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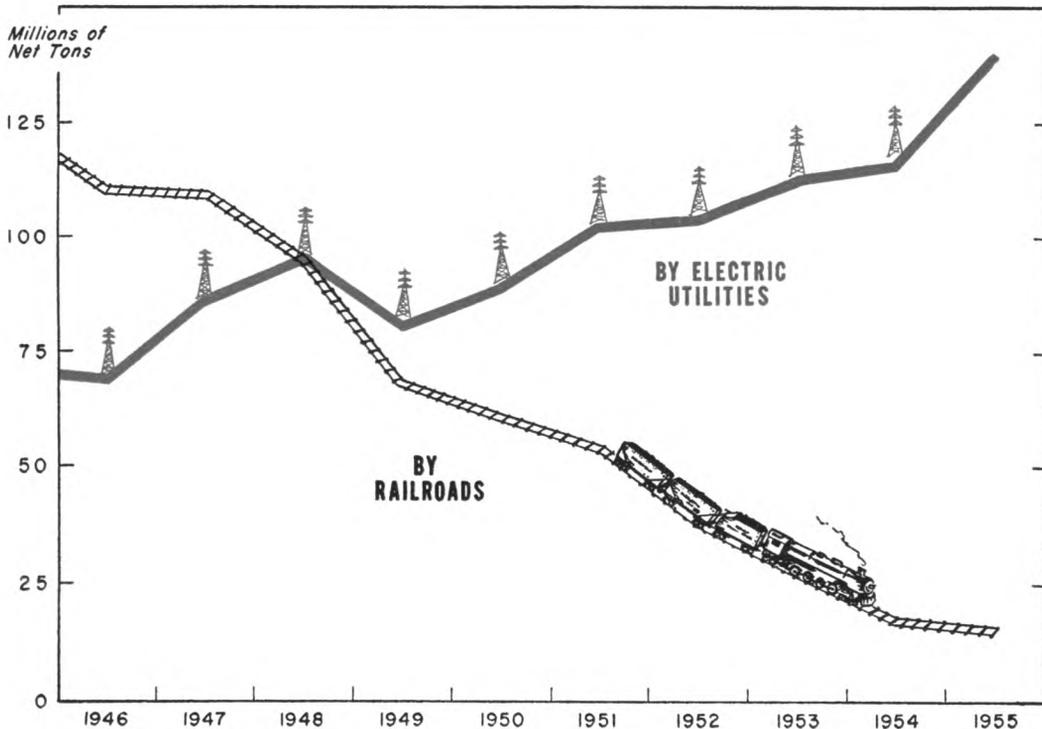
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IN THIS ISSUE

- Changing Fortunes of Bituminous Coal  
(1) *The Comeback of Coal* . . . . . 2
- "Warehousing" of Real-Estate  
Mortgages . . . . . 6

BITUMINOUS COAL CONSUMPTION



Source of data: U.S. Bureau of Mines.

# Changing Fortunes of Bituminous Coal

## (1) The Comeback of Coal

**I**N THE bituminous coal fields, the year recently ended is being hailed as a decisive turning point in the industry's long struggle against depression and bankruptcy.

Coal mining has been one of the few major U. S. industries that has failed to share in the general prosperity which has prevailed since the end of World War II. Except for a short-lived recovery during the Korean War, U. S. production of soft coal headed steadily downward between 1947 and 1954. In the latter year, production sank to the lowest level since 1938. Many mines closed and unemployment as high as 20 percent of the available labor force was quite common among mining communities.

In 1955, however, the picture changed considerably. Coal production increased almost 20 percent without any build-up in consumer stocks. The reasons behind the turnabout are varied. The general industrial boom sharpened the appetites of many coal consumers, particularly the steel industry. Export shipments also expanded substantially, but probably most significant was the indication, as suggested by the cover chart, that a long-term shift in the relative importance of coal's declining and expanding markets was making itself felt. The increasing demand for coal by electric power utilities, for example, now impressively outweighs dwindling losses in the once substantial railroad market.

