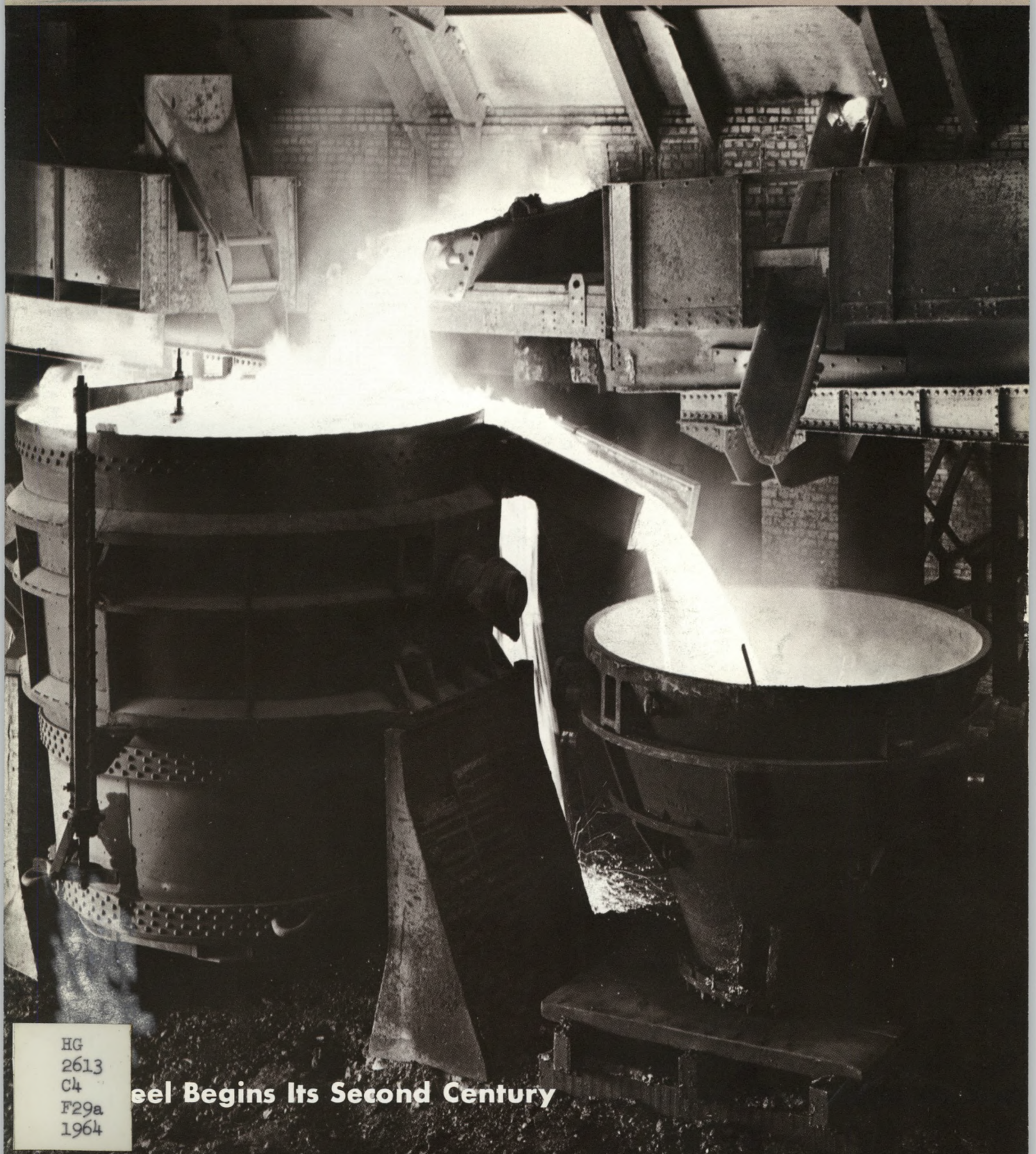
FEDERAL RESERVE BANK OF CHICAGO
ANNUAL REPORT 1964



eel Begins Its Second Century

To the Member Banks of the
Seventh Federal Reserve District:

I am pleased to present to you the Annual Report of the Federal Reserve Bank of Chicago for the year 1964.

The past year has been characterized by further improvement in economic activity and continued growth of banking. Some of the more significant developments are described briefly at the beginning of this report.

Following the review of 1964, we present a discussion of the steel industry, which produces the key material upon which much of Midwest industrial activity is based.

Official appointments, elections and resignations during the year are reported on page 36.

The volume of transactions in a number of the Bank's departments has continued to rise as business activity in the District has risen further (pages 32 and 33).

On behalf of the directors, officers and staff, I extend to you appreciation for your cooperation and counsel. Such guidance and assistance have helped us to discharge more effectively our responsibilities to the financial community, business and the general public.

Sincerely,

Charles J. Scanlon

CHARLES J. SCANLON
President

January 14, 1965

1964 IN REVIEW

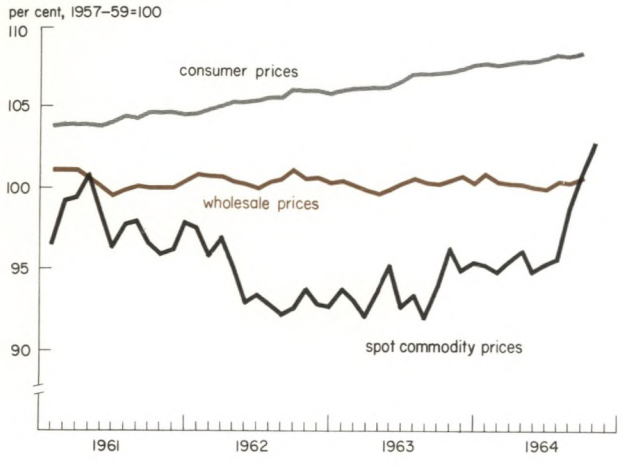
Economic Developments

Nineteen hundred and sixty-four was in most respects a "good year"—the fourth in a row. The expansion that began in early 1961 continued during the year without interruption. Most major sectors of the economy experienced vigorous demand for their products or services. Employment rose and prices continued quite stable except for some metals which rose sharply as demand increased, and supplies were restricted by labor and political unrest in producing areas abroad.

The demand for durable goods was especially strong. Business firms boosted their spending for new plant and equipment about 14 per cent and consumers upped their purchases of autos and household durables about 11 per cent during the year. These developments were favorable for the Seventh Federal Reserve District where production of durable goods ranks high among all activities.

Because of the strong demand for producer and household durable goods, industrial production in the Seventh District rose more than the 6 per cent increase in the nation. The largest gain in output was in iron and steel, up 16 per cent compared with 1963 and well above output in the previous peak year, 1955.

Prices for some basic materials rose sharply late in the year



Production of machinery and business equipment increased about 8 to 9 per cent.

The high level of demand for steel toward year-end reflected, in addition to the increase in industrial activity, efforts by many firms to stockpile steel. Inventories were being increased in anticipation of a possible steel workers' strike by mid-1965 and as a hedge against possible steel price increases.

Prior to the strikes at General Motors and Ford in October and November, production of autos had been 8 per cent above the year-earlier volume. Employment and income in the District were adversely affected since almost two-thirds of the United States auto employment is concentrated in this region. In December, however, auto production was at a record high to accommodate customers' orders and rebuild dealers' inventories. Sales of domestic cars in calendar 1964, even in the face of the strike, were estimated to pass 7.5 million and set a new record. This volume would exceed 1963 sales by about 3 per cent and sales in the previous peak year, 1955, by about 2 per cent.

Major producers of machinery and equipment in the District continued to report that plant capacity was adequate to handle additional orders. Skilled labor, however, was in short supply in many areas at year-end and backlogs of unfilled orders continued to rise. Midwestern producers of nondurable goods, such as paper, manufactured foods and chemicals, experienced strong demand throughout 1964 and were generally able to fill orders promptly.

The rising level of economic activity led to moderate increases in employment and a further reduction in unemployment in most areas. Throughout 1964 the level of unemployment in all Seventh District states was substantially below the national average. At year-end only 1 of the 23 major labor market areas in the District, South Bend, reported a "substantial labor surplus," with unemployment in excess of 6 per cent. Nearly one-fifth of the 150 centers nationally were classified as having substantial labor surplus.

Unemployment continues to be a serious problem among the unskilled workers, particularly those with

Housing permit activity was strong in Detroit and Milwaukee areas in 1964

a minimum amount of education and young people with little or no previous employment experience. These encounter difficulty in qualifying for job openings.

Residential construction in the District drifted downward during most of the year along with a similar trend in the nation. Until early 1964, nonfarm residential construction activity across the country had outpaced the growth rate of the overall economy in the current expansion. Expenditures on homebuilding in the nation, aided by favorable weather, had been at a record rate in the first quarter of the year and by the fourth quarter were down about 5 per cent. However, the decline in residential construction was not expected to gain momentum since it was occurring within a framework of stable vacancy rates, rising rents and ready availability of mortgage credit at stable or declining interest rates.

Agricultural prices decline

The farm sector did not share fully in the economic expansion during 1964. Although demand for agricultural commodities was at a high level, the large volume of production, particularly of livestock, depressed prices somewhat. Farmers' receipts from marketings, therefore, declined from the record year-earlier level. Substantially larger Government payments were received by District farmers under the feed grain and wheat programs but rising production costs resulted in lower net farm income than in the preceding year.

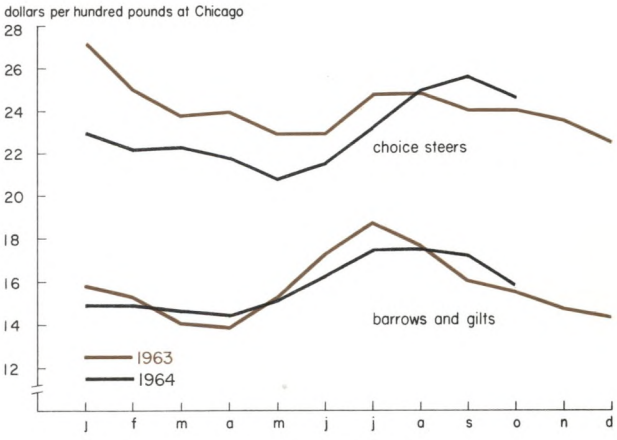
Livestock farmers bore much of the brunt of lower prices. Cattle prices were severely depressed during the first half of 1964, averaging $2 to $4 below the relatively low year-earlier levels. As a consequence, many farmers incurred substantial losses from their feeding operations. Hog prices, too, were lower during much of the year and producers' net returns were below 1963 levels.

