MONTHLY REVIEW

The new fiber glass industry may be important in the Fifth District.

FEDERAL RESERVE BANK OF RICHMOND JANUARY 1961

fifth district 1960

1960 began on a high level. Businessmen envisioned a prosperous year and planned accordingly. January statistics made glowing forecasts seem reasonable. District nonfarm employment registered a good gain over December and the advance in man-hours was even better. Both series were near their record highs set just prior to the 1959 steel strike. The aura of optimism, thus reinforced, survived a February decline and a sharp setback in March. These were clearly linked to spells of bad weather. Nevertheless, the 5% drop in manufacturing man-hours between January and March stirred up a few misgivings.

These doubts were quickly forgotten, however, when April re-established near-record levels in nonfarm jobs and manufacturing activity. Retail sales reached a new peak and new car registrations were the highest since 1955. Nonresidential contract awards soared. Residential awards showed signs of life and the lumber business perked up. Toward the end of April, District business seemed well on its way to new highs.

The picture changed again in May. Although man-hours went up another notch, the rise in employment was negligible. Retail trade dipped almost to the very low March level. Manufacturers' orders had been slow for several months, but seasonal irregularities such as large backlogs booked during the fall and winter seemed to explain this. Nearly halfway through the year, when orders still lagged, backlogs steadily diminished, and inventories continued to rise, the alternatives were clear. Either renewed spending would revive growth, or the peak had already been reached.

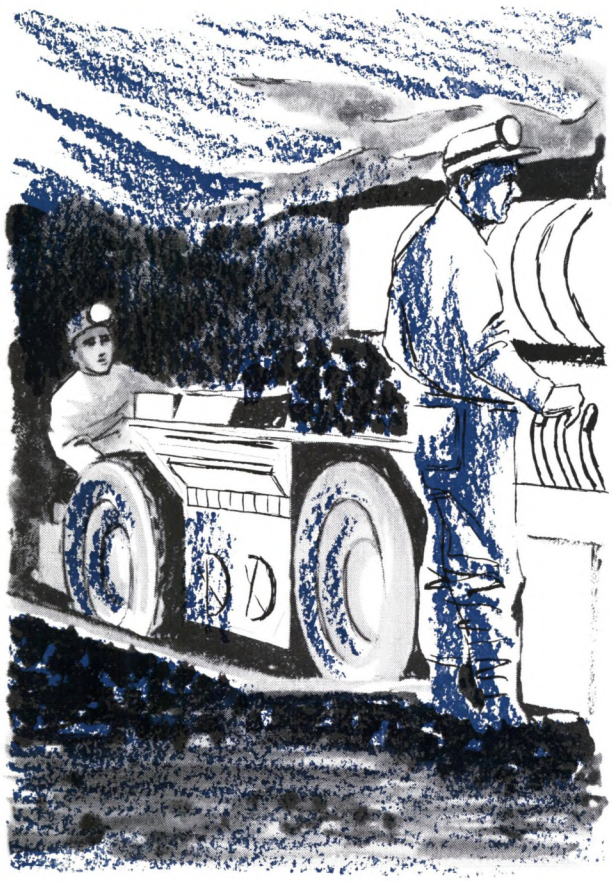
No revival came. Consumer buying remained fairly strong, but was fitful and inconsistent for the rest of the year. Employment edged steadily downward. Declines in manufacturing and other lines were only partially offset by more jobs in government, services, and financial enterprises. During the final months of 1960 Fifth District business gave ground slowly, its retreat marked by a few bright spots to rekindle glimmers of hope. The net result was a year of generally high activity which ended in a decline instead of fulfilling its early promise of further growth.

AGRICULTURE The year was a generally favorable one for Fifth District farmers in spite of numerous difficulties. A cold, wet March delayed field preparation and planting. After more adverse weather, some cotton acreage had to be replanted. Summer hail storms, dry spells, and a hurricane provided further setbacks in certain localities. Nevertheless, 1960 turned out to be a very good growing year, and harvest weather was favorable. Tobacco and peanut crops were much larger than those of 1959, and brought higher prices. Per acre yields of flue-cured tobacco set a new high, as did yields and production of corn and soybeans. Cotton yields and prices, on the other hand, tended to be lower. On balance, crop values in 1960 were about 10% greater than in 1959.