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**EDITOR'S NOTE:** *This is the first of a series of articles about bituminous coal. Subsequent articles, to appear in early issues of the REVIEW, will discuss changing techniques in the industry, the impact of coal mining on the states and communities of the Fourth Federal Reserve District, and the future of bituminous coal.*

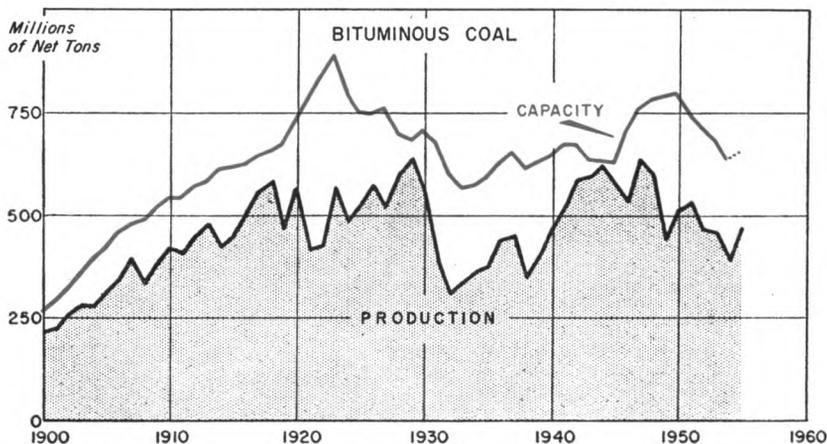
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### The Rise and Fall of Bituminous Coal

Back in the 1800's and for the first 20 years of this century, coal mining was a burgeoning "growth" industry. Production doubled every decade, bringing wealth and importance to countless mining towns in the remote Appalachian hill country. National production pushed to a peak at the end of World War I, after prices more than tripled between 1915 and 1920. The demand for coal seemed insatiable. Hundreds of new mines were opened, boosting total annual capacity to 885 million tons in 1923. But, instead of rising to new heights in the 1920's, the coal industry floundered.

The ending of railroad expansion had halted the growth trend of one major coal consumer. Then, economies in the use of coal and increased competition from alternative fuels choked off further growth in the consumption of other customers. The steel industry used more scrap instead of coal and iron ore, and the technical efficiency of coal burning equipment in the electric utilities was being rapidly improved. At the same time, rising production of oil and natural gas began to threaten coal's dominant position in many fuel markets.

The long-term growth of the petroleum industry was stimulated greatly by the expansion of demand for many oil products, particularly gasoline, which are not at all competitive with coal. However, this expansion of demand brought with it an intensive search for new supplies and technological advances which contributed to declining costs of production and marketing, not only for



Source of data: U. S. Bureau of Mines. Data include lignite.

*Coal mining failed to extend its early growth trend after World War I. Since then, declining production and excess capacity have plagued the industry much of the time.*

gasoline but also for natural gas and the fuel oil products competing with coal.

Because coal mining areas had very few alternative opportunities for employment and because capital invested in mine development was quite immobile, coal mining became a "sick" industry. The excess capacity developed in the early 1920's was squeezed out very slowly and painfully.

The depression of the 1930's made a bad situation worse. Only during the forced draft of World War II did the industry begin to get back on its feet.

