I - Importance of South to U.S. Paper Industry

The major part of the growth of the paper industry during the past three decades has taken place in the Southern States. Since 1947, production of paper and paperboard in the United States has just about tripled; in that same period, growth of paper and paperboard production in the South had a multiple of five. In wood pulp, the nation increased its output by 4 times, while the South increased output of wood pulp by 5-1/2 times.

The only other region to come close to this rapid pace in expansion was the Western region, but there the tonnages are much lower. At the present time, the South accounts for over 50% of the total production of paper and paperboard, while the Western states take about 14%. In wood pulp, the South produces about 66% of the total, while the Western states account for about 18%.

While virtually every grade of paper and paperboard is produced to some extent or other in the Southern mills, there are a few grades in which the South produces the major part of the U.S. total. These include newsprint, where the South produces over half; the packaging and industrial converting paper grades, that is bleached and unbleached
kraft papers for these purposes, over two-thirds; and bleached bristols, used as cards for computers, business cards and similar uses, also over two-thirds. Among the other paper grades, the South produces about two-fifths of the uncoated book papers, and a little over one-seventh of the tissue papers.

In the board grades, the South is particularly important. Over 80% of all the kraft board made in the United States is produced in the Southern states and over 85% of all the bleached paperboards. While technically not a paper grade, but one still made from wood pulp, over half the hardboard produced in the U.S. is also made in the South. I should note here that by the South we are talking about the states bounded on the east by the Mississippi River, on the north by Kentucky, West Virginia and Maryland, plus four states west of the Mississippi: Texas, Oklahoma, Arkansas and Louisiana.

The growth of total economy of the Southern states has exceeded that of the U.S. as a whole. In 1948 approximately 23% of the personal income in the U.S. was generated in the South; at present it accounts for some 28%. In order to achieve this growth, personal income - which is a measure of how much work and business is done - had to grow by a multiple of 6-1/2. It is true that about half of this growth reflected price increases, but even in real terms, that is adjusted for the impact of price changes, personal income in the South has more than tripled during the past three decades.

A major resource fueling this growth was, of course, the forests of the South. This renewable raw material, combined with revolutionary technological changes which permitted the conversion of Southern wood species into wood pulp, plus technological changes in the manufacture of paper and board which resulted in ever larger
paper making machines — getting so large they could produce well over 1,000 tons in a single day — plus the specific development of the U.S. economy as a whole that required the products that could be made on these machines, all had to come together at just about the same time to result in such spectacular growth. Even that would not have been enough without the willingness of paper producers to invest the huge sums of money required to build the necessary plant and equipment and develop the forests as a permanent source of raw material. It must have taken a great deal of faith to invest this much money in a new region for a growth in demand that had to take place in the future.

This faith must still exist. On the basis of known plans for future expansion, paper companies have indicated they will expand capacity for paper and paperboard by approximately 4.7 million tons between 1975 and 1978. Of this, some 59% will be in these Southern states. In wood pulp, the total expansion projected is 3.7 million tons, of this 65% will be in the Southern states. When we look at the mills that are presently projected to come in beyond 1978, we see the same proportions still hold.

With this tremendous growth behind us, what can we say about the longer range future of the paper industry in the South? What were the economic forces spurring this growth, and what are some of the major economic problems facing us in the future? I would like to spend the remaining time allotted to me this morning discussing the potential problems that lie before us, and the potential growth that may be achieved.

II - Demand for Paper and Paperboard

The economic forces affecting industry can usually be clearly differentiated between those affecting supply and those affecting demand. The two sets of forces meet in the market place, which has the major function of bringing forth a supply volume that will match the required demand.
Analysis of the demand for paper requires analyses of a great many separate markets. Fortunately, these can be segregated into a few large groups. One such grouping would include (1) newspapers; (2) other communication markets; (3) packaging (shipping containers, cartons and paper bags); (4) sanitary consumer products; (5) industrial products, and (6) building paper and board.

From our earlier discussion, we can see that Southern paper mills are major suppliers to the newspaper, packaging and building board markets.

