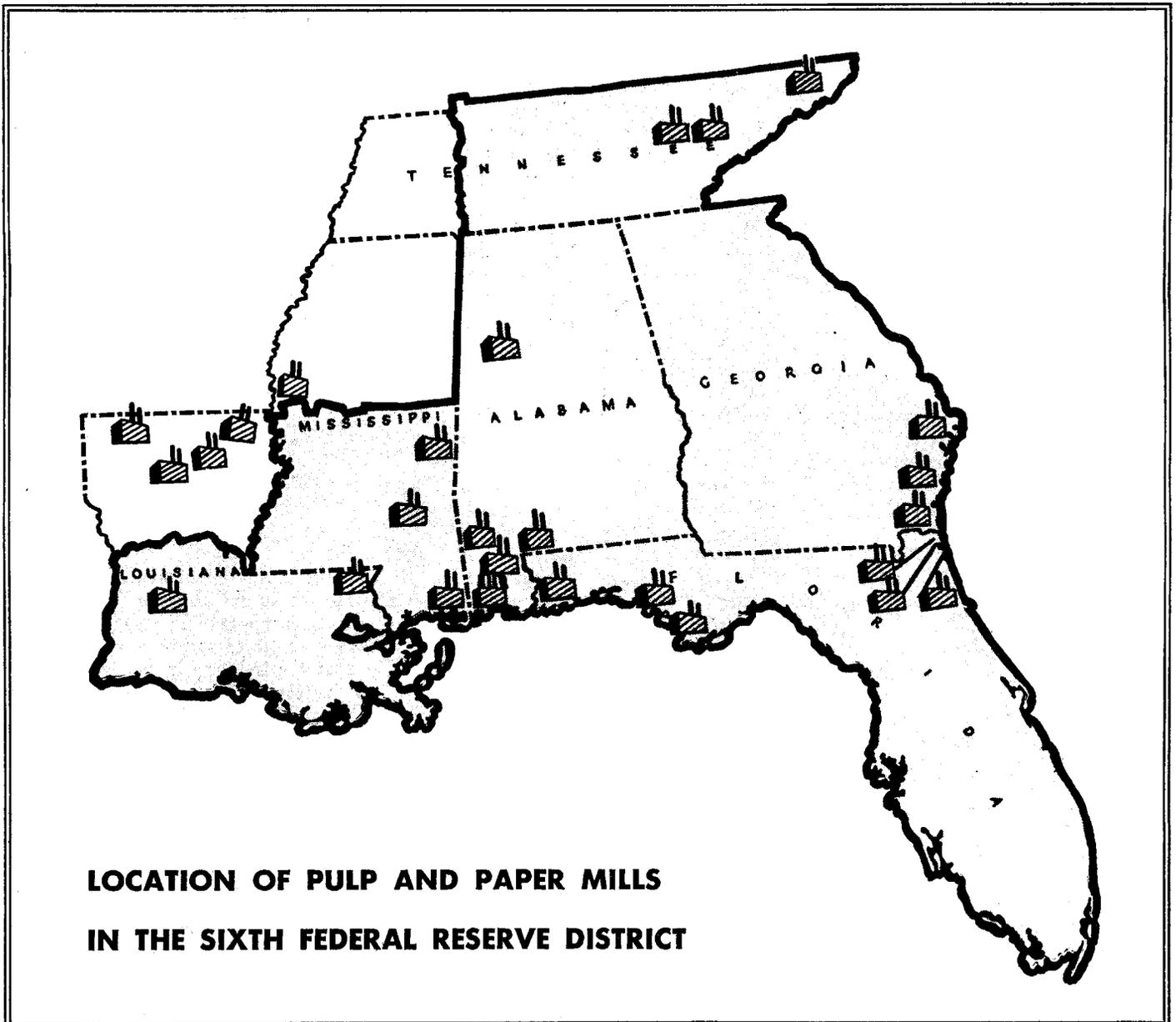
association as being in the Central zone. In January 1944, the wage rate for male common labor in that zone was 65.1 cents.