Livestock producers as a group fared just about as well as in the previous year. Beef prices fell slightly as quantities rose. Higher hog prices offset a lower volume. Dairy farm income was virtually unchanged. Broiler and egg producers gained. As

a result, gross sales of District farmers were greater than in 1959, but gains in net income were held down by rising costs.

MINING The bituminous coal industry has few good reasons for remembering 1960. Employment figures, adjusted for normal seasonal variation, declined relentlessly month by month from February on. Monthly average employment during the year fell below comparable figures for 1959, 1958, and 1957 by 4%, 13%, and 24%, respectively. Production, on the other hand, remained fairly stable during 1960. It finished the year about 1% below 1959 output, but more than 20% below the amount produced in 1957, coal's most recent good year.



Coal's failure to improve during 1960 was mainly the result of the low output of steel. Foreign shipments in 1960 bettered the poor 1959 record, but were well below the 1958 level, and less than half the 1957 volume. Residual fuel oil and surplus natural gas continued to provide stiff competition for coal in some market areas. Work also progressed on new hydroelectric power facilities which will soon provide still more competition for coal.

CONSTRUCTION Throughout the year construction activity was a strong factor in the Fifth District economy. Moreover, the consistently good gross volume of contract awards indicates that total demand for new construction weakened little if any in the course of the year. Average monthly employment in the building trades was about 1% greater in 1960 than in 1959, and 6% higher than in 1958. During the season of peak employment, from June through September, the number of construction workers on the job this year about equaled previous record levels.

Not all parts of the construction business were equally prosperous, however. For half of the year residential building remained on a par with 1959's record pace. The second half brought a rather sharp decline accompanied by reports of many unsold new houses and rising vacancy rates in rental properties, particularly in Virginia and the Carolinas. Related industries, especially lumber, were hard hit. On the other hand, new houses in a few areas sold very well, and new apartment house projects reported excellent advance rentals. In spite of a weaker second half, 1960 was the District's second best year for residen-

tial construction, less than 7% below the peak year, 1959, in value of contracts awarded.

Private nonresidential building began the year in a strong position as a result of a wave of new awards late in 1959. The wave broke, however, and nonresidential awards finished 1960 at a level 9% below that of 1959, an even greater drop than occurred in the residential field. Since these larger jobs require more time to complete than residential projects, the shrinking value of new contracts for business property did not cause any appreciable decline in actual building during 1960.

Public works and utility construction contrasted sharply with the private sector. Contract awards in this category had remained at moderate levels during 1959. Then during the first three months of 1960 the pace of new orders nearly doubled. The heavy volume continued intermittently throughout the year, finally reaching a total value about 80% greater than in 1959.

MANUFACTURING At the beginning of the year District manufacturing employment, seasonally adjusted, was above the level of late 1959. Whereas total nonfarm employment reached a peak in May before beginning to contract, employment in manufacturing increased gradually through July. This upward swing was not great—less than 1% over seven months. The first decline, nearly 2% from July to August, dropped manufacturing employment back below the January level. The total decline exceeded 3% by the end of the year.

Weekly hours of work began to fall even while employment continued to rise. As a result the year's high point in seasonally adjusted man-hours came in May, two months ahead of the employment peak. For the group most sensitive to business changes, the makers of durable goods, the busiest month of the year was April.

Patterns of activity in the District's principal categories of durable manufactures were by no means uniform. While April was the high month for the group, only the metals industries and lumber reached their peaks then. Furniture manufacturing attained its high for the year (seasonally adjusted) in May. The stone, clay, and glass industries continued to gain through the month of July. The District's shipyards began the year in a decline, but several large orders for construction and renovation were received during the summer. New car assemblies also picked up during the second half of the year. Thus transportation equipment manufacturers had the distinction of stepping up the pace through the late months

of the year, when most other manufacturers were cutting back.