The ideal way to analyze the potential use of paper or paperboard in each market would be to (1) analyze the trend that each of these markets has followed over the past fifteen years or so in terms of its end-use markets in order to ascertain the future growth potential of that market, and (2) analyze the way that market has used paper relative to competing products in order to determine the competitive potential of paper or paperboard in that market in the future.

We can, indeed, do exactly that in the case of newsprint. We know, for example, that circulation of daily newspapers grew about 0.8% per year in the 25 years preceding 1973, but has since shown a small decline. The "Printers Ink" index of newspaper advertising expenditures (which determines the size of each newspaper) showed a 6.5% per year growth in the earlier period, and has followed that same pace since. However, about half this rate reflected price changes. There is no other product competitive with newsprint in this market, but there have been important shifts in the basis weight of newsprint (from 32 lbs. to 30 lbs. and in some cases even lower) and changes in the way newspapers are printed that has tended to reduce the weight of the average newspaper. When we put this all together, we can see that newsprint demand in the U.S. will probably expand by no more than 3% per year during the coming decade.
In the case of newsprint, however, the analysis does not stop here. At present, we get nearly two-thirds of our newsprint from Canada. What we want to know is the probable trend of U.S. newsprint production and, more to the point, the probably trend of production of newsprint in the South.

Domestic newsprint capacity has been growing steadily over the past decade, from 2.57 million tons as of the end of 1966, to 3.97 million tons in 1976. In 1966, U.S. production accounted for 28% of the total new supply; last year it accounted for 36% of the total. The 1976 API Capacity Survey showed that U.S. newsprint capacity would increase by 404,000 tons from 1976 to 1979, a growth of 10%. In terms of total newsprint new supply of over 10 million tons in 1976, this will add only 4% to the potential new supply of newsprint in this period. The API Capacity Survey also showed that the regional increase in capacity was concentrated largely in the South, with two new mills scheduled for this region as opposed to one new mill outside the region (in the Pacific Northwest).

While management cannot project specific plans for new capacity additions beyond a four or five year horizon, it does appear reasonable to project the trend of U.S. newsprint production beyond 1980 along a 2% to 3% per year growth trend. I must note here that this is a trend projection. It is explicitly based on the assumption that the U.S. economy will follow a growth pattern of perhaps 5% per year for the next two years as it recovers from the 1974-1975 recession, then slow down to a more normal 3-1/2-4% per year. We can expect a recurrence of business cycles during this period and, indeed, at least one major forecasting service is projecting such a slowdown as early as next year. This projection makes no attempt to forecast the cycle - only the potential long-term trend.

I think it is obvious that if I attempted to describe the demand for Southern paper in each of its major markets, I would need far more
time than is presently available and would exhaust your patience long before that time was up. Fortunately, we can look at the major paper and paperboard markets in a more simplified manner. For example, both communication and packaging papers find uses in almost every phase of business, and are influenced by changes in consumer purchasing power as well. In the face of this complexity, it is useful to analyze demand for each grade of paper in terms of the trend of total economic activity. The measure of total economic activity I prefer to use is the real gross national product - real GNP - which measures the total output of all goods and services on a price-adjusted basis.

Real GNP grew by 50% from 1959 to 1969, an average of 4.1% per year. From 1969 to 1976 real GNP grew by only 17%, an average of only 2.3% per year. This slowdown reflected, to name only a few of the more obvious forces, the impact of two business cycles, one in 1970 and the other in 1974-1975, price controls and the oil embargo of October 1973. If the economy is to move back to full employment within the next two or three years, it must expand by some 5% per year. After that, a full employment economy would grow in the neighborhood of 3-1/2-4% per year.

We can analyze demand for each grade of paper by studying the trend of the ratio of production of each grade (new supply in the case of newsprint and containerboard) to real GNP.