Corn and soybean prices averaged slightly higher during most of 1964, reflecting the continued strong domestic and foreign demand for these commodities. Wheat prices, however, dropped sharply at midyear but the effects were offset, in part, by the marketing certificates issued under the new wheat program which boosted Government payments substantially.

Unfavorable weather conditions during the critical growing stages reduced the production of field crops in 1964 from the previous year's record total. Corn production in the District states dropped about 10 per cent below the exceptionally high level in 1963 but was still above the average of the past five years. Production of soybeans was about 5 per cent below 1963.

Farmers' income from nonfarm earnings rose somewhat as the demand for labor in manufacturing, construction and other nonfarm activities rose further and increased the availability of both part-time and full-time jobs to farmers and members of their families.

Livestock prices averaged lower during much of 1964



The number of small and inefficient farm units capable of providing only low levels of farm income has continued to decline.

Farmland prices in the District advanced further during 1964 and at the end of the third quarter were about 4 per cent above the previous year. The demand for farmland has remained strong as individual farmers have continued to seek additional land to add to their present units and improve their efficiency.

Agricultural loans outstanding at District member banks rose again. At midyear, loans secured by farm real estate were up 13 per cent from 1963, matching the increase in the preceding 12 months. Non-real estate loans showed somewhat smaller gains, up 5 per cent from a year earlier. Also, the increase was smaller than in the 1962-63 period.

A larger volume of non-real estate loans were renewed as they matured in the first half of 1964, primarily reflecting the small profits or actual losses from cattle marketed during that period. This situation had improved greatly by year-end with renewals and extensions of maturing agricultural loans again near normal levels.

Farm mortgage debt, although rising substantially during the past few years, appeared not to be cumbersome to borrowers. Mortgage loan delinquencies and foreclosures remained at low levels with repayments on mortgage loans continuing above the scheduled amounts during 1964.

Deposits at country banks continued to show steady gains. During the latter part of the year, smaller credit demand to finance purchases of feeder cattle eased the upward pressure on loan-deposit ratios in some areas.

Bank credit and deposits

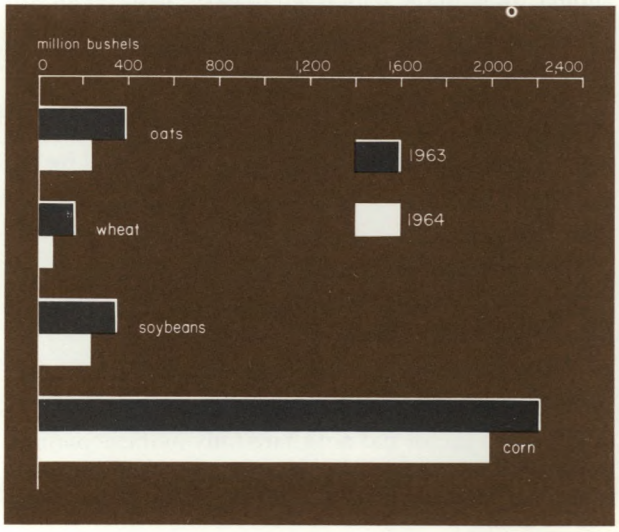
As business activity advanced, member bank loans continued to expand rapidly although at somewhat less than the record pace in 1963. At the end of November total loans and discounts of Seventh District member banks were 12 per cent above the year-earlier level compared with a 15 per cent gain in the previous year. Under a continued stimulative monetary policy, total reserves of the banking system rose faster than in 1963, and deposit growth at District banks was sufficient to enable the banks to meet loan demand without reducing investments. Holdings of U. S. Government securities showed little change, while portfolios of municipal and Government agency issues were expanded substantially for the third consecutive year. Total bank credit—loans plus investments—was up 9 per cent, slightly more than in the previous year.

The demand for loans was strong throughout the District (except in the major cattle feeding areas in the fall). Relative to the 1963 experience, weekly reporting banks showed a slightly slower growth in commercial and industrial loans, while loans with real estate as collateral rose at about the same rate and credit to individuals climbed 15 per cent—twice as fast as in the previous year. The slower overall loan growth reflected smaller increases in credits to securities dealers and finance companies, mainly at the large Chicago banks. Preliminary data indicate that banks outside the major cities had larger gains in their lending to both businesses and individuals in 1964 than in 1963.

Fewer banks reduced their holdings of U. S. Government securities compared with 1963. The largest reductions were in areas where banks substantially increased their holdings of tax-exempt issues. The average maturity of U. S. Government portfolios was shortened markedly during the year. Holdings of intermediate and long-term issues by the weekly reporting banks declined nearly 15 per cent, reflecting sales, the passage of time and the greater proportion of short-term issues offered in Treasury financings. These declines were offset by the rise in holdings of short-maturity Governments.

Member banks in Indianapolis reported the largest gains in both loans and securities. Total deposits of these banks rose almost 15 per cent after the Indiana state banking authorities lifted the time deposit interest rate ceilings in line with those made applicable to other states when Regulation Q was amended two years earlier. Time deposits rose 40 per cent in In-

Crop output in District
fell below record year-earlier level



dianapolis and 16 per cent at other Indiana member banks.

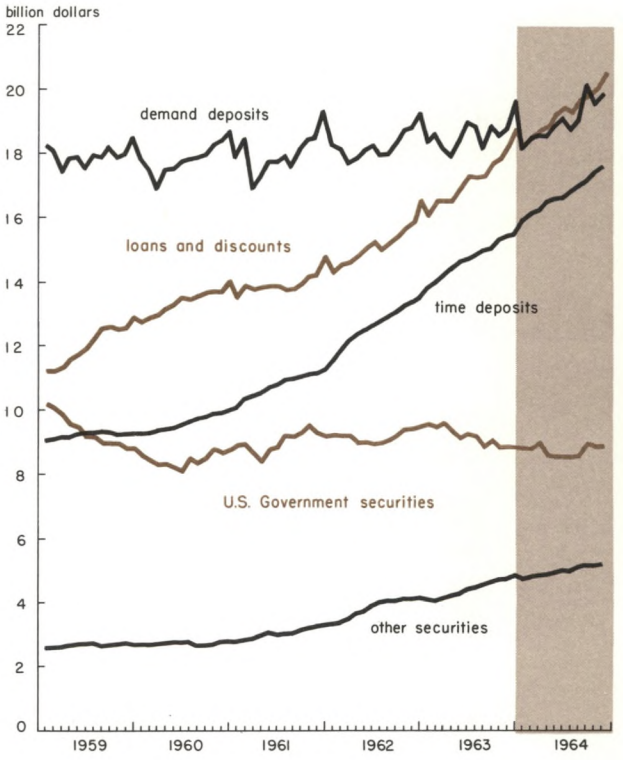
In other areas deposit growth was again mainly in the time accounts although the rate of growth was somewhat slower than in the preceding two years. A number of large District banks continued to acquire funds through the issue of negotiable time certificates of deposit. Outstanding certificates of weekly reporting banks rose more than one-third and accounted for nearly 40 per cent of the growth in total time and savings deposits at these banks. Demand deposits were up only 5 per cent, but this was the largest gain since 1958.

Some commercial banks have sought out new sources of funds in order to serve more adequately the financial needs of their customers. In addition to the more widespread issuance of negotiable time certificates of deposit—now outstanding in an amount exceeding 13 billion dollars at the nation's larger banks—a number of banks raised funds by the issue of unsecured promissory notes. These, typically, have maturities roughly comparable to CDs and have been issued at roughly comparable rates. These obligations, however, are not subject to reserve requirements or deposit insurance assessments, as are CDs, but they are subject to the applicable borrowing limits. Some further use was made of another innovation begun in 1963 after a permissive ruling by the Comptroller of the Currency—that of raising capital funds through the sale of long-term debentures. The total amount of funds raised through the sale of notes and debentures during the past two years is estimated at roughly 1 billion dollars.

Individual banks, moreover, apparently have increased their efforts to acquire funds for short-term liquid loans and investments by regular day-to-day borrowings from other banks. By paying rates for Federal funds competitive with other short-term yields, even though at times above the discount rate, some banks were able to use the Federal funds market fairly continuously.

These have been important avenues of commercial bank growth, but their use has not been completely free of difficulties. Smaller banks, because of the premium they must pay on their obligations, have been hard pressed to retain corporate time deposits on occasions when rates paid by the nation's large money market banks have approached the maximum specified in Regulation Q. Also, the high interest cost of time and savings deposits and of subordinated obligations has been a strong inducement for banks to channel funds into assets with relatively high yields and, presumably, greater risk. In general, the funds thus acquired

Loan demand accommodated without liquidation of securities at District member banks



were invested in sound assets with investment yields sufficient to cover their costs (largely tax-exempt securities and mortgages).

A growing cause of concern on the part of supervisory authorities, however, was the deterioration in the quality of assets which led to the closing of a few banks in the course of the year. The banks forced to liquidate were widely scattered geographically over the nation. The most common cause of failure was losses incurred on high-risk, high-interest loans either in connection with, or as a result of, policies adopted by changed ownership and management of the banks. In a number of instances these were banks that had achieved rapid growth of deposits through the sale of negotiable certificates of deposit, sometimes at costs involving not only high contract rates but brokerage fees as well.

Most smaller banks continued to gain deposits by attracting savings. Not all banks have boosted interest rates paid on *savings* deposits to the same degree. Relatively low rates are common in the rural areas of District states. At the beginning of the fourth quarter, the average rate paid on savings was less than 3 per cent in both Iowa and Wisconsin outside the major metro-

politan areas in these states. Except in Indiana, this average changed very little during the past year. Most of the rural banks, however, offer higher rates on time certificates and this type of deposit has been rising in relative importance.