Among the District's nondurable goods industries, food and tobacco producers showed the greatest divergence from the general trend. The food industry, doing well at the start of the year, declined unevenly through August, then moved up again. Cigarette factories found the demand for their products strong, and presently increasing about 5% per year. The proportion of filter brands exceeded 50% in 1959 and increased to 52% in 1960. Assured of a fairly stable market, cigarette manufacturers are not greatly influenced by current changes in economic conditions.

In contrast, the District's largest manufacturing industry, textiles, shows a keen sensitivity to current conditions. The year began with the largest textile backlogs in many years. The flow of orders had pretty well come to a halt by the close of 1959, but before it did, a good portion of anticipated mill output for 1960 had been spoken for. Thus there was little concern at first when week after week passed with very few new orders for cotton textiles. Manufacturers of textile end-products were busy, and con-

sumers were buying their output, irregularly but in good average volume.

Dull markets week after week, however, became dull markets month after month. Occasional flurries of orders seemed to presage a new wave of forward buying, but they were short-lived. Prices backed gradually down from the high levels reached late in 1959. Backlogs were still large and the industry prosperous. But not all of the output which had been ordered for delivery during the first half of 1960 was being absorbed. Converters and dealers with a current need for gray goods began shopping around among their fellow firms. Growing inventories brought further downward pressure on prices.

Rising inventories and softening prices, familiar red flags in the textile business, were much in evidence as the usual vacation period, the week of July 4, approached. This time many mills took the Fourth of July as a holiday and scheduled vacations for a full week toward the end of July or in August. Mills were still in a strong forward order position, but knew from experience the bitter consequences of high inventories. Unpublicized curtailments of output had been in process since May, the industry's peak month for the year. From August on, cutbacks became more pronounced. During the later months hand-to-mouth purchasing and minimum inventory policies were the rule from retailers clear back to the mills. As the year ended, the industry looked to fashion-conscious consumers to put the bounce back into the textile business.

For the District furniture industry, 1960 was marked by frequent shifts in market conditions, keen competition, and much variation in the fortunes of individual firms. Orders came in rapidly during January and February, dipped abruptly in March and April, but revived again unevenly during the period from May through August. The lull that followed lasted until the fall market brought a moderate revival of buyer interest. After starting out ahead, the furniture industry wound up 1960 about on a par with 1959, its best year.

RETAIL TRADE The uneven record of retail sales during 1960 was one of the year's most interesting phenomena, and one of the most difficult to interpret. The only spenders who lost their enthusiasm occasionally during the year were private citizens. Business spending for new plant and equipment in the District continued on a high level. Federal government expenditures in the D. C. area and elsewhere increased. Local government outlays continued their expansion.

The spells of consumer indifference were not directly caused by economic conditions. Employment and wages were at record highs until practically the middle of the year. In retrospect 1960 appears to have been a year in which industry was set to produce for the consumer a greater volume of goods than ever before, but the consumer felt his needs less keenly than in the past. Some products were new, but most were slight modifications of items consumers had seen before. When motivated by seasonal or other special incentives, buyers broke existing records. In between these sprees, however, many stores thought they had never had it so slow.

The seasonally adjusted index of District department store sales reflects this pattern of consumer behavior. The buying flurries came in January, April (the best month in the history of the index), July, and October. Christmas sales remained below the levels of the prior year. The low months more than offset the high ones and 1960 sales ended up slightly below 1959's record volume.