Chart 1 shows this analysis for total paper and paperboard. The upper panel of that chart shows the trend of paper and board production, capacity and new supply, as well as that of real GNP from 1959 to 1976. The chart highlights the close parallelism of these trends. The bottom panel shows the trend of the ratio of new supply to real GNP. The ratio showed relatively little movement from 1947 to 1974, except for some minor cyclical variation, reflecting the parallel growth in new supply and real GNP. The recession
of 1975 had a major impact on the paper industry, as excess inventories of paper and paperboard accumulated throughout the channels of distribution in 1972, 1973 and 1974 were liquidated in the space of three or four quarters.

It appears that the 1976 recovery did not quite restore paper to its earlier position. It also appears that this will turn out to be a one-time adjustment, so that the future growth of the paper industry may again match that of real GNP. A full employment real GNP would require paper production to be several million tons over the 70 million-ton level in 1980, and to rise by 2 to 3 million tons per year in the 1980’s. This is a trend projection and does not attempt to forecast the effects of future business cycles.

Chart 2 shows trend in production of wood pulp. The upper line of this chart highlights the steep growth of production of total wood pulp in the 1960’s and the slowdown that has taken place since 1972. The lower line shows that production of the dissolving and special alpha pulps, which are also important in the South, has actually been negative in the past few years, reflecting weakness in demand for rayon, acetate and cellophane - three major end-use markets.

The bulk of the growth in the wood pulp industry has been in the sulphate grades (Chart 3). Unbleached sulphate pulp, which was in a steeply rising trend from 1960 to 1973 has more or less flattened out. Well over 80% of the total production of unbleached sulphate pulp takes place in the South. Production of bleached sulphate pulp (Chart 4) still appears to be in an uptrend for reasons that will become clearer when we look at the paper and board demand trends. The South produces over 2/3rds of bleached sulphate pulp, and more than 4/5ths of semi-bleached sulphate pulps.

The South is not an important producer of sulphite pulps; these are limited more to the Northeast and the Far West (Chart 4). Production of sulphite
pulp was in a downtrend from about 1965 to 1971, but since then has more or less flattened out. This type of pulp has had severe pollution abatement problems, which has resulted in a shutdown of many mills. At the same time, bleached kraft pulps have replaced sulphite pulps in many of its major markets.

The next set of charts shows the trends of production in the major grades of paper and paperboard. I will emphasize those that are of major importance in the South. These charts show the actual trend in production. They are plotted on ratio paper, which means that any given slope on any one of the charts shows the same percent per year trend. If we refer back to Chart 1, where the trend of the real GNP is plotted, we can set this a guide as to which of the grades are growing faster than economic activity and which are growing more slowly. The growth in demand for paper and paperboard as a whole has more or less paralleled the trend in real GNP.

Chart 5 shows newsprint consumption. Note here the slow growth in consumption relative to real GNP. The trend in newsprint consumption has been somewhat jumpy, with a slow growth pattern in the early 1960's followed by a strong increase from about 1963 to 1969 and then a much more moderate trend. Note, too, that newsprint has not recovered to the highs reached in 1973 and 1974. Part of this reflects the 6% reduction in basis weight that started in 1974. Nonetheless, the flat trend here relative to real GNP growth is further support for the relatively slow rate of growth in demand projected earlier.

While the South is not a major producer of uncoated groundwood paper shipments, the relatively sharp increase in uncoated groundwood paper shipments noted here for 1976 could have an impact on the South. Some of this growth reflected an increase in production of lightweight newsprint produced on newsprint machines. The weight was below the standard weights
for newsprint and was thus reported as groundwood paper. Based on past
trends, only modest growth is projected for these papers. The API
Capacity Survey shows that no new groundwood paper machines are now
being built or actively considered.

Chart 6 shows production of printing papers. The South is not
an important producer of chemical wood pulp writing paper, which has had
one of the steepest growth items in the paper industry. It is, however,
an important producer of uncoated book paper, and here the trend has been
relatively flat since about 1972. Uncoated book papers are meeting strong
competition from the coated papers in the commercial printing paper market,
and in some of the book markets as well. Nonetheless, the total demand
is relatively strong and the trend should match that of the total economy.