Additional flexibility as to rates paid on time and savings deposits was provided in November when Regulation Q was further amended to raise maximum rates payable as follows: from 4 to 4.5 per cent on time deposits maturing in 90 days or more, from 1 to 4 per cent on those maturing in 30 to 90 days, and from 3.5 to 4 per cent on savings deposits of less than one year. Before the end of the year a number of the large Chicago banks announced they would pay 4 per cent on all savings deposits, effective January 1.

Changes in major assets at District member banks

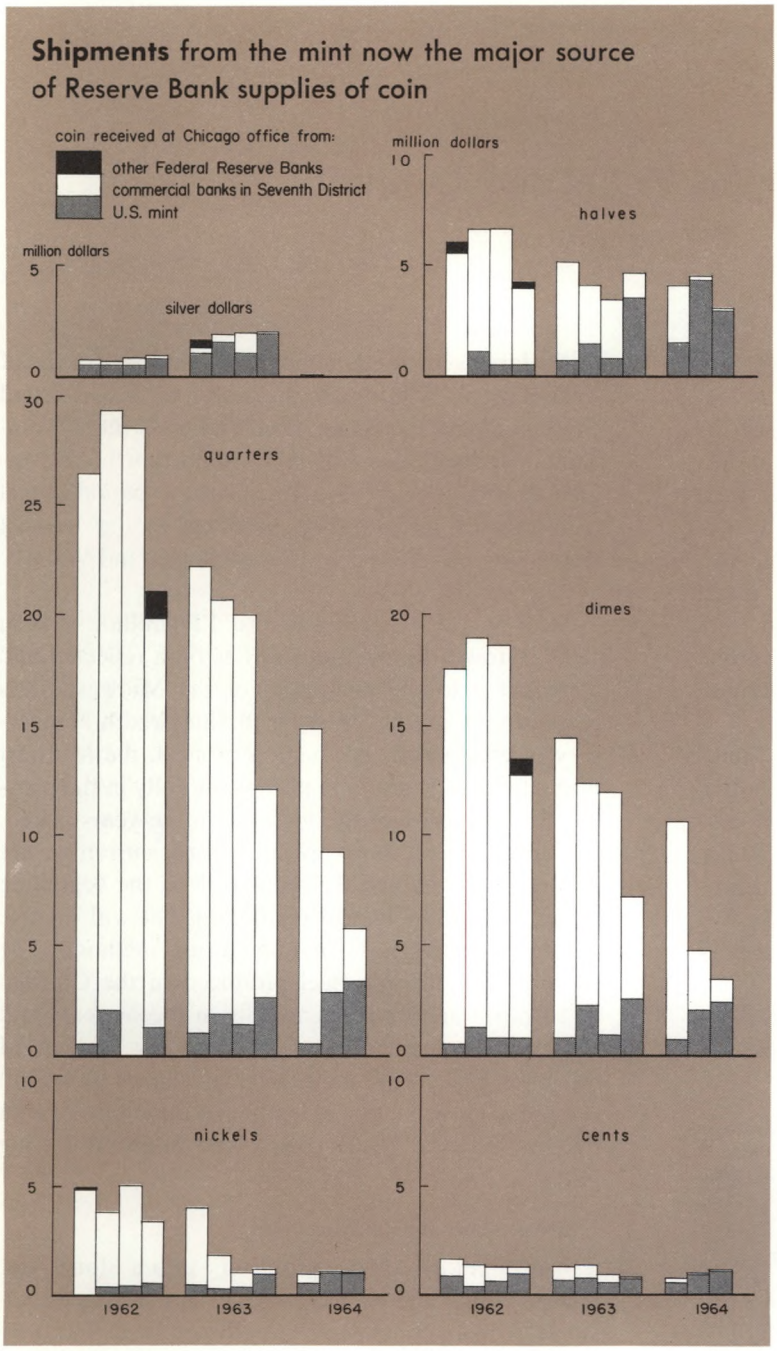
The action raising Regulation Q ceilings was taken concurrent with an increase in the discount rate on member bank borrowings in the Seventh District and four other Federal Reserve districts (followed shortly by similar boosts in other districts). The change in the discount rate from 3.5 to 4 per cent, like the previous half percentage point boost in July 1963, was mainly to protect the United States balance of payments position by reducing the differential between short-term interest rates here and those abroad. It was precipitated by the boost from 5 per cent to 7 per cent in the British bank rate. The volume of member bank borrowings at the discount window, both in the District and for the United States as a whole, averaged somewhat higher in 1964 than in 1963.

Reflecting the policy of the monetary authorities to accommodate the credit demands associated with an expanding economy, yields on securities and other interest rates remained quite stable throughout most of the year. The three-month Treasury bill rate (weekly average) fluctuated by not more than 10 basis points above or below the discount rate until late November. Yield averages on long-term U. S. Government securities and state and municipal issues were both at their lows for the year in mid-November. Yields on seasoned high-grade corporation bonds traced a slowly rising trend but rose less than in 1963. Rates on residential mortgages showed no net overall change during the year.

All sectors of the money and capital markets reacted sharply to the announced increases in the British and American central bank rates in late November. Short-term money rates moved up in response to this and year-end seasonal demands. But yields on long-term securities, after a relatively brief spurt due to uncertainties about the impact of these changes, settled back, on balance, to levels close to those prevailing earlier.

A very troublesome operating problem for the banking system during 1964 was the increasingly severe coin shortage. Despite a rapid rise in the amount of coin in circulation (the total dollar value of coin outside the Treasury and the Federal Reserve Banks has increased 20 per cent in the past two years), banks found it difficult to meet the demands of their customers for coin. The "shortage" is traceable in part to increased use of vending machines, toll roads, parking meters and other coin-operated devices but probably also reflects diversion into private collections and into hoards for speculative purposes.

The Federal Reserve Banks, which normally fill



member bank orders for coin as a routine matter, were forced to ration coins because of the sharp drop-off in coin receipts from commercial banks. The accompanying chart, based on receipts at the Main office of the Federal Reserve Bank of Chicago, illustrates how this return flow of coin in all denominations has shrunk in the past two years. Although new production has been increased sharply, receipts of new coin from the mint have not been sufficient to offset the failure of existing coin to flow back into the Federal Reserve Banks.

At year end . . .

The expansion of economic activity in 1964 was well balanced with increases in nearly all categories and little evidence of the kinds of excesses that normally precede economic adjustments in the form of temporary curtailment in overall activity. At year-end, however, evidences of some imbalances were emerging. Inventories of steel were being increased at a substantial pace. Some upward price pressures were visible, particularly in the case of nonferrous metals and other raw materials. Wage settlements had been and were being negotiated which was feared would have an inflationary impact if the margins of unemployed manpower and unused plant facilities narrowed further.

At the beginning of 1965 the economy appears poised for continued growth. Such imbalances as had developed had not reached critical proportions. Appropriate policies of business, individuals and government should permit continuation of the longest uninterrupted postwar uptrend in economic activity yet experienced. There are, of course, unsolved problems. Relatively high unemployment among some segments of the labor force and the near-chronic balance of payments deficit are probably the most important of these and will continue to command attention in the months, possibly years, ahead.

Steel Begins Its Second Century

September 1964 marked the hundredth anniversary of the first commercial production of Bessemer steel in the United States. The place was Wyandotte, Michigan. For some years after 1864 the nation's total output of steel was measured in thousands rather than millions of tons, but production expanded rapidly, except in periods of business recession. As the supply of this strong, versatile and relatively inexpensive metal increased, the United States was transformed in a quarter century from a primarily rural nation to one of the world's foremost producers of manufactured goods. The Age of Steel had begun.

More than 800,000 workers in the United States are now employed producing iron and steel, including those in foundries, almost 5 per cent of the total employment in all types of manufacturing. Nearly 30 per cent of employment and an approximately equal proportion of the steel industry's production is in the five states of the Seventh Federal Reserve District, mainly in the Chicago-Gary and Detroit areas.

About 55 per cent of total manufactured products are classified as durable goods and many of these are made largely of steel. Among the heaviest users of steel in manufacturing are the motor vehicle, railroad equipment and industrial, farm and construction machinery industries—all of them important in this region. Probably over 35 per cent of the nation's steel is fabricated into finished products in the District states—Illinois, Indiana, Iowa, Michigan and Wisconsin.

Blast furnace, coke ovens and by-product facilities—marks of an integrated steel plant

Steel output reached a record 127 million tons in 1964. Growth in this industry has both reflected and contributed to the prosperity of the Midwest. It is reassuring, therefore, that on the hundredth anniversary of commercial production of steel, the Midwest is in a favored position to participate fully in the prospective expansion of the industry in the years ahead.