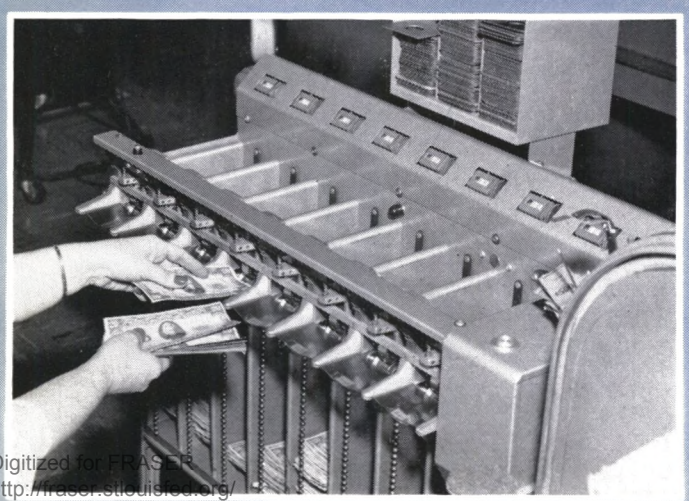
Money to burn!

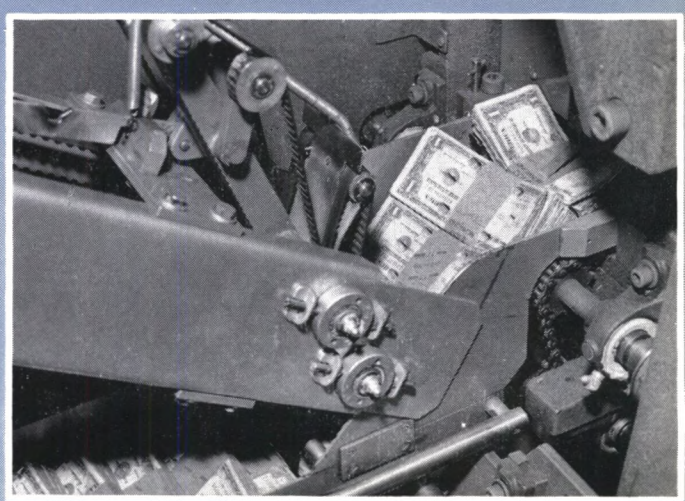
Every day, member banks send currency to the Federal Reserve Bank in their District, primarily because commercial banks prefer to keep only enough money on hand to meet their normal needs. These currency shipments contain all the principal types of "pocketbook money"—Federal Reserve notes, silver certificates, and United States notes. Most of the larger denominations are bills issued by the Federal Reserve Banks; all those less than $5.00 are issued by the Treasury. Many of these bills are soiled, torn, or mutilated—the average life of a $1.00 bill is about fifteen months. The Reserve Banks remove this unfit money so that it does not go back into circulation.

Here a clerk at the Federal Reserve Bank counts the money sent in by member banks. Bills in poor condition are culled out and sorted as to Treasury currency or Federal Reserve currency.

The Federal Reserve Bank of Richmond and its branches cancel about 600,000 pieces of currency every day; in 1959 the Richmond bank canceled 74% of the $1.00 bills and 54% of the $5.00 bills received. The reason for this large proportion of unfit bills is that many banks keep their good used money, and send the Fed a great deal of unfit currency. Banks would rather have good used money than new bills, which are stiff and hard to handle.

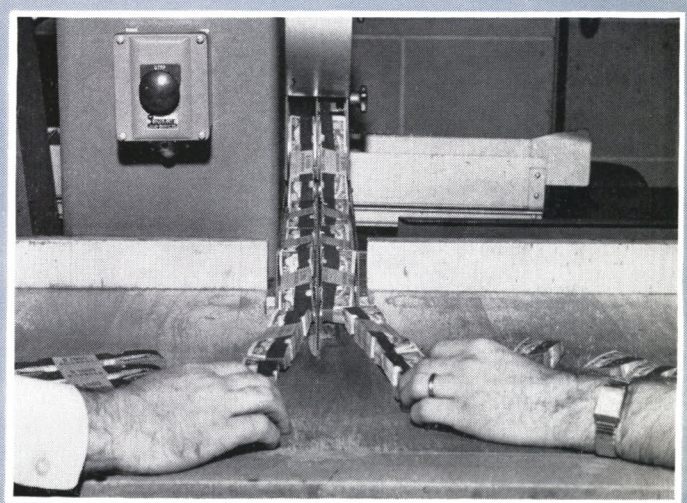
The Federal Reserve Banks are authorized to destroy unfit Treasury currency. These bills are put through a machine which cancels them by punching several holes of a distinct shape through each bill.