Excluding employees of converting departments, i.e., employees engaged in manufacturing paper products, the average hourly earnings of productive employees in 204 United States pulp and paper mills increased from 49.9 cents in January 1934 to 89.3 cents in January 1944. Over the same 10-year period, average hourly earnings of productive employees in the Southern industry as represented by the figures supplied by nine mills in that zone increased from 44.8 cents to 87.8 cents. The differential has thus been narrowed from 5.1 cents to 1.5 cents in the last 10 years.

Hours of work have been increased during the past decade, but less rapidly in the South than in the country as a whole. In January 1934, 204 pulp and paper mills in the United States reported that the average number of hours worked weekly by productive employees (all employees excepting

office workers, mill managers, and superintendents) was 33.8. Ten years later, the average work week had increased to 46.4 hours. The average work week in the South was 2.1 hours longer in January 1934 than the national average work week. That month, nine Southern mills reported an average work week of 35.9 hours. The Southern average in January 1944 was 44.6 hours, 1.8 hours less than the national figure.

Between January 1934 and January 1944, mills reporting to the Pulp and Paper Association increased employment by almost 10,000 workers, from 53,758 to 63,454. Almost half of this increase took place in the South. Nine identical Southern mills in January 1934 had on their pay rolls 4,951 productive employees, and 10 years later they had 8,733. Nothing like this rate of increase was recorded in any other region. The average size of the Southern mills is much greater than that in other regions. For example, 16 mills in the Central states employed only 3,474 persons in January 1944, and 50 mills



in New England employed only 13,976 persons in that month.

▶ Wartime demands have led to increased production by the pulp and paper industry. In the first seven months of 1944, pulpwood receipts at Southern mills were 15.5 per cent higher than they were in the corresponding period of the preceding year, but this difference was lower than the national increase of 21.7 per cent for the same period. The country's production of wood pulp to August 1 of this year was 4.2 per cent above the 1943 figure, but, because of fewer imports, total inventory of pulp on July 31, 1944, was 33.4 per cent below the level of July 31, 1943.

Paper and paperboard requirements of the war effort are immense, and supplies available for civilian uses have been seriously curtailed in recent months. Some 700,000 articles are being manufactured for the Army and Navy, and most of these items must be packaged before they can be shipped to the fronts. Perhaps the most spectacular wartime development in packaging is waterproof paper. Items wrapped in this paper can be thrown overboard and floated ashore with no danger of water damage. Military requirements for this waterproof paper were 20,000 tons during the last three months of 1943. In the first quarter of 1944, requirements jumped to 150,000 tons.

Total wood-pulp supplies available to United States mills during the three-month period from July 1 to October 1, 1944, are estimated at 2.8 million tons, of which it is estimated 2.5 million tons were domestically produced, the remainder having been imported from Canada. Total paper and paperboard production during the third quarter of this year is estimated at 4.3 million tons. Of this total, container board took 1.1 million tons, wrapping paper and bags and other coarse paper products 475,508 tons.

The continuing labor shortage has seriously handicapped attempts to expand production of wood pulp during the war. The cutting of pulpwood is still almost entirely a hand operation. About the only machines used are the five-foot saw and the smaller trucks. A portable power saw is being used in a few operations. A new saw operated on the chain principle is being tried out, and it may revolutionize the woods end of the pulp and paper industry by mechanizing the cutting of pulpwood. The problem of getting the wood to the mill after cutting is an acute one because of the heavy reliance upon trucks for this work. Shortages of repair parts, heavy-duty tires, and gasoline plus the limited supply of new trucks available to the industry are seriously handicapping operations, though the situation has improved somewhat in recent months.

▶ In general, the pulp and paper industry in the Southeast can face the future with a degree of optimism. One reason for optimism is that the Southern mills have two distinct advantages over the Northern mills. In the first place, Southern mills are larger and newer and hence more efficient than the Northern mills. Secondly, Southern mills do not have to maintain a large stock of pulpwood because they can get deliveries the year around. Northern mills, on the contrary, cannot ordinarily get wood out of the forests during the winter months and hence must maintain huge inventories. Maintenance of inventories involves interest costs and in addition involves expensive insurance premiums against fire.