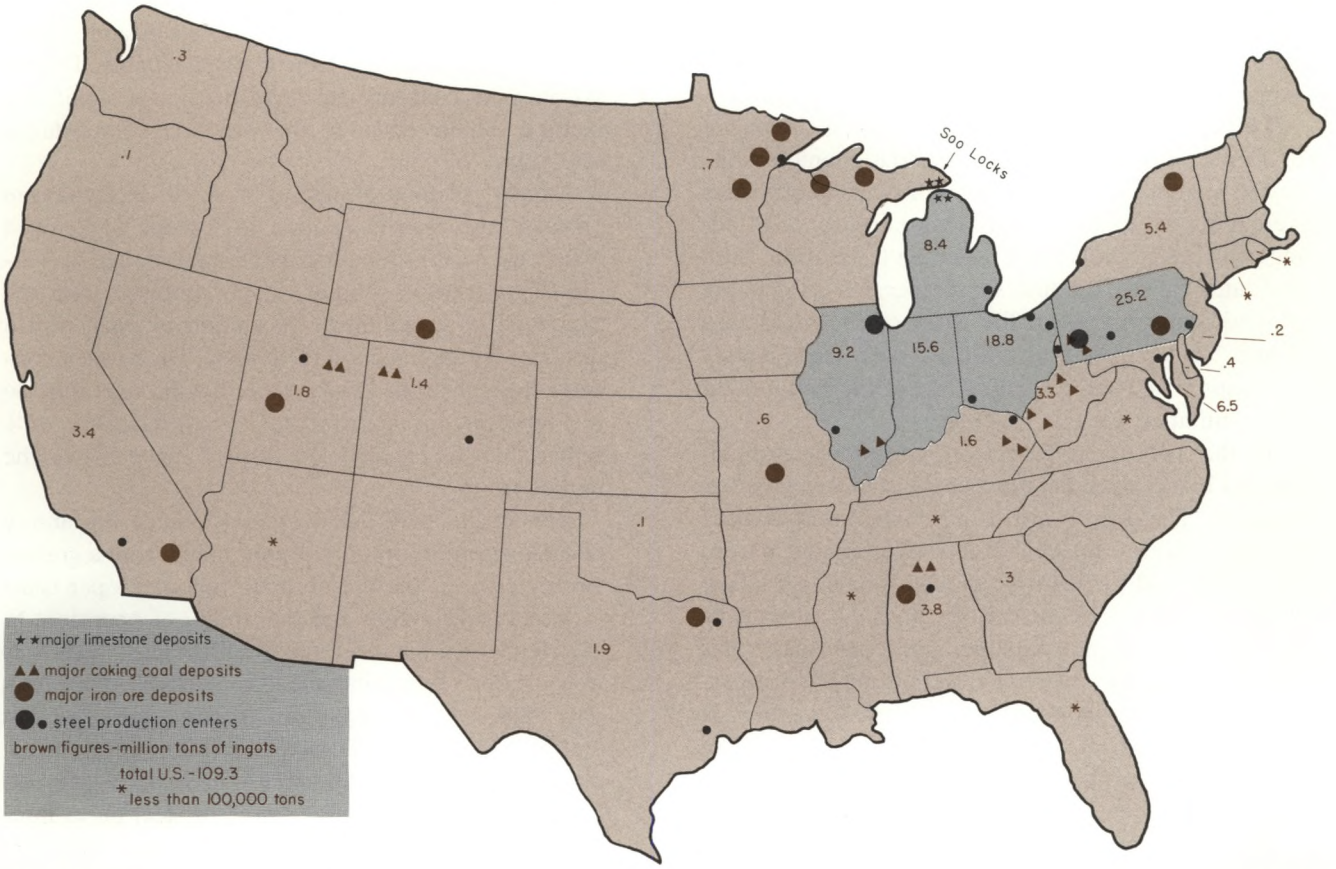
Capital expenditures by steel firms, currently, are at a record level, and the industry is in the beginning stages of a technological revolution that will involve substantial changes in manufacturing methods. The share of the nation's steel produced in the Chicago and Detroit areas has been rising in recent years and is expected to continue upward. The development of this most basic of all industries, in relation to overall economic growth and with emphasis upon the Seventh Federal Reserve District, is traced in the following pages.

Steel: the basic material

Anthropology divides prehistory into a Stone Age, a Bronze Age and an Iron Age, each marking an advance in man's control over his environment. The original advantage of tools and weapons made of iron or steel over bronze (usually an alloy of copper and tin) was strength, hardness and durability rather than cheapness. Unlike copper and various other metals, iron although very abundant is not found in the earth's crust in a metallic form. Moreover, smelting of iron ores requires higher temperatures and more exacting techniques than those used in extracting other common metals that are found combined with other elements.

Steel is iron after removal of the impurities, such

Locations of steel making facilities and principal sources of raw materials



as phosphorus, sulphur and silicon and with a controlled carbon content—usually 1 per cent or less. Unrefined iron is very brittle and has a low tensile strength. It cannot be rolled or shaped or drawn into wire and usually is cast in molds to form objects that must be hard and strong but need not absorb shocks or other dynamic stresses.

The principle of the blast furnace in which iron is separated from its ores with the aid of a charcoal or coal fire and a "blast" of air has been known since ancient times. Until the middle of the last century, however, only small amounts of steel were made, either by happy accident or through painstaking hand methods in crucibles.

Output of steel was exceeded substantially by that of wrought iron. The latter was produced manually by stirring or "puddling" a molten bath of iron until the carbon content was reduced to negligible amounts and the slag was evenly distributed through the mix. Wrought iron has excellent properties—toughness, workability and rust resistance—and continues to be used for some purposes. But wrought iron could be produced only in limited quantities and, therefore, like steel, was expensive. Until a cheap method of producing steel was achieved, the use of both steel and wrought iron was confined to weapons, tools, cooking utensils and machinery. Mass production in factories was limited largely to textiles, the main fruit of the first 100 years of the "industrial revolution."

From Bessemer to oxygen converter

One of the great breakthroughs in the history of industrial progress was the development of the **Bessemer** process for converting iron to steel, patented in England by Henry Bessemer in 1856 and by William Kelly in the United States and further developed in subsequent years. The Bessemer converter, still used in limited numbers, is a pear-shaped vessel lined with firebrick that can be rotated for charging and emptying. Molten iron is poured into the converter and subjected to a blast of compressed air from below for about 20 minutes. Oxygen in the air burns out the impurities in the iron without the use of fuel.

The Bessemer process was fast and cheap. More than half of all United States steel was produced in these converters until 1908.

The largest share of Bessemer steel produced in the Seventies and Eighties was rolled into rails for the rapidly expanding railroads. Substantial quantities were also used for railroad locomotives and cars, ships, bridges and other types of construction.

The Eads bridge which crosses the Mississippi at St. Louis was completed in 1876 and is counted as the first to use appreciable quantities of steel. Steel girders were first used in the 12-story Home Insurance Building constructed on La Salle Street in Chicago in 1885 and later called "the first skyscraper." Steel framing played a major role in the work of the "Chicago School" of architecture in which walls were merely "curtains," and large window areas for better light and ventilation became feasible.

In the 1860s the Bessemer process was supplemented by the **open hearth** process, also developed in England. The open hearth is a reverberatory furnace in which flames are deflected—"reverberated"—from the ceiling and played over molten iron in a shallow bath, the whole area enclosed by firebrick with openings for charging and tapping. The open hearth has several advantages over the Bessemer process: it permits the use of iron containing phosphorus which is common in the United States; up to 60 per cent of the charge can be scrap, and control is more exact so that alloy steels can be produced.

Production of steel in the United States exceeded 1 million tons for the first time in 1880. By 1889 output reached 3.4 million tons and this nation surpassed the United Kingdom as the principal producer. The United States has retained the lead ever since.

The **electric steel** furnace was developed in Germany in the 1890s. Electric furnaces, usually charged 100 per cent with scrap, are used to produce relatively small quantities of high grade alloy steels and carbon steel where molten pig iron is not available. During World War I electric furnaces became a significant factor and have tended to grow in relative importance ever since.

A fourth method of making steel, the **basic oxygen** process, also was developed in Europe. The most widely used Linz-Donawitz method is credited to Austria. This process should not be confused with the technique of speeding up the output of open hearth furnaces by the injection of oxygen. The oxygen converter resembles the Bessemer in that the steel is made in a large receptacle that can be rotated. Oxygen—rather than air—is injected from a lance above the molten iron.

Advantages over the Bessemer include the ability of the oxygen process to use iron made from a greater variety of ores, the use of scrap (about 25 per cent) as part of the charge and the ability of operators to closely control the steel making process. Advantages over the open hearth include lower initial investment—only half as great per ton of capacity—and lower operating costs. No fuel is used, and firebrick can be replaced much more easily than in an open hearth. An oxygen furnace turns out a batch of steel in 45 minutes to an hour in comparison with eight hours for an open hearth even when oxygen injection is used. One oxygen converter can replace five or more open hearths, while requiring much less space, less auxiliary equipment and fewer operators.

The first heats of steel were made in the United

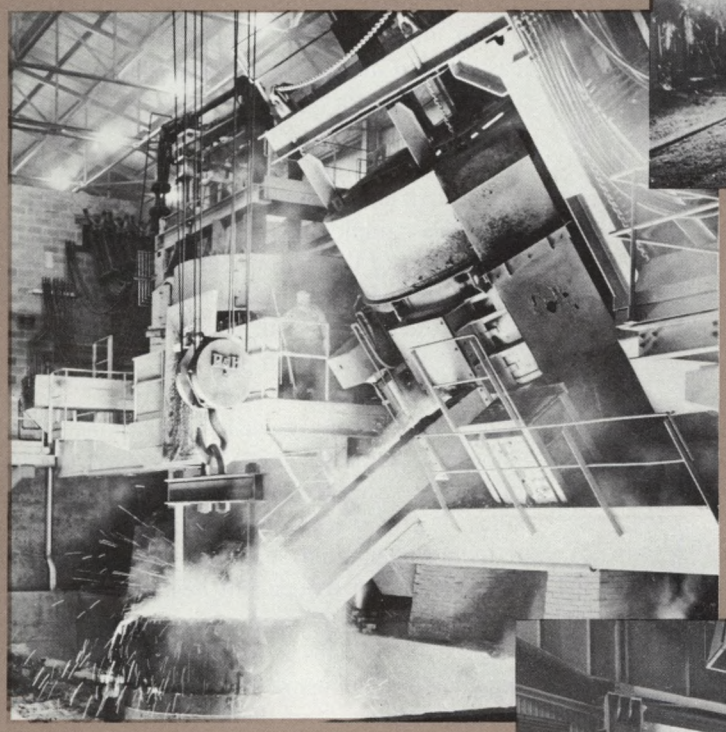
Steel production in the United States by type of furnace

	Total		Bessemer		Open hearth		Electric		Basic oxygen	
	Amount	Per cent	Amount	Per cent	Amount	Per cent	Amount	Per cent	Amount	Per cent
	(amounts in millions of tons)									
1900	10.2	100	6.7	66	3.4	34	—	—	—	—
1910	29.2	100	10.5	36	18.5	64	0.1	*	—	—
1920	47.2	100	9.9	21	36.6	78	0.6	1	—	—
1930	45.6	100	5.6	12	39.3	86	0.7	2	—	—
1940	67.0	100	3.7	5	61.6	92	1.7	3	—	—
1950	96.8	100	4.5	5	86.3	89	6.0	6	—	—
1955	117.0	100	3.3	3	105.4	90	8.0	7	0.3	*
1960	109.3	100	1.2	1	86.4	87	8.4	9	3.3	3
1964	127.0	100	0.9	*	98.4	78	12.4	10	15.3	12

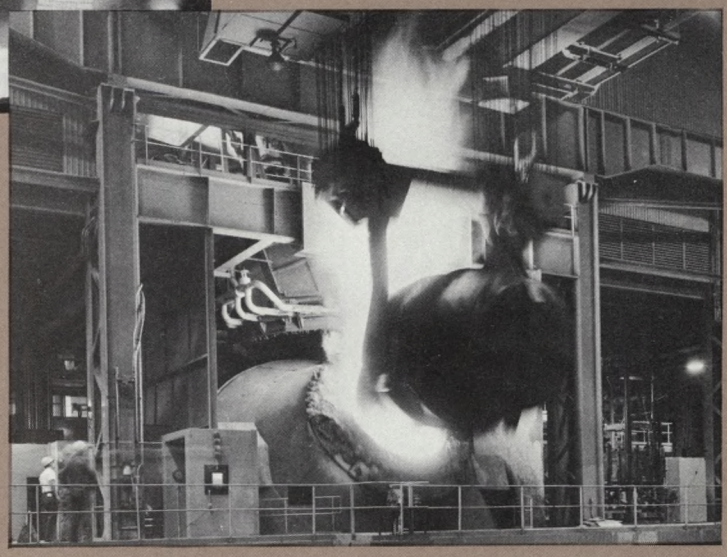
*Less than 1 per cent.