The canceled Treasury currency is then sent to the Currency Verification and Destruction Division of the Bank, where it is counted again and burned. After the money has been reduced to ashes, these ashes are sifted and any fragments found are burned again and completely destroyed.

Federal Reserve notes are not destroyed by Federal Reserve Banks. By law, this function is performed by the Treasury. Before shipping the old currency to Washington, however, the Fed takes precautions against theft en route. Money to be shipped to Washington is cut in half lengthwise after having been canceled. The two halves are sent to the Treasury in separate shipments. The lower halves are shipped the day the money is cut; the upper halves are sent only when word is received that the lower halves have arrived.



One of the most versatile of new products, fiber glass can combine many of the qualities of glass with the flexibility of cloth.

The Fiber Glass Industry: *a bright picture*

Although most fiber glass boats are in the "small boat" category, numbers of luxury cruisers like this one are also being produced.

A new material considered capable of phenomenal growth may provide the basis for an important new industry in the Fifth District. The material is fiber glass, regarded as a "miracle product" in terms of performance and potential. Since many phases of fiber glass production use spinning and weaving techniques similar to those used in the textile industry, the District's supply of skilled textile labor may attract a major portion of the industry to this region.

VERSATILITY: Fiber glass has been used in everything from draperies to refrigerators and from fishing rods to satellites, for it combines the strength and heat resistance of glass with the flexibility of cloth. It will not burn, it is a nonconductor of electricity, and it transmits heat very slowly: a man in a fiber glass suit can walk through a blazing oil fire and come out unscorched. It will not absorb moisture, resists weathering, and is not subject to rust or rot. Furthermore, it is very strong—stronger than steel in many cases. A one-inch rope of fiber glass can hoist 250,000 pounds. No wonder new uses for this extraordinary product are constantly appearing, like rabbits out of a hat.

A "YOUNG" INDUSTRY: Although glass fibers were made in ancient times, they were not produced commercially until recently. Glass is not flexible unless spun extremely thin—it is not as inherently flexible as steel, for example—and it is the flexibility of fiber glass that makes it useful. For a long time there was no process available for producing fine, uniform, flexible threads at a low, competitive cost.

During World War I, however, both England and Germany needed a substitute for asbestos, a fireproof insulation. England developed a process for the manufacture of a crude type of fiber glass insulation. However, it was still too expensive for widespread commercial production. At the end of the war, when asbestos again became plentiful, fiber glass production was abandoned.

It was not until the 30's, when the depression hit the American glass industry and new markets were desperately needed, that fiber glass production was again attempted. Wartime experiments had proved that glass fibers made an excellent, fireproof insulation; the only problem was one of cost. After much

research and experimentation, a system was evolved in which molten glass was blown at high speed through a series of tiny holes, producing fibers flexible enough for insulation. By 1934, this process had been developed to the point where it was feasible to open a plant devoted entirely to the manufacture of fiber glass, and glass wool insulation went on the market for the first time.

Scientists also found that these fibers made excellent air filters when coated with a glue-like substance. Air could easily pass between the glass fibers while the sticky covering caught and held the dust particles.

Fiber-glass reinforced plastic, used here as an automobile headliner, provides a most important market for the fiber glass industry.

A year later, in 1935, the first thread spun from glass wool made its appearance. Woven into cloth, it was used in electrical insulation, since it resisted moisture and heat better than did cotton, silk, or rubber. The new fabric was not used in clothing, however, because it would not hold a dye, it would not "give" as clothing must, and it wrinkled badly. A few curtains were made of glass wool in the 30's, but they were used in hotels and theatres where their fire-prevention qualities were important; they were not attractive enough to tempt the housewife.