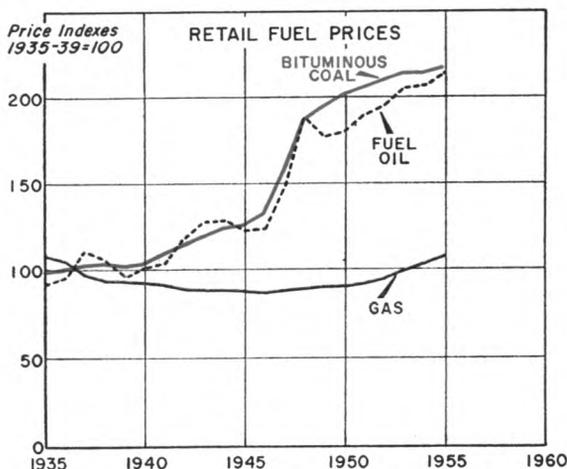
### Postwar Coal Markets

The war's end brought new problems for the coal industry. Initially, the need for large exports of coal to the crippled nations of Europe extended the wartime prosperity. However, as the European countries recovered economically, high-cost coal imports from the United States were curtailed. At the same time, intensified competition between coal and its rivals, oil and gas, returned at home. An accompanying chart shows that the competitive position of coal, especially in relation to gas, was weakened by sharply rising retail coal prices in the early postwar years.

Many factors other than price, however, are important in the selection of fuel by con-

sumers. Actual fuel cost depends as much upon efficiency of utilization as upon gross fuel prices. In addition, intangible factors such as ease of handling, cleanliness and the dependability of an uninterrupted supply influence the relative attractiveness of alternative fuels. In almost all these respects, coal suffered when compared with competing fuels.

*The competitive position of coal, especially in relation to gas, was weakened by sharply rising retail coal prices in the early postwar years.*



Source: Based on data collected by the U. S. Bureau of Labor Statistics for cities included in the Consumer Price Index.

As a result, deep inroads were made in coal's traditional markets.

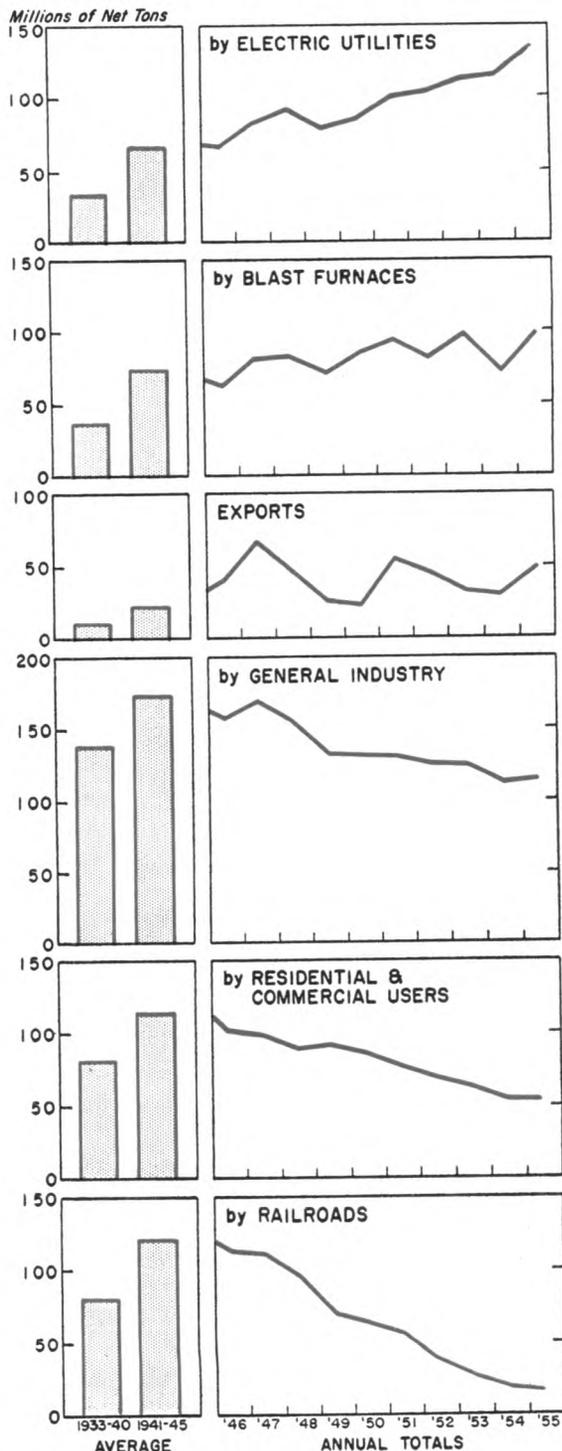
*Railroads.* The sharpest blow to coal was the mass conversion of the nation's railroads from coal-burning steam engines to oil-burning diesels. By more efficient utilization of fuel energy, diesel locomotives operated at fuel costs as little as one-half or even one-fourth those of steam engines, depending on the type of service performed. In the short space of eight years, the railroad market, which had been consuming about 20 percent of all coal produced, shrank to almost nothing.