SOURCE: American Iron and Steel Institute.

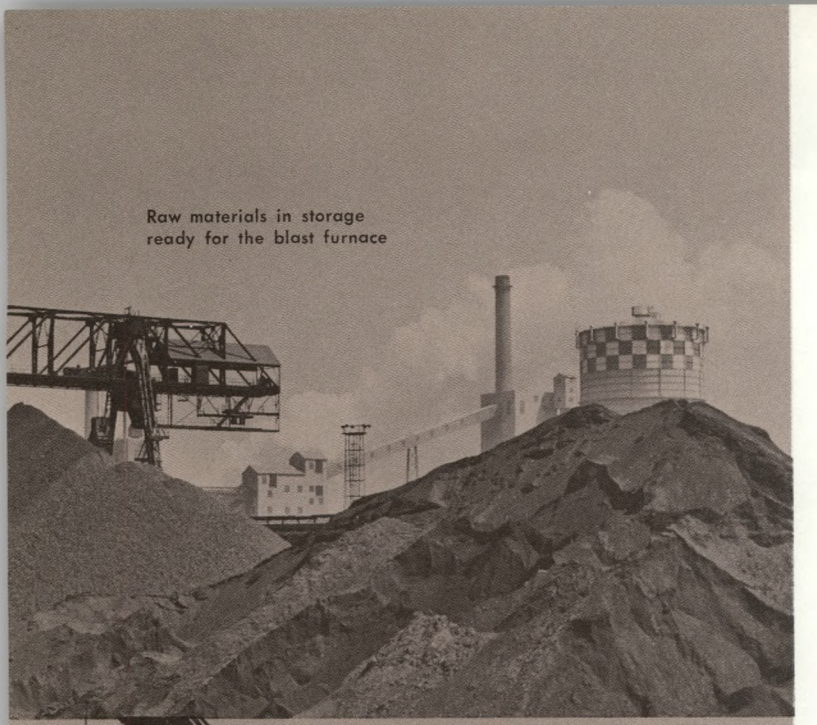
Charging an open hearth furnace
with molten pig iron



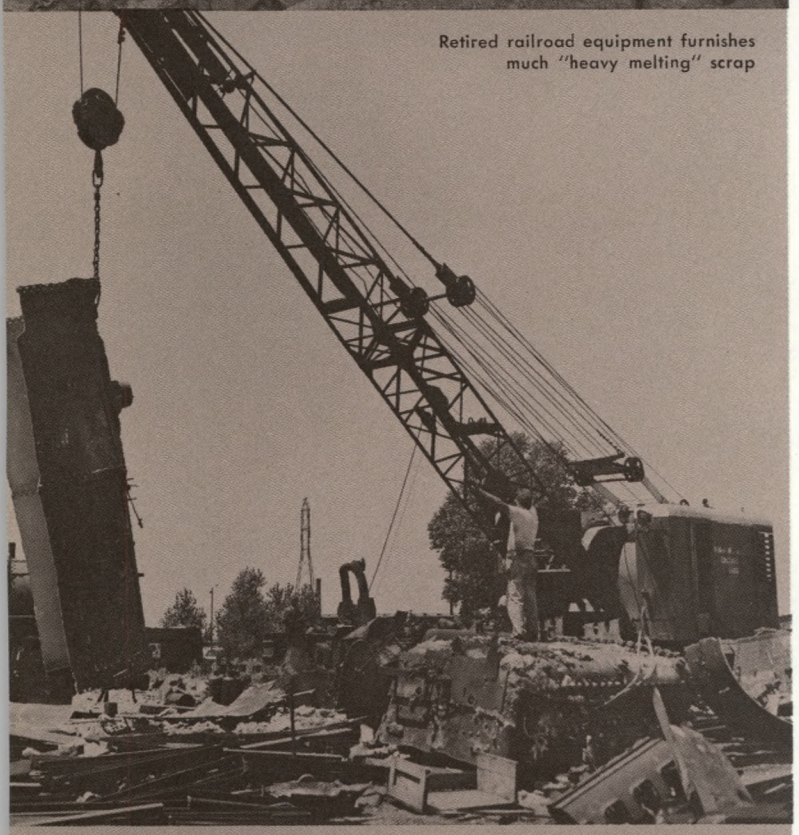
Tapping molten steel
from an electric arc furnace



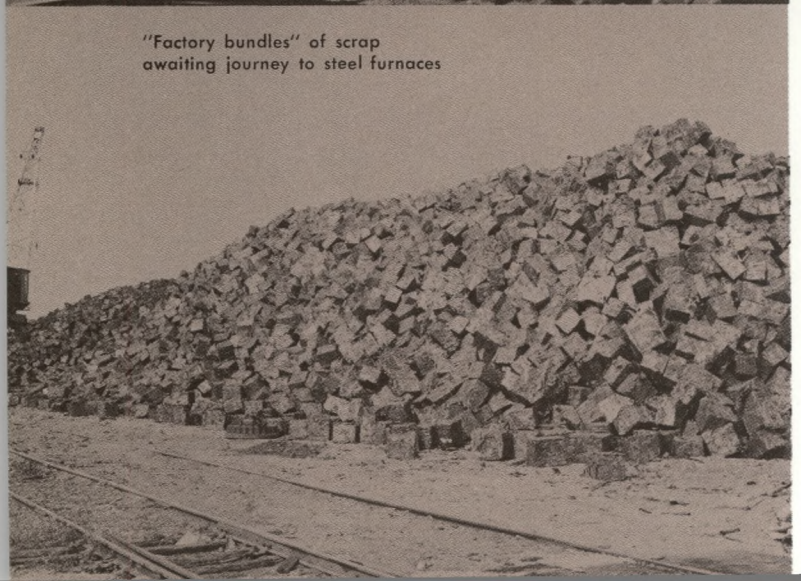
Pig iron being poured
into 300 ton oxygen converter



Raw materials in storage ready for the blast furnace



Retired railroad equipment furnishes much "heavy melting" scrap



"Factory bundles" of scrap awaiting journey to steel furnaces

States by the basic oxygen process in 1955. By 1964, the new process accounted for 12 per cent of total output and exceeded the 10 per cent share of the electric furnaces. The Bessemer and open hearth processes accounted for 1 and 78 per cent, respectively.

All the new furnaces ordered by domestic steel firms since the capital spending boom of the mid-Fifties have been either electric or basic oxygen types. Doubtless the time will come when these furnaces will account for the bulk of production. This development compares with the displacement of the Bessemer by the open hearth, but the transition is being accomplished in a much shorter time.

Abundance of raw materials

Production of 1 ton of pig iron requires roughly 1.5 tons of ore, two-thirds ton of coke and one-quarter ton of limestone. These materials are all plentiful in eastern and midwestern United States.

Limestone serves as a "flux" in the iron making process, reducing melting points and combining with waste materials to form slag. The quarrying, crushing and sizing of limestone for blast furnace use are relatively simple processes. Limestone is found in many parts of the nation, but the largest quarries supplying blast furnaces are located in northern Michigan in the vicinity of the straits of Mackinac.

Coke is made from metallurgical grades of soft coal, principally from deposits of the Appalachian region. Good coke must have resistance to crushing in order to support heavy charges of ore and limestone in the blast furnace and be low in sulphur, ash, and silica. It provides carbon monoxide that serves as the reducing agent that separates metallic iron from its ore, usually an oxide, and heat to melt the reduced iron and slag. A portion of the coking coal produced in the United States is sent abroad to nations not having adequate deposits.

Most important of the raw materials, of course, is iron ore. The rapid rise of steel production in the United States during the second half of the nineteenth century was aided by the development of the rich Lake Superior ores of northern Minnesota, Michigan, Wisconsin and Ontario, which could be transported to ports on the Great Lakes through the Soo Locks connecting Lake Superior and Lake Huron. Principal of these ore sources was the Mesabi range in Minnesota where ore could be scooped directly from the earth by huge shovels in open pit mines.

During the postwar period the dependence of domestic steel production on foreign ores has increased sharply. Imports of iron ore in the early postwar years were about 4 per cent of domestic consumption

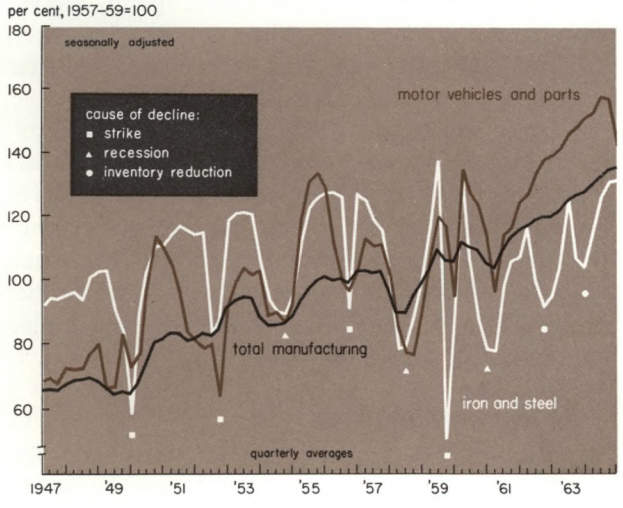
and were about balanced by exports. Gradual exhaustion of some of the richest ore bodies of Minnesota and the discovery and development of sources in Labrador and Venezuela have changed this picture. Last year one-third of the iron ore used in American plants came from foreign deposits.