The production of kraft paper promises to continue to dominate the paper industry in the District. Some years ago

the possibility of manufacturing newsprint from Southern pine pulp received enthusiastic publicity. It seems unlikely, however, that the industry in the South will take this direction. In the first place, newsprint is a low-value product relative to the other possible end products from Southern pine. Secondly, the plants in the South are chemical-process plants—chiefly sulphate—and newsprint contains about 80 per cent ground wood since the pulp is made by the physical disintegration of pine logs rather than by chemical disintegration. As a result, the capital loss involved in converting Southern kraft mills to newsprint production constitutes a prohibitive expense. Furthermore, the tremendous advances in recent years in the bleaching of kraft paper have reached a point where paper of a whiteness comparable to that manufactured in Northern mills from spruce and other timber can be produced from pine. Paper products from white paper are far more profitable to manufacture than is newsprint.

Continued sound operation of any industry dependent upon the forest is, in its turn, absolutely dependent upon sound forestry practices in the area. That is to say, the forest must be treated as a crop that is planted and harvested rather than as a mineral that is mined once and for all. The larger pulp and paper mills in the South own outright vast acreages of pine forest, and they are, in varying degrees, applying the best forest management practices on these acreages to assure a continuing supply of raw material.

One of the large costs in the manufacture of paper is freight, and the farther back from the mill the forest is cut down, the farther the pulpwood has to be hauled and the higher is the freight charge against the paper. As a result, mills in cut-over areas cannot compete in price with mills in sections where wood is abundant. The large pulp and paper producers, the more progressive of them, attempt not only to manage their own holdings properly but also to encourage the private timber owners, from whom they purchase pulpwood through contractors, to adopt modern management practices.

A major problem for all Southern industries drawing their raw materials from the forests is the continuing enormous loss by fire of vast stands of timber. It is estimated that 90 per cent of all forest areas burned in recent years have been concentrated in 11 Southern states. It is probable that more wood is burned in Southern forests each year than is consumed in pulp mills.

The treating of trees as a recurrent crop involves not only fire protection and reforestation but also the use of the forest in the most advantageous manner. The butt cuts of pine trees worked for turpentine, for example, are not in ordinary times acceptable to the pulp mills because they have been so burned that they are less desirable for the pulping process.

Some attention has been given to the possibility of manufacturing pulp from bamboo. The United States Plant Introduction Station is currently experimenting on new uses for bamboo at the Bamboo Gardens near Savannah. Although industrial uses undoubtedly will be developed for bamboo types that can be grown in the South, there seems little reason to expect any wide use of bamboo for paper pulp. Proper forest management practice requires the thinning of stands of pine, and the major market for such trees is the pulp mill. Furthermore, bamboo is so light that the transportation cost involved in moving a sufficient tonnage to pulp mills would be prohibitive.

► The Southern Forest Survey in the mid-1930's indicated that there was a considerable margin of growth above drain so far as cordwood was concerned. Thus, some millions of cords each year are available for pulping without reducing the total forest area or volume. Furthermore, the annual production of 500,000 barrels of turpentine, the average prewar production, means that enough trees are discarded from the naval-stores operation annually to provide 1,800,000 cords for pulping. The average diameter of the abandoned turpentine tree is approximately 12 inches, and, because of damage to the wood through the turpentinizing operation under old methods that still dominate the industry, only about 15 per cent of the volume of timber abandoned by naval-stores producers is of saw-timber quality and size.

Foresters believe the existence of a good pulpwood market may often mean the difference between the success and failure of a sustained forest operation, since the money realized on the sales of pulpwood from thinnings and intermediate cuttings while the stand is growing to final saw-timber size may suffice to carry the cost of the stand during the period of waiting. It is true that an overexpansion of the industry in the area would mean excessive cutting of trees for pulp, and this degree of development is to be avoided.

► What does the postwar future hold for the pulp and paper industry? The U. S. Department of Commerce has made forecasts of estimated domestic production and imports of wood pulp at various levels of gross national product. The department took 1946 as the assumed first postwar normal year and calculated production of wood pulp for various levels of gross national product ranging from 145 to 165 billion dollars. The statistical projection indicates that, with a gross national product of 145 billion dollars, domestic production of pulpwood would be 10.89 million short tons, imports would total 3.35 million short tons, and domestic consumption would be 14.24 million short tons. On the optimistic assumption of 165 billion dollars gross national product in 1946, all these factors would increase. Domestic production of wood pulp would then be 12.00 million short tons with imports of 3.68 million short tons and approximate domestic consumption of 15.68.