The South produces about 1/4th of the total coated paper pro-
duced in the nation. The demand trend here is particularly strong,
reflecting rising demand for magazines as well as the demand increases in
other markets. However, there are no new coated paper machines now being
built or scheduled.

The South is a major producer of the kraft packaging and industrial
converting grades. Chart 7 shows the production trend of bleached plus
bleached kraft papers. This chart does not include special industrial
or glassine, greaseproof and vegetable parchment papers. Here the trend
has been extremely flat in recent years and the projection suggests only
modest growth in the future. Use of these papers has been declining as other
packaging materials and methods move into its markets. Plastics are a parti-
cularly strong threat. The major kraft paper growth item has been grocers sacks,
but in recent years even this has been under competitive pressures. Multwall
shipping sacks are also an important product, and here too, the growth has been
relatively shallow. Some heady increases in demand for shipping sacks
in 1974 were followed by steep reductions in 1975, making projections here particularly uncertain.

The growth in tissue paper production has more or less paralleled that of GNP, but a slightly shallower growth trend relative to real GNP is likely in the future. There has been a slowdown in growth of some of the major tissue paper markets, while in others, such as disposable diapers, there have been technological changes wherein fluffed pulp has been substituted for sanitary tissue wadding.

About 1/3rd of total paper and board production produced in the South is unbleached kraft paperboard. The major use of this product is in containerboard. Production of containerboard for domestic use was in a steeply rising trend up to about 1971, rising somewhat faster than real GNP. Containerboard, of course, is used for corrugated shipping containers. This growth reflected the tremendous increasing number of products shipped in corrugated shipping containers throughout this period. The slowdown in economic activity evident since 1971 was, of course, reflected in containerboard demand. During the past few years, the growth in demand for containerboard has averaged out about the same as that of the GNP as a whole. Containerboard for domestic use may be expected to move in line with total economic activity in the future, but probably will not show the faster trend that was evident in the 1960's and early 1970's. An important market for kraft linerboard during the 1960's and the early 1970's was exports. However, exports of kraft linerboard peaked at about 1971, and has since fluctuated about a trend well below its 1971 high. Future growth in kraft linerboard exports must await a stronger recovery in Western Europe and Latin America, the two major market areas for this product.

The South is an important producer of bleached kraft board. Chart 8 shows the production trend in folding boxboard and milk carton and food
service board. During most of the period shown on the chart the bleached kraft folding boxboard was in a strong growth trend as this product took over more and more markets normally held by recycled board, and at the same time, developed entirely new packaging markets. At the present time, bleached kraft accounts for about 35% of the total folding boxboard market which is somewhat below the 38% held in 1974. This product is meeting new competition from clay coated unbleached kraft folding boxboard. The growth trend in total folding boxboard production has tended to be much lower than that of the economy as a whole, reflecting the trends of the specific markets served. Recent trends within this market suggest that bleached folding boxboard will be more likely to parallel the growth of total folding boxboard, which suggests a somewhat slower growth than that indicated for real GNP.

The milk carton and food service board market has been in an absolute decline since 1970 reflecting mainly the displacement of milk carton stock by plastic bottles, particularly in the larger sizes, and the competition of plastics in the plate, dish and tray market. So far this year, production of milk carton and food service board is running about 5% ahead of its 1976 level, which is perhaps the strongest performance of any major grade of paperboard. Folding boxboard, for example, is barely matching its 1976 rate so far this year. The strongest bleached kraft grade, oddly enough, has been milk carton stock itself, although exports of bleached paperboard have also been particularly strong. Recent trends in the various bleached kraft markets have been fairly erratic, and it is difficult to pin down a specific growth trend for the total. Total bleached kraft paperboard production so far in 1977 is running about at its 1974 rate, which suggests that, at best, demand for this product will expand at a rate a little below that of total economic activity.
There are several major additions to bleached kraft paperboard capacity scheduled over the next few years, all in the South. The potential growth trends in domestic and export requirements will probably be strong enough to utilize most of this tonnage as it comes onstream. If the economy moves along its full employment tend in subsequent years, demand for bleached kraft paperboard will quickly rise to utilize the remainder of this incoming capacity.