Dependence on foreign ores is unlikely to increase substantially in the United States in the near future. Hundreds of millions of dollars are being invested in new "beneficiating" plants that convert low grade taconite and jasper ores of Minnesota and Michigan to small pellets containing 60-65 per cent iron. Natural ores average about 52 per cent iron before concentration (pure iron ore is about 72 per cent iron and 28 per cent oxygen). The use of pellets from existing plants in blast furnaces has proved to be highly efficient. The reduction process is speeded and lesser quantities of coke and limestone are required.

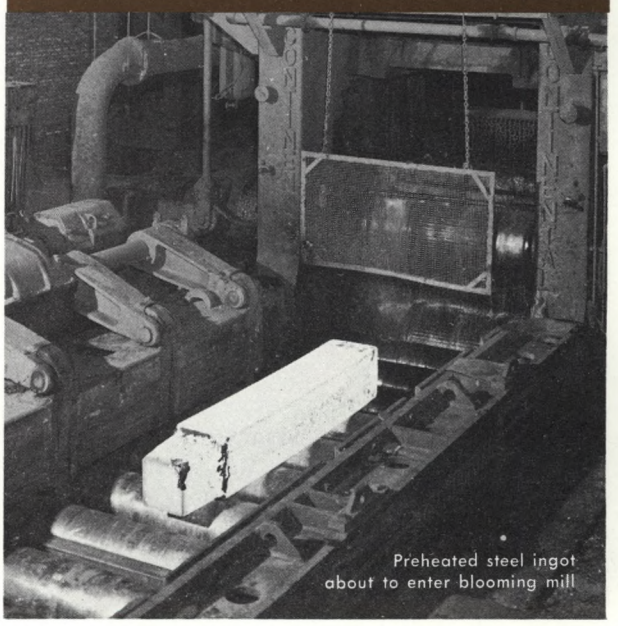
Vast quantities of scrap are used in steel making—in 1964 more than 60 million tons. Scrap comes from three sources—"home" scrap generated in the process of making steel, principally croppings of slabs and blooms and rejected or damaged material; returns of clippings and waste from fabricators, and old scrap assembled and processed by brokers (mainly junked automobiles and retired railroad equipment and machinery). Assembly and processing of scrap is said to be a 2 billion dollar industry. Some of the iron in a given finished steel product may have been incarnated several times in earlier forms.

Scrap prices fluctuate sharply in response to changes in demand. Late in 1964 heavy melting scrap sold for $40 a ton compared with $25 a year earlier.

Dips in steel output have reflected strikes, recessions and inventory liquidations




Steel being poured into ingot mold to solidify


Preheated steel ingot about to enter blooming mill

The scrap collection industry has been undergoing considerable change in recent years. Large firms with heavy investments in handling equipment and giant shears and presses are increasingly dominating the field. Further changes apparently are in store because oxygen furnaces require less (and more carefully processed) scrap than do open hearths.

Making finished steel

Steel firms are classified as fully integrated, semi-integrated and non-integrated. A fully integrated

Large integrated mill with access to water, rail and truck transportation

firm owns or controls sources of raw materials; transportation facilities, usually including large lake ore boats; blast furnaces; steel furnaces; facilities to produce coke, oxygen and electric power, roughing and finishing mills, research laboratories; a marketing and distributing network and numerous other supporting facilities. Most large steel plants in the Midwest are served by harbors on the Great Lakes that can accommodate the boats and barges that bring together the necessary iron ore, coal and limestone.

The most prominent feature of an integrated steel plant is the blast furnace—100 or more feet high and up to 30 feet in diameter. Close to the furnaces are the stoves that provide heat for the blast of air and the coke ovens.

Steel firms have their own ovens in which soft coal is heated to drive off gases and impurities leaving coke, which is virtually pure carbon. Various hydrocarbons and other chemicals are produced as by-products in the coke-making process.

Ore, coke and limestone are dumped into the blast furnace from the top from "skips" or buckets. Blast furnaces, like most other steel making facilities, are operated 24 hours a day seven days a week in a continuous process, unless closed down for repairs or lack of orders, or banked because of temporary work stoppages.

Blast furnaces are tapped every three or four hours. In the past, iron was run out into sand molds to cool in "pigs," hence the name "pig iron." Today virtually all pig iron is transferred in insulated ladle cars to steel furnaces in molten form. This journey usually is no more than a few hundred yards but some molten pig iron is transported 10 miles or more to the point of use. Part of the pig iron is sold in solid form to foundries for the manufacture of cast iron products or to steel firms that do not have blast furnaces.

For many years the principal improvement in blast furnaces was in size and the provision of more efficient auxiliary units. Output of blast furnaces in recent years has been increased by the use of top pressure, injection of oxygen and improvements in the quality and sizing of raw materials. This has resulted in a year-to-year rise in output per furnace.

Between 1953 and 1963 the average output per blast furnace per day increased from 920 tons to 1,430 tons. Iron ore requirements per ton of pig iron during the same period were reduced 10 per cent because of improved concentration processes. Coke and limestone needs were lowered 26 and 32 per cent, respectively. The largest blast furnaces produce over 2,500 tons of pig iron per day.

Molten pig iron is charged into the open hearth or oxygen converter along with scrap, limestone or lime to remove impurities, iron ore to promote a boiling action (in the open hearth) and, where required, alloying metals such as vanadium, tungsten, molybdenum and manganese. When the mix has been "cooked" sufficiently, the furnace is tapped and steel is poured into ingot molds to solidify.

Formed ingots are transferred to "soaking pits" where they are reheated to a uniform temperature and then passed back and forth through the heavy rolls of a roughing mill to produce blooms (square) or slabs (rectangular). Blooms are rolled again into bars, structural shapes and other products. Slabs are further processed to become plates, sheets or strip—called "flat rolled products."

Diversity of products

There are thousands of different steels and "finished" steel products. These finished products are the

raw materials of metal fabricating firms, construction contractors and the mining and petroleum industries. Shipments of steel products are about 70 per cent as great as ingot production, the remainder going back into the steel furnaces as home scrap.

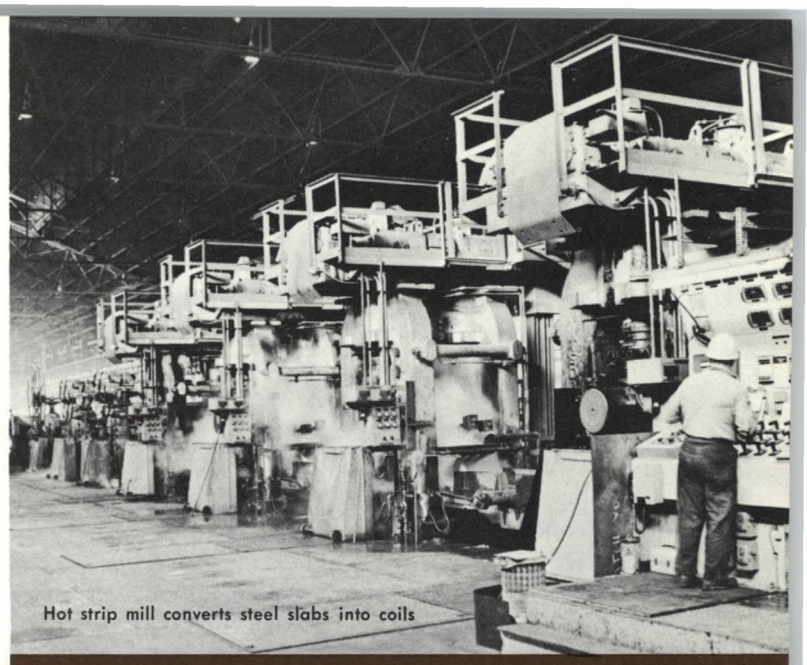
About 90 per cent of the steel produced in the United States is carbon steel. The rest is composed of alloy steels of various types. Stainless steels, containing a high proportion of chromium and nickel, account for only 1 per cent of the total. These stainless steels are very expensive—40 to 50 cents a pound compared with 6 to 8 cents for carbon steel—and usually are classified separately from other alloy steels.

Sheets and strip, intermediate in thickness between plates and tin mill products, are the most important single category of carbon steel products. Strip is differentiated from sheets by width, tolerances required and other characteristics. Sheet steel and strip are often used for similar purposes and are commonly called "sheet." Sheets accounted for about 40 per cent of steel mill shipments in the first 10 months of 1964. This proportion has been growing steadily for many years.

More than half of the hot rolled sheets are subjected to a further process called "cold rolling" that imparts a hard bright finish, finer tolerances and better forming characteristics. Cold rolled sheets are used in such applications as auto bodies and shells of appliances and metal furniture.