*Retail Deliveries.* Hardly less devastating was the rapid displacement of coal in the home and commercial heating markets. Some of coal's residential and commercial customers converted to oil-burning equipment and many more switched because of the widening availability of cheap, easily handled natural gas. The great increase in natural gas production during the past 25 years has come about largely through discoveries associated with the extensive search for oil. In the postwar period, a rapid development of gathering and transport facilities enabled gas to invade countless new markets, where its expansion was largely at the expense of coal.

*General Industry.* Despite rising industrial production and an increased demand by industry for heat and power, industrial coal consumption gradually declined in the postwar years. Again, competition from oil and gas was primarily responsible, with frequent supply interruptions due to labor disputes adding to the disadvantages of coal in the eyes of some industrial consumers. Industrial markets for coal were further undermined by the dumping of cheap natural gas during the summer months, when the more lucrative residential sales were at a seasonal low. In addition, imports of bargain-priced residual fuel oil from Caribbean refineries pushed substantial quantities of coal out of many East Coast markets.

*Iron and Steel.* Although many of coal's traditional consumers turned to other fuels, an accompanying chart shows that the demand for blast furnace coke and fuel for

## BITUMINOUS COAL CONSUMPTION



electric power generation increased after 1945. No effective substitute has been found for the one and a quarter tons of coal in the form of coke which it takes to produce a ton of blast furnace pig iron. Rising iron and steel output therefore has created a corresponding increase in the iron and steel industry's demand for coal.

*Electric Utilities.* The other, and most important, bright spot from the viewpoint of the coal industry has been the steady gain in the coal consumption of electric utilities. Electric power output more than doubled between 1945 and 1954. And coal continued to supply about 50 percent of the total energy utilized in the generation of electricity. Gas doubled its relatively small percentage share of the growing total, largely at the expense of hydroelectric production which failed to keep pace with the industry's rapid rate of expansion. Coal retained its place in the utility market because in most areas it provided the cheapest available source of heat energy. When fuel costs constitute a substantial portion of total operating costs, as they do in power production, considerations other than cost have little weight.

### **A Brighter Future**

The vigor of the upturn in coal production in 1955 and the pattern of consumption in coal's various markets has fostered a growing belief, especially within the industry, that last year's recovery was the prelude to a new era of expansion in bituminous coal mining.

It is quite possible that 1954 marked the bottom of coal's postwar slump. However, the pace of the secular upturn (assuming it has occurred) should not be judged by the industry's performance in 1955, when a cyclical industrial boom, both here and abroad, tended to overshadow all other developments.

The contention that coal has turned the corner is based on the assumption that balance has finally been achieved between coal's declining and expanding markets. Further losses in the railroad market will necessarily be quite small because there is practically no market left to lose. The railroads' postwar

switch to diesels has been pretty well completed.

Industrial consumption of coal may continue to shrink moderately in the short run, but the outlines of a reversal in trend are beginning to take shape. The latest designs in automatic coal-burning equipment seem capable of holding their own against competitive oil and gas units for industrial purposes. In fact, a widening of coal's price advantage in some areas could conceivably spark a limited reconversion movement. In any case, there should continue to be an increase in coal requirements of those industries, like steel, chemicals, and cement, which have provided a growing market for coal in the past.