Meanwhile, the fiber glass industry expanded in other directions. It was found that glass wool could be treated with a binding agent and then compressed, making a board that could often be installed more easily than ordinary glass wool. A large demand for this glass-wool insulation board came from refrigerator manufacturers, who found it an ideal material for their product.

In the late 30's a method was found for producing a silk-like glass thread which could be woven into a thinner, smoother fabric than thread from glass wool. This new insulating fabric reduced the weight of much electrical equipment, but remained unsuitable for other purposes.

By 1939 fiber glass output was large enough to warrant the formation of a new company, completely devoted to fiber glass manufacturing. Two large glass companies joined forces to become the parent organization of this new corporation, and their fiber glass facilities were combined to form a new and separate unit.

WARTIME ROLE The vital defense role played by fiber glass during World War II hastened its rapid development still further. In munitions plants where a speck of dust could cause an explosion, in precision-equipment factories where a fleck of dirt could ruin a highly delicate mechanism, fiber glass

Fiber glass will not burn, and it transmits heat very slowly; this makes it especially useful for insulation and fire-fighting equipment.

air filters provided safe, clean air—sometimes at the rate of thousands of cubic feet a minute. On warships and airplanes where the danger from fire was acute, fiber glass wrappings provided safe, fireproof insulation. In a million and one pieces of equipment, from tiny electrical appliances to huge tanks and gun carriers, fiber glass played an important wartime role.

It was during the war that one of the most effective new uses for fiber glass was developed: that of combining it with plastic. This reinforced the strength of the plastic material while allowing it to remain pliable and light.

Wartime demand pushed fiber glass production to new heights. Although the industry is so new that statistical information is incomplete, figures are available from the companies themselves: In 1940 industry sales were valued at about $6.6 million; by 1944 they had jumped to $58 million. Sales declined after the war until 1949, but picked up again as peacetime production moved into high gear. From $80 million in 1950, sales jumped to $290 million in 1959.

In 1949 an antitrust action was brought against the one company producing fiber glass in this country. As the result of a consent decree, four other companies were licensed to manufacture the product. Since then, only one other new company has entered the field, probably because capital investment per plant runs high. The production process requires intricate and expensive machinery.

GROWTH: PRESENT AND FUTURE Glass fiber production today is divided into two general categories: *glass wool,* used for insulation and air filters, and *glass textile fibers,* used for fabrics or yarn and for plastic reinforcing. Demand for glass wool has recently been relatively stable, while glass textile fibers represent the growing segment of the industry. Though fibers presently account for only 39% of total sales, the industry expects this figure to jump to 48% by 1963.

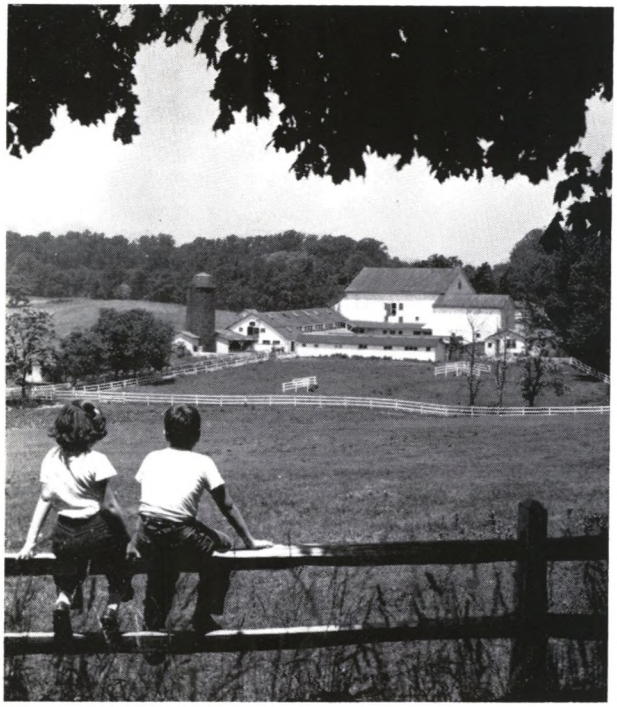
Consumption of glass textile fibers has grown at an average annual rate of 22% since 1950 and many authorities expect this rapid pace to continue. While 147 million pounds were produced in 1959, capacity in 1961 will probably reach 318 million pounds, and industry sources estimate consumption in 1970 at more than 700 million pounds.