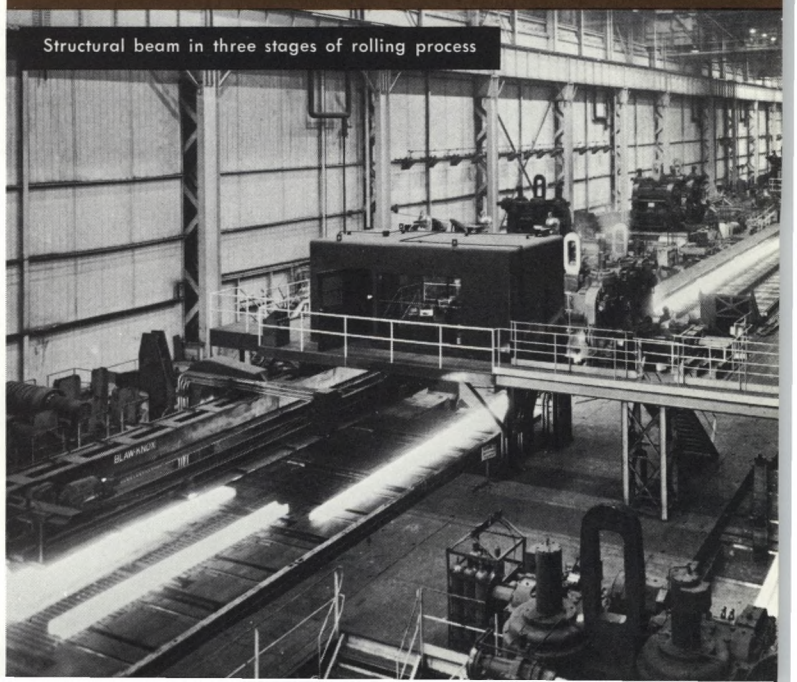
The supply of cold rolled sheets has been inadequate in the postwar years in periods of strong demand. New cold rolling capacity, particularly in the Midwest, continues to be added at a rapid pace. Supplies of galvanized sheets also are occasionally inadequate to satisfy demands. Part of the problem is that quality requirements for these products have been raised continuously to improve performance on fabricators' high speed equipment, so certain orders cannot be supplied from older mills.

For many years the American Iron and Steel Institute (A.I.S.I.) estimated industry capacity in terms of ingot tons and weekly and monthly production operating rates were published as a per cent of capacity. The last official estimate of capacity at the start of 1960 was 149 million tons. Unofficial estimates place ingot capacity currently at 165 million tons or higher, but about 20 per cent of this is in open hearth furnaces that were not in use in the fourth quarter of 1964 despite rising order backlogs. The reason was that finishing capacity to produce the types of steel in strong demand was being fully utilized and there was no use for the additional ingots that might have been produced in older, less efficient steel furnaces.



Hot strip mill converts steel slabs into coils

Water cooling of rolls required in hot rolling processes



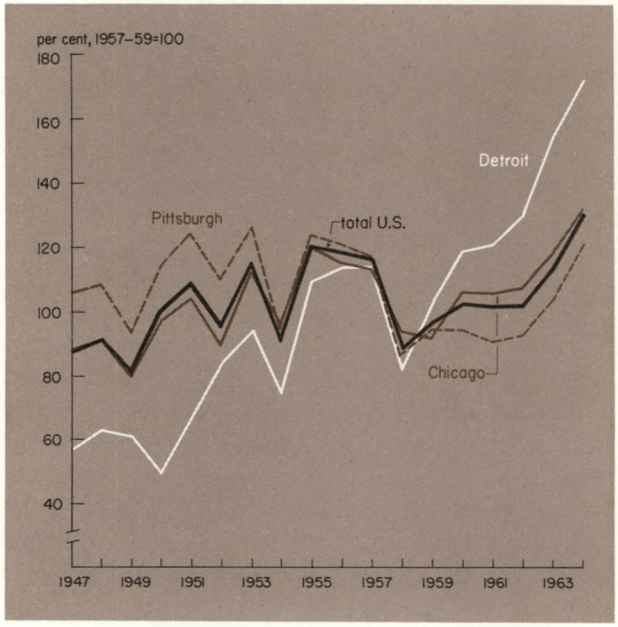
Structural beam in three stages of rolling process

Some open hearths scheduled for eventual demolition were started up again late in 1964 as production of steel rose to an annual rate of 138 million tons. Presumably, these will be taken out of production as soon as demand subsides.

Like the older steel furnaces, many blast furnaces stood idle during 1964. At the start of the year only 142 of 236 blast furnaces—60 per cent—were in use despite the fact that the steel industry was then operating at an annual rate of about 105 million tons. In Pennsylvania and Ohio, 56 per cent of the blast furnaces were in use. For Illinois the proportion was less than 50 per cent while 21 of the 23 blast furnaces were in use in Indiana and all of the 9 in Michigan.

During periods of peak output in the years 1941 through 1957 all blast furnaces and steel furnaces not down for repairs were in use. Under these circumstances the steel industry's operating rate as a per cent of capacity was a useful indicator of demand pressures, because facilities to produce finished steel products could have absorbed additional ingots. This was not the case in late 1964. Bottlenecks existed in some kinds of finishing capacity that could turn out the types and quality of steel required. Estimates of overall capacity are not meaningful under these conditions.

Growth of steel output in Detroit and Chicago areas has been faster than in the nation



SOURCE: American Iron and Steel Institute.

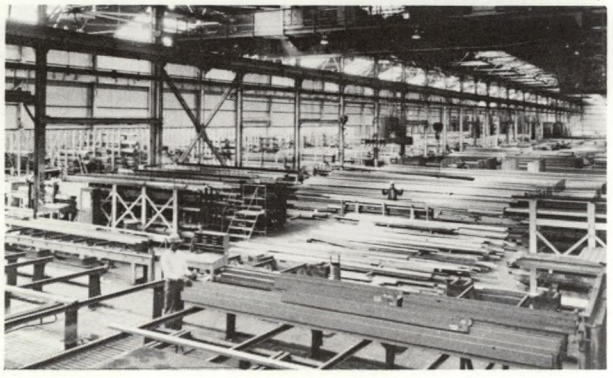
Who uses steel?

The automobile industry is often said to be the largest user of steel, taking about 20 per cent of the total shipped by the mills, with construction in second place. Actually, both industries use additional amounts of steel obtained through steel warehouses (now officially called steel service centers). The construction industry, including "contractors' products" such as heating and plumbing apparatus, is the largest user of steel, accounting for about 27 per cent of total production. Motor vehicles use about 24 per cent and all the machinery and equipment industries combined require a roughly similar amount.

About 10 per cent of all steel is fabricated into containers and 6 per cent is used by the various extractive industries, principally for oil well drilling and pipelines. Smaller but important tonnages are taken by railroads, shipbuilders, producers of fasteners (screws, nuts and bolts), forgers and others. Military ordnance in recent years has used only a fraction of 1 per cent of all steel.

Steel users whose needs for particular types are of sufficient size order directly from the mills. Shipments usually are made by rail or truck but to a limited extent by water. Smaller orders are placed with warehouses, which carry an inventory of many types, shapes and sizes of steel (and usually nonferrous metals as well). Warehouses handle about 18 per cent of all steel consumed and account for much larger proportions of stainless steel and tubing. They are equipped to cut, shape and ship on short notice (almost always by truck). Most types of steel purchased through warehouses bear a higher price than steel obtained directly from the mills because of the smaller quantities involved and special processing. Small manufacturers typically buy all their steel from ware-

Service centers carry thousands of types of steel for immediate delivery



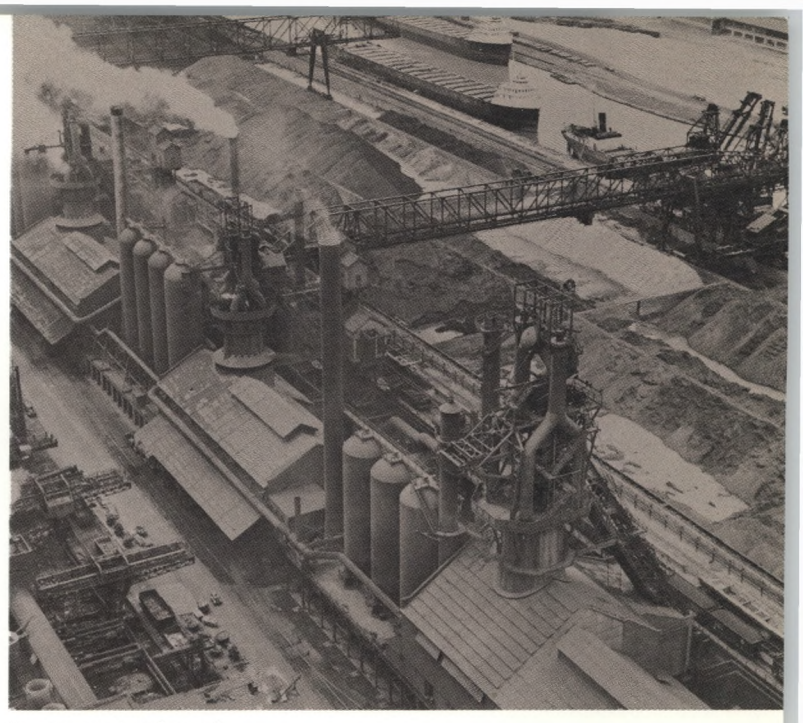
houses, but even the largest users obtain a portion of their needs from this source.

The geography of steel

Location of steel facilities is determined principally by striking a balance between access to raw materials and access to markets. Consideration is given also to labor supply, sources of fresh water for cooling and other factors. Once a plant is developed, there is a tendency to expand on the site because the various facilities must be coordinated and the creation of an all new integrated plant in another place requires an investment of hundreds of millions of dollars.

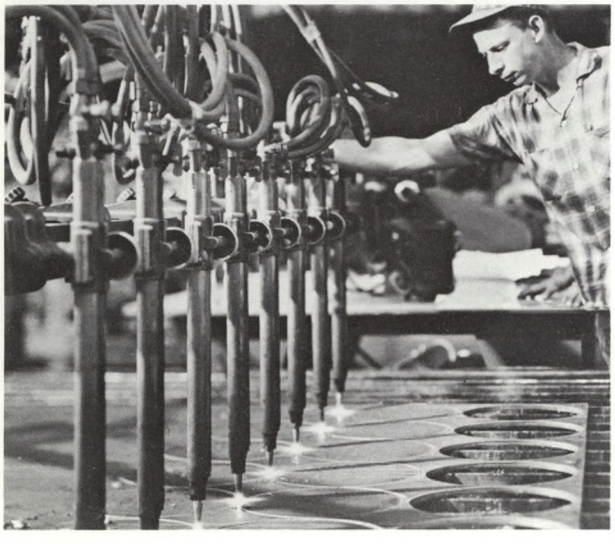
Since the latter part of the nineteenth century, Pittsburgh has been synonomous with steel. Defined broadly to include such centers as Youngstown, Ohio, Johnstown, Pennsylvania, and Weirton and Wheeling, West Virginia, the Pittsburgh area is still the nation's major steel producing center. The main advantage of this area is its close proximity to coking coal.