In the home heating market, continued displacement of coal must be expected as the extension of distribution facilities makes low-cost natural gas available to more and more communities. However, in the larger commercial units and apartment houses, newly developed automatic coal furnaces may enable coal to hold its own.

In 1955, a 20-million-ton increase in export shipments gave a fillip to coal demand. Most of the increased exports went to Europe where old depleted mines and labor shortages have prevented production from keeping pace with the needs of booming industry. Although no early end is seen for Europe's coal shortage, it seems unlikely that expensive importation of American coal will be accepted as a permanent solution. Increased use of petroleum products from the Middle East and stepped-up development of atomic power offer possible alternative courses of action.

The real key to coal's brightening future lies primarily with the electric utilities, which last year were responsible for about 30 percent of total bituminous coal consumption. Electric utilities are expected to more than double their power output during the next decade, just as they have during the past decade. Cheap power from hydroelectric developments and surplus natural gas is becoming scarcer, now that the best dam sites have been occupied and extensive new marketing

*(Continued on Page 8)*

# “Warehousing” of

## Real-Estate Mortgages

**B**ETWEEN August 10 and November 16, 1955, “warehousing” loans to real-estate mortgage lenders at 17 weekly reporting member banks of the Fourth Federal Reserve District increased \$22 million and unused commitments to participate in such loans declined \$5 million. “Warehousing” loans provide interim financing for real-estate mortgage lenders and, thereby, become indirect extensions of commercial bank credit to those borrowing for the purpose of purchasing real estate.

Changes in the Fourth District adhered rather closely to the national trend. Outstanding warehousing loans and commitments in the District were, respectively, about six percent and about four percent of the United States total on both dates.

The information for the above dates was obtained from two surveys undertaken for the purpose of ascertaining the amounts of all types of credit extended by commercial banks to real-estate mortgage lenders. An analysis of the August survey and a discussion of “warehousing” appeared in the November 1955 issue of this *Review*, pages 9-11.<sup>(1)</sup>

As shown in the accompanying table, nearly two-thirds of the increase in warehousing

loans in the Fourth District occurred in loans secured by real-estate mortgages, which rose \$14 million. Loans secured by other assets, or unsecured, rose \$6 million and registered the largest relative increase.

By type of lender, loans to “others,” predominantly savings and loan associations, rose \$12 million. This category accounted for more than half of the rise in total warehousing loans to mortgage lenders. Loans to mortgage companies increased \$10 million, but loans to insurance companies fell \$1 million between the survey dates.

A decline of \$5 million in unused commitments was shared by all lender categories. Commitments to insurance companies accounted for about half of the decline and the miscellaneous “other” category accounted for most of the remainder. Commitments to mortgage companies declined only slightly, but this was contrary to the national movement which showed a \$23 million increase.

Data are not available to determine the extent that changes reported were due to seasonal factors. However, the increase in warehousing activity was accompanied by an upward movement in total mortgage debt outstanding on one- to four-family houses in the interval between the survey dates.

(1) For a summary of the results of the November survey on a national scale, see *Federal Reserve Bulletin*, December 1955, pp. 1323-1324.

# LOANS TO REAL-ESTATE MORTGAGE LENDERS

By Weekly Reporting Member Banks  
November 16, 1955 and August 10, 1955

(Millions of dollars)