Fiber-glass reinforced plastics, which use about half of all glass textile fibers produced, are finding their way into hundreds of industries. For example, fiber glass boats are making heavy inroads in the small boat market, jumping from 20% of the total in 1958 to an estimated 50% in 1960. Increased efficiency in production methods has been partly responsible for this increase. Prior to 1958 all fiber glass boats were made in a time-consuming process that included the treatment of large "blankets" of fiber glass cloth with a resin binder. Spray guns are now available which spray glass fibers, resin, and hardener into a mold all at one time, greatly cutting down the time and cost of production.

New techniques like this are necessary if supply is to keep pace with increased demand. If production of fiber glass boats reaches 600,000 by 1965 as some estimates indicate, 43 million pounds of glass fiber would be used—the amount that went into the entire plastics industry in 1958.

This anticipated growth is sparking a series of expansion plans; programs involving a total investment of $90 million were in progress last year, consisting mainly of two new textile fiber plants, one in Aiken, South Carolina, and the other in Shelby, North Carolina. Both of these plants began operations recently. The Shelby plant, the larger of the two, has a capacity of 35 to 40 million pounds and employs about 1200 people. If the glass textile fiber industry grows at the rate predicted, nine additional plants the size of the Shelby operation will be required by 1970.

OTHER USES The above estimates are based on increased demand in present markets, but there may well be additional uses. One possibility is the automobile industry—potentially a very important customer. It is thought that fiber-glass reinforced plastic would be a highly satisfactory material for automobile parts because of its lightness and strength, but so far the relatively long production time required for reinforced plastic makes mass production impossible. Automotive use of fiber-glass reinforced plastic is thus limited to a few special products such as molded headliners for automobile roofs. A breakthrough in production methods might provide a new market for the fiber glass industry.



WHAT'S AHEAD IN FARMING

Unless more effective programs are developed, farmers will be faced with a continuing income squeeze in the next 5 years. With average weather, annual farm production will continue to exceed available outlets at 1959 prices, which would mean that stocks of surplus products would become even larger.

As economists gathered at the U. S. Department of Agriculture's recent Outlook Conference heard these words from a top USDA economist, they perhaps found it frustrating that the end of the struggle with the "farm problem" was not in sight. With just a trace of battle fatigue, they again applied themselves to the challenge posed by the nation's current victory over hunger—at once both a major social blessing and an economic headache.

The challenge is how to cope with the effects of a continuing technological revolution in farming: In the last two decades, gains in productivity of farm labor were so substantial that farm output increased more than 50% while man-hours used were reduced nearly 50%. As this indicates, innovations which increased output or reduced costs often involved substitution of other production inputs for labor. During this period, farm employment was reduced by 3.6 million. Farmers increased their use of purchased production inputs by 44%, and the average value of total production assets used per farm rose to $42,000.

SUPPLY INCREASES But the application of discovered technology is not completed, and the flow of new developments is not expected to cease. Thus, the Conference heard that further farm adjustments can be expected. USDA economists estimate that if recent trends continue until 1965 the number of farms will be reduced by 400,000 to 3.3 million and employment on farms will drop by 15% to 6.3 million workers, with farm workers then representing only 6.5% of the labor force. During the same period, they expect farmers' purchases of feeds, pesticides, fertilizer, and machinery to rise by about 10% to 20%. As productivity is raised, they estimate that total production may grow by about 8%.