These calculations of domestic consumption exclude exports of pulp and give no consideration to inventory changes, but these items are relatively insignificant. Exports of wood pulp from domestic production averaged only about 3 per cent of consumption from 1935 to 1941. The gross national product was 119 billion dollars in 1941. In that year, domestic production of wood pulp was 10.20 million short tons with imports estimated at 1.00 million short tons; the apparent domestic consumption was, therefore, about 11.20 million short tons.

The Department of Commerce has also made estimates, based on statistical projection of 1941 figures for various assumed levels of gross national product in 1946, for paper and paperboard manufactured from pulp. That series of estimates is shown in the accompanying table.

► In the years just preceding the war, the pulp and paper industry as a whole had a good bit of excess capacity and there were a number of marginal plants, i.e., plants that could operate only on a high market. During the war, this capacity has almost all come into production and the problem has been that of meeting rising demands. It seems unlikely that total demand will not fall somewhat at the end of the

ESTIMATED PRODUCTION OF PAPER AND PAPERBOARD IN 1946 AT VARIOUS LEVELS OF GROSS NATIONAL PRODUCT¹

(Levels of gross national product in billions of dollars)	1941 (Actual)	1946				
		145.00	150.00	155.00	160.00	165.00
Item		In Millions of Short Tons				
Total	17.30	21.00	21.62	22.24	22.85	23.47
Paperboard	8.25	10.44	10.75	11.05	11.36	11.67
Newsprint ²	1.05	.57	.58	.60	.62	.63
Wrapping paper	2.75	3.65	3.76	3.88	3.98	4.08
Book paper	2.02	2.18	2.25	2.31	2.37	2.44
Tissue paper	.96	1.22	1.25	1.29	1.33	1.36
All other paper	2.27	2.94	3.03	3.11	3.19	3.29

¹ Gross national product includes total expenditures for consumers' goods and services, capital formation by private enterprise, and the product of Government.

² Although domestic newsprint production displays a downward trend at estimated production levels in 1946, this does not necessarily indicate a falling-off in consumption of newsprint. From 80 to 85 per cent of all paper imported into the United States is composed of newsprint.

Source: *Domestic Commerce*, June 1943, p. 26.

war, but the experience of the Southern branch of the industry seemingly will differ from that of the industry as a whole. In the first place, Southern plants are newer and larger, and have lower unit costs than the average plant in the country, and, in the second place, the development of successful processes for bleaching sulphate pulp makes it likely that the paper industry will continue to move south so that the fall in production will probably be concentrated in the Northern plants. Another favorable factor, at least so far as Southern plants are concerned, is the increasing stress upon attractive packaging. Kraft paper and paperboard made from pine pulp thus have a bright future in the development of new outlets for packaging materials in postwar America.

BUFORD BRANDIS

Announcement

ON September 1, 1944, the Little River Bank and Trust Company, Miami, Florida, was added to the Federal Reserve Par List. Effective on that date, this bank is remitting to the Jacksonville branch of the Federal Reserve Bank of Atlanta at par for checks drawn upon it by its depositors.

The Little River Bank and Trust Company was established in 1926 under a charter issued to it by the state comptroller of Florida. Its capital is \$100,000; it has surplus and undivided profits of \$247,000; and its deposits exceed \$7,600,000.

E. C. Romfh is chairman of the board of directors and president; Charles E. Buker is executive vice president; James G. Garner is vice president and trust officer; Laurence Romfh and Alec Baker are assistant vice presidents and assistant trust officers; C. S. Rye is vice president; W. W. Asmus is secretary and treasurer; and J. M. Frohock and Violet H. Reid each have the title of assistant secretary and assistant treasurer. In addition to Messrs. E. C. Romfh, Buker, Garner, Baker, and Laurence Romfh, the board of directors includes J. L. Davis, C. B. Rose, W. H. Gragg, Lucian L. Renuart, and H. P. Emerson.