Major Classes of Borrower By Type of Loan	FOURTH DISTRICT			UNITED STATES		
	Outstanding on		Changes	Outstanding on		Changes
	Nov. 16, 1955	Aug. 10, 1955		Nov. 16, 1955 <sup>(1)</sup>	Aug. 10, 1955 <sup>(2)</sup>	
Mortgages Purchased Under Resale Agreement:						
Insurance Companies . . . . .	10.2	10.9	— .7	261	235	+ 26
Mortgage Companies . . . . .	7.5	5.2	+ 2.3	116	94	+ 22
Others <sup>(2)</sup> . . . . .	.3	.2	+ .1	28	10	+ 17
Total . . . . .	18.0	16.2	+ 1.8	405	339	+ 66
Secured by Real-Estate Mortgages:						
Insurance Companies . . . . .	.7	1.3	— .6	37	13	+ 24
Mortgage Companies . . . . .	65.4	57.7	+ 7.7	1,008	910	+ 98
Others <sup>(2)</sup> . . . . .	7.1	(a)	+ 7.1	59	59	. . . .
Total . . . . .	73.2	59.0	+ 14.2	1,105	983	+122
Unsecured, or Secured other than by Real-Estate Mortgages:						
Insurance Companies . . . . .	. . . .	. . . .	. . . .	2	4	— 2
Mortgage Companies . . . . .	1.3	.9	+ .4	38	25	+ 13
Others <sup>(2)</sup> . . . . .	16.0	10.7	+ 5.3	68	60	+ 8
Total . . . . .	17.3	11.5	+ 5.8	108	89	+ 19
Unused Firm Commitments to Extend Credit of Above Types:						
Insurance Companies . . . . .	17.8	20.4	— 2.6	147	184	— 37
Mortgage Companies . . . . .	26.1	26.6	— .5	918	895	+ 23
Others <sup>(2)</sup> . . . . .	2.4	4.4	— 2.0	183	217	— 34
Total . . . . .	46.3	51.4	— 5.1	1,249	1,295	— 46

(a) Less than \$50,000.

(r) Revised.

(1) Banks reporting less than \$1 million in total loans and commitments on August 10 were not asked to report on November 16. For comparative purposes, their August 10 figures are included in the November 16 data.

(2) Savings and loan associations, mutual savings banks, builders and other organizations (other than banks) that make or hold substantial amounts of real estate loans.

## Bituminous Coal

*(Continued from Page 5)*

and storage facilities have been constructed for gas. This means that coal quite probably will furnish a gradually increasing proportion of the energy required for new electric power projects — at least until atomic power becomes competitive. Interestingly enough, a big factor in the prodigious postwar growth of power output has been the tremendous power appetite of the U. S. atomic energy program. It is expected that in excess of 30 million tons of coal will be burned in 1956 to supply electric power to the major atomic energy plants of the nation.

Another development likely to give coal an expanding share of future electric output is a definite tendency for electro-process industries with large power requirements to look toward coal fields in locating new capacity. The proximity of large bituminous coal fields to the major industrial markets of the north-eastern and midwestern United States and the assurance of firm supplies of low cost fuel far into the future lend attractiveness to coal-based electric power. Several corporations are already planning the construction of aluminum reduction facilities in the Ohio River valley, for example.

Improvements in the design of equipment converting coal into electric energy have reduced the minimum amount of coal needed to produce a kilowatt-hour of electricity from about four pounds at the turn of the century

to two-thirds of a pound today. Further improvements in design will affect the quantity of coal needed to provide future increments in electric power. But even when such eventualities are allowed for, the prospective increase in coal consumption by electric utilities seems more than sufficient to offset the moderate contraction anticipated in certain other coal markets.

In the battle between competitive fuels, coal may be assisted in the future by an improvement in its relative price position. The great price advantage enjoyed by natural gas during the past two decades will be narrowed in the next one if the trend displayed on the accompanying retail fuel chart continues. It shows gas prices turning decisively upward in the past five years, after a long period of stability.

It may be argued that eventually the coal industry, with its practically limitless reserves and its great potential for cost-saving mechanization, will gain a substantial price advantage over petroleum and gas. The extraction, transportation and distribution of the latter fuels have already experienced almost complete mechanization and, even more important for the longer run, both will be facing gradual exhaustion of reserves, and hence rising discovery and production costs, long before aggregate coal supplies begin to be dissipated.