DEMAND INCREASES Economic and social forces outside of agriculture also affect the farm outlook, partly through their influence on demand for farm products. USDA analysts expect the population of the United States to increase by almost 10% during the next five years, with total domestic demand for farm products rising in roughly the same proportion. In addition, people are likely to continue to eat fewer starchy foods as they perform less physical labor and attain still higher real incomes. Thus, USDA economists estimate demand increases at 15% for meat, 14% for poultry, and 17% for fruits and vegetables, but at only 2% for cereals and potatoes. These shifts will probably be reflected in changes in the composition of farm output.

The nonfarm economy is also important as the potential employer of labor no longer needed in agriculture. USDA economists estimate that about 250,000 male farm youth will join the labor force

during each of the next five years, but that each year only 25,000 of these will be able to become operators of farms with annual gross sales of $5,000 or more. If most of the remainder are to be able to find jobs in the nonfarm sector, this part of the economy must continue to grow. Indeed, declines in business activity now affect farm families more through reduction of nonfarm employment opportunities than through reduction in demand for farm output, since consumer spending for most farm products is well-maintained during mild business recessions.

WEATHER IS CAPRICIOUS Other powerful factors also have a hand in determining the farm outlook. Still quite beyond man's control, the weather plays a major role in crop production. Economists preparing outlook statements usually assume that future weather will be about the same as the average of past years. If it actually turns out to be much different from normal, projections based on this assumption are likely to be off the mark.

FARM PROGRAMS MAY BE CHANGED At the other extreme, completely under man's direction, the government farm programs also influence the agricultural outlook. Outlook statements can be prepared under the assumption that present government programs will be continued, or they can be projections of the results under alternative programs or no government program at all.

USDA PROJECTIONS Upon extending current demand and productivity trends, and assuming normal weather and continuation of present government price support and farm export programs, USDA economists find that total farm production will continue to exceed use by nearly 5% annually. Under these conditions the unconsumed surplus, consisting primarily of wheat, corn, and sorghum, would be accumulated by the government in its price support operations.

The economists investigated two possible ways of avoiding further accumulation of surplus stocks: reducing crop acreage or increasing livestock production. Under the first method, they estimate that acreage of wheat and feed grains would have to be reduced by 20 to 30 million acres by 1965. About five million of these acres could probably go into increased cotton and soybean production; the rest would have to remain idle.

On the other hand, if livestock production were to be increased enough to use all of the prospective grain surplus, USDA economists estimate that the annual supply of meat available per person would rise from 158 pounds in 1959 to 181 pounds by 1965. They conclude that this large supply would almost certainly depress meat prices below the average cost of production.

INCOME PROSPECTS UNIMPROVED General dissatisfaction with the outlook revealed by these projections stems not only from the prospect of further accumulation of surplus stocks, with attendant government storage costs and subsequent disposal problems, but also from the prospect of continuation of recent farm income experience. With total net farm income fairly stable since 1954, monetary returns to labor and capital in farming have remained considerably below the average in nonfarm industries. This disparity has supplied much of the motive for greater efficiency of production, increased size of operations, and movement of labor out of agriculture—trends that tend to improve farm incomes and benefit consumers. However, since millions of farmers have been making these adjustments under income pressure, the resulting economic and social upheaval has been a major national problem.

Faced with these prospects, man's efforts to alter the projected course of events focus on a convenient point of control—the government farm programs. This was evident at the last session of the Outlook Conference, which was devoted to a discussion of alternative policies designed to reduce surpluses and increase farm incomes without lessening the rate of increase in productivity.

LAND PRICE RISE HALTED Current reports indicate that the land price boom may at last have been halted by the reality of relatively low returns in farming. If so, this is of major concern to present and prospective farmers, since real estate represents about 63% of farmers' total assets of $199 billion. Thus, even a small land price decline such as occurred in 1960 caused most of the $4.5 billion drop in the value of farmers' assets during the year.

OUTLOOK FOR 1961 According to USDA economists, the outlook for 1961 closely resembles the longer-term prospects. Potential crop output will be high, and total livestock production will be greater than in 1960. As a result, meat and poultry prices may weaken during the year. Realized net farm income is expected to remain at the level of the past two years.

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