Chart 9 shows production of hardpressed board. This is also a major product in the South. The steepness of the growth trend here is particularly impressive. The growing strength in the housing market, which uses these products directly through new construction and indirectly through demand for new furniture that uses hard pressed board as its base, suggests continued strong growth in the future.

It is apparent from this discussion that many of the major pulp, paper and paperboard product produced in the South will match, or come close to matching, the rate of growth of real GNP that we have used here as our standard measure of growth. The major exception is kraft packaging and industrial converting papers, and even here a positive growth is likely during the coming years. If the economy does, indeed, follow a more or less uninterrupted trend to a full employment level during the next two or three years, the industry's problems will center more on the supply than on the demand side.

III - Supply

The demand trends, while promising, seem to be hedged with a great many ifs, ands or buts. The supply problems are not less vexatious.

The usual analysis of supply covers land, labor and capital and these are all important problems to the paper industry in the South. To these, however, we must also add raw materials, energy and government. These last three factors are raising uncertainty to levels seldom seen in a peace-time economy.
While there is really no such thing as an average or typical paper mill, we can break out the major factors affecting costs and present a rough approximation of their relative importance.

Two major costs at an integrated Southern paper and paperboard mill are wood and labor. You are going to hear a great deal about land availability, land costs and wood costs during these sessions. I have never belonged to the doom and gloom school regarding the long-term availability of wood. I'll concede that it is more difficult to find a site for a green field mill than it was in the sixties, but development in sylviculture and wood-use that have taken place during the past two decades give some assurance that wood will not be a limiting factor of growth.

Labor availability will not be a limitation, but unit labor costs are clearly going up. Pulp and paper mill wages in the South are second only to those in the West, where living costs tend to be much higher. The Southern mills are among the most efficient in the world, but new capacity - a major source of productivity increases - is growing only slowly at a time when increases in employment costs in terms of both wage rates and fringe benefits - based on agreements already signed - are rising steeply. Average hourly earnings at paper mills rose 38% from 1967-1972 and 40% at paperboard mills. From 1972 to 1976, a 4 rather than 5 year period, they each increased another 40%. The total increase - 93% for pulp and paper mills and 97% for paperboard mills - from 1967 to 1976, excluding fringe benefits which have added about 40% to wage costs over this period, compare to a 40% increase in output per man-hour at these mills. Wage rates and fringe benefits increases are accelerating even while productivity gains are slowing. It will require innovative approaches by labor, management and government to slow the rise in unit labor costs implicit in the current situation.

One potential bottleneck is chemicals. Chemicals account for as much as 10% of the total costs of production at an integrated mill. The
paper industry is a major user of such important bulk chemicals as soda ash, caustic soda and chlorine, and also uses a great deal of kaolin clay, titanium dioxide and starch.

Production of some of the major bulk chemicals is running in the neighborhood of 90% of capacity. These chemicals face the same types of problems as paper in bringing in new capacity: high capital costs, difficult pollution abatement and environmental problems and high energy costs. If real GNP moves toward its full employment level along a trend of sustained economic growth, these industries, as will paper, will bump against capacity ceilings within 2 or 3 years. The solution to their problem is the same as that for the paper industry: provide the type of economic environment that will encourage capacity expansion within the framework of the efficient environmental and energy requirements of the nation.

It is, indeed, the factor of government and its impact on the industry through environmental and energy regulations that is probably creating more uncertainty about the future than the vagaries of the business cycle. You've probably heard many times that the pulp, paper and paperboard industries have already spent $3 billion on capital equipment to alleviate water and air pollution and are still buying such equipment at the rate of over $600 million per year. With a few specific exceptions - including those mills that elected to utilize municipal waste treatment systems that failed to be completed on schedule - the paper industry is largely in basic compliance with the government standards set for mid-1977.

The costs and technology necessary for pulp and paper mills to meet the "best available technique" standards set for mid-1983 not yet resolved. For example, toxicity standards have yet to be set. There are estimates that it will require about as much money as has already been spent to meet these standards. At the same time, such massive expenditures will result in only minor environmental improvement. The costs could rise even higher
to meet some of the more extreme requirements for OSHA noise abatement regulations at paper and board mills.

The paper industry fully recognizes the importance of a clean environment. It is working with the entire forest products industry, in a joint API/NFPA effort, to achieve fishable and swimable waters without massive costs in terms of dollars, energy and resources for insignificant benefits.

The paper industry is the fifth largest user of purchased energy among the twenty manufacturing industries in the United States and the largest user of fuel oil. The Federal Energy Administration, operating under the Energy Policy and Conservation Act passed in December 1975, and the Energy Policy and Coordination Act passed earlier that year, indicated it would set up energy conservation goals for industry. The Administration has indicated it would like to make these goals mandatory. At present, the paper industry, working through the API, conducts a voluntary energy monitoring system. In October 1974 the paper industry set a voluntary goal of reducing fossil fuel and purchased energy per ton of output by 10% between 1972 and 1980. The industry met that goal in the first half of 1976, but the cold weather of late 1976 brought the average gain in energy efficiency for calendar 1976 just below the 10% level.

Dr. Ronald J. Slinn, who is in charge of the API's monitoring system, tells me that the White House is leaning toward a 4-pronged attack on industrial energy use, which if rigidly applied, would create major and largely unnecessary cost problems for the paper industry.

These include (1) mandatory energy efficiency improvement targets; (2) mandatory conversion to coal for specified boilers, with all new boilers built required to have coal burning capacity; (3) user taxes on gas and oil for industrial users; and (4) product standards. This latter will require, first, a definition of each pulp, paper and paperboard product, and, second, establishment of an optimum number of BTU's per unit of output.
The paper industry would like voluntary standards and has already demonstrated its ability to meet such standards. It also wants to limit conservation goals to fossil fuels and purchased energy. Use of self-generated energy is necessarily less efficient in terms of total BTU's per ton of output even while saving major amounts of fossil fuels. The paper industry presently generates 45% of its total energy from self-generated fuels and waste wood.

Mandatory conversion to coal, as presently envisaged, is far too restrictive. One company noted that if all its specified boilers had to be converted to coal, the total cost would be $100 million. Conversion of these same boilers to haggled wood would cost only $25 million and would, in addition, result in major savings of fossil fuel without the environmental impact of coal. Another company noted that the cost of converting its boilers to coal at one of its mills was greater than the book value of that mill.

One of the problems with all these regulations is that after a certain point they are counter-productive. Pollution abatement equipment is energy intensive. Paper mills have had to increase their purchases of electric energy to run this equipment. If they tried to build their own generators they would create further air pollution problems.

All of this, finally, impinges on capital costs. The primary sector of the paper industry is already spending about one-third of its capital dollars on pollution abatement equipment. The unit cost of new productive equipment was rising at the rate of 10% per year from the late 1960's to the mid-1970's, and even now hasn't slackened much below that level. Present estimates indicate that 15%-20% of the cost of a new mill must go for pollution abatement equipment, and that is in terms of current standards. The industry has large capital needs just to meet full employment demand for its products at the end of this decade and beyond. Costs for pollution
abatement capital equipment based on unrealistic standards and time schedules could well bring total capital requirements out of the reach of the industry.

IV - Summary

If the paper industry is to meet the requirements of an economy rising to full employment and then growing along a full employment trend, the nation must so set its policies that paper and other industries can establish their own methods and production processes within a framework of environmental and energy regulations that are workable and fair to producers (who are themselves consumers) and consumers alike.
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CHART 7

PRODUCTION

KRAFT PACKAGING & INDUSTRIAL CONVERTING PAPERS

TISSUE PAPERS

CONTAINERBOARD FOR DOMESTIC USE

American Paper Institute Economics Department
April 5, 1977
CHART 9

PRODUCTION

HARD PRESSED BOARD

1959 - 1965  Density over 26 lb. per cubic feet
1967 - 1976  Density over 31 lb. per cubic feet

American Paper Institute
Economics Department
April 5, 1977