On a metropolitan area basis the Chicago-Gary complex since 1953 has been the nation's largest steel producer. Plants in the area are closely concentrated in a strip along Lake Michigan from southern Cook County, Illinois, through Lake and Porter Counties, Indiana. The Chicago area's advantage consists of its access to water transportation for raw materials and finished products on Lake Michigan (much of the construction of harbors and plants has been on land reclaimed from the lake) and the inland waterways to the Mississippi and gulf ports, and its proximity to four of the largest steel consuming centers—Chicago itself, Detroit, Milwaukee and Indianapolis. Other important steel producing centers include Detroit, Baltimore, Buffalo, Cleveland, Philadelphia, Los Angeles and Birmingham (see map on page 9).



Most raw materials reach Midwest steel plants by boat

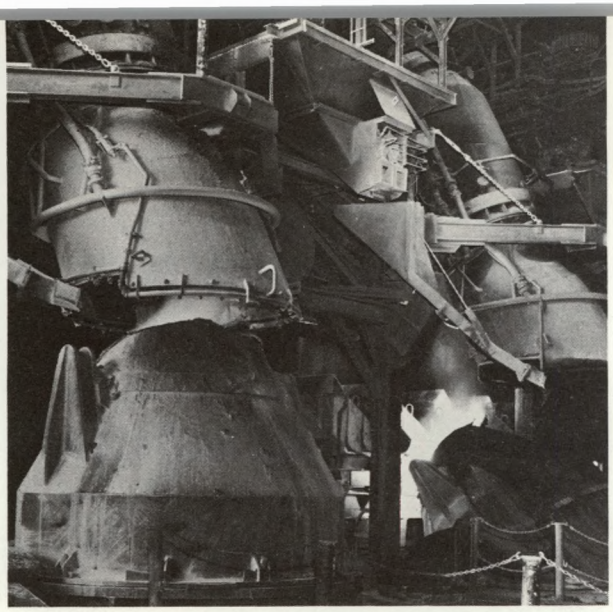
Steel being processed to customer order at service center



Among the principal producers in the Chicago area are United States Steel Corporation (with works at Gary and southeast Chicago), Inland Steel Company, Youngstown Sheet and Tube Company, International Harvester Company (Wisconsin Steel Division), Republic Steel Corporation and Acme Steel Company. Midwest Steel Corporation (a division of National Steel Corporation) and Bethlehem Steel Corporation roll sheet and plates from coils and slabs shipped from the East. In addition, there are numerous companies that produce special finished steel products or relatively small tonnages of steel in electric furnaces. The Chicago area is particularly important in the production of cold finished bars drawn to close tolerances. In Detroit the principal steel producers are McLouth Steel Corporation (developed largely in the postwar period), Great Lakes Steel Corporation (a division of National Steel Corporation) and the Ford Motor Company.

The second and third largest steel plants in the United States are located in Lake County, Indiana—the Gary Works of U.S. Steel and the Indiana Harbor Works of Inland Steel. (Inland, the only firm headquartered in Chicago, produces only at this location.) The largest facility at one site is Bethlehem's Sparrows Point Works near Baltimore. Bethlehem's Burns Harbor Plant, situated on a 3,300 acre site in the Indiana sand dunes east of Gary, could develop into a comparable size operation.

At the turn of the century, the Indiana shore of



Oxygen converters were installed in Detroit in 1955

Lake Michigan and the Lake Calumet area of Illinois were sparsely inhabited. Previous industrial growth in the Chicago region had been largely to the north. But the likelihood of future expansion in the region at the foot of Lake Michigan had long been recognized. The land was flat and easily graded, ample supplies of fresh water were at hand, water and rail transportation were available and the industries of the Midwest, within a radius of 300-400 miles, were growing far more rapidly than those of the nation. Now the area contains a vast complex of metal fabricating plants, oil refineries and chemical plants as well as steel mills.

The motor vehicle plants in or near Detroit long have been heavy users of steel. Ford Motor Company built its first facilities in the Twenties. Steel firms, however, were slow to locate plants in the area and Michigan did not become a major steel state until the Thirties. Postwar progress has been rapid, but Michigan continues to "import" large quantities of steel from other states.

Pennsylvania, Ohio, Indiana, Illinois and Michigan, in that order, are the largest steel producing states. For the past 50 years, these five states together have produced more than 70 per cent of the nation's steel. However, a fairly steady westward movement of the industry has occurred. Although important facilities have been added in Pennsylvania and Ohio, the portion of total production contributed by these two states dropped from 52 per cent in 1944, the peak year of World War II, to 40 per cent in 1963. During the same period, Illinois remained at about 8.5 per cent of total output while Indiana increased from 12.6 to 14.2 per cent and Michigan rose from 3.3 to 7.7 per cent. These trends were reversed slightly in 1964 as some older plants in the East were activated in response to the heavy demand.

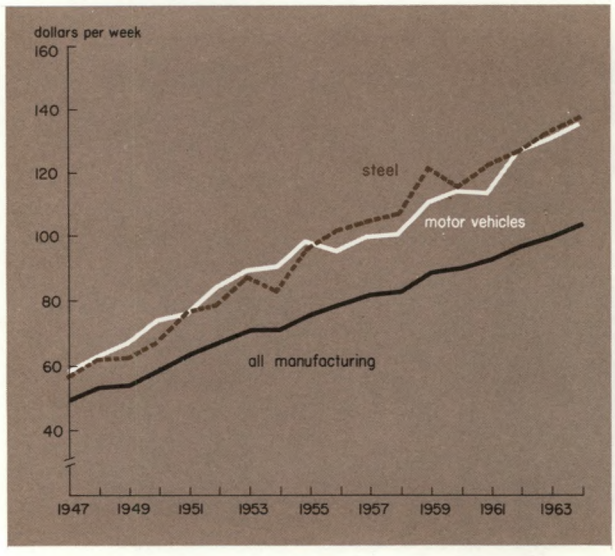
Michigan is followed in rank as a steel producing state by Maryland, New York, Alabama, California and West Virginia. These states account for about 20 per cent of United States steel production. Other states with significant tonnages are Texas, Utah, Kentucky, Colorado and Minnesota, but none of these account for as much as 2 per cent of the national total. Fourteen other states produce small amounts of steel, mainly in electric furnaces.

Production in California, Texas and Utah was increased substantially in World War II, when the plants —financed mainly by the Federal Government and privately operated—were built. In the past few decades, steel producing facilities in various states have been retired; among these was Wisconsin. Facilities, including blast furnaces, were in operation in Milwaukee until 1929.

Through the years, the location of the industry has tended to follow shifts in markets and to move toward water transportation. The move toward markets has been encouraged by needs for scrap generated in large quantities in manufacturing centers. More recently the reduction in requirements for coke has reduced the advantages of sites near coal.

The move toward water transportation was evident early in the century when the Lackawanna Steel Company, established in Scranton, was relocated near Buffalo on Lake Erie, and U. S. Steel decided to build at

Weekly earnings of steel and auto workers well above all-industry average



Note: Annual averages, nine-month average for 1964.

Major postwar steel strikes

	Start	End	Duration (days)
1946	January	February	28
1949	October	November	42
1952	June	July	59
1956	July	August	36
1959	July	November	116

Gary. In the postwar period the only completely new integrated mill has been U. S. Steel's Fairless Works, located at tidewater near Philadelphia, in part to receive foreign ores direct from vessels.

Recent and prospective technological developments may encourage the construction of new integrated mills. The combination of oxygen steel furnaces and continuous casting, for example, will reduce capital requirements sharply. This may tend to aid the forces that cause steel furnaces to be located with an eye more to markets than raw materials and existing supporting facilities. Oxygen furnaces will be used only in large plants as compared with electric furnaces. A single oxygen furnace can produce 1 million tons of steel per year, and they are usually installed in pairs. Ample facilities must be at hand to supply molten pig iron and to process the molten steel.

Employment and wages

Prior to the Thirties organized labor had not been an important force in the steel industry. Craft unions had existed since the middle of the nineteenth century, but these represented only a very small proportion of all steel workers. Attempts were made to organize a larger segment of the work force from time to time, but these were not successful even though supported by fiercely contested strikes.

Today, most workers in the steel industry and many in related activities are members of the United Steel Workers Union (USW). The present status of organized labor dates back to March 1937 when the Steel Workers Organizing Committee of the CIO was recognized as the workers' bargaining agent by the U. S. Steel Corporation. (General Motors had recognized the United Automobile Workers only two weeks earlier.) Several other major producers accepted the USW as bargaining agent in 1942.

When a nationwide strike is called by the USW, about 85 per cent of the steel making capacity of the nation is shut down. Work stoppages lasting a month or more have occurred five times since World War II –in 1946, 1949, 1952, 1956 and 1959. The last of these was by far the longest–116 days. This strike resulted in secondary layoffs by steel fabricators who had used their stock of metal as well as by transportation firms. The influence of these disputes is registered prominently on charts of general economic activity.

In the first quarters of 1962 and 1963, and again in late 1964, users of steel began to stockpile inventories while labor-management negotiations were in progress. Although negotiations were concluded in 1962 and 1963 without stopping production, steel output slumped sharply following conclusion of negotiations as users worked off excess inventories. A similar decline in output is expected some time in 1965 whether or not a strike occurs.

Wage rates in the industry have been relatively high for many years. In 1936 average hourly wages at 67 cents per hour were 22 per cent above the average for all manufacturing. Many jobs in the plants require skill, strength and alertness. One steel firm has stated that only 10 per cent of the jobs in its plants are classified as "unskilled."

In the first nine months of 1964, hourly earnings in steel averaged $3.35, 33 per cent higher than the average for all manufacturing. Additional "fringe benefits" raise wage earner employment costs, according to industry sources, to over $4.25 per hour. In recent years average hourly pay for steel workers has exceeded the average for auto workers, but because of longer hours in the auto industry, weekly earnings have been about the same.

Emphasis upon safety by both management and

Output of steel per worker has increased sharply since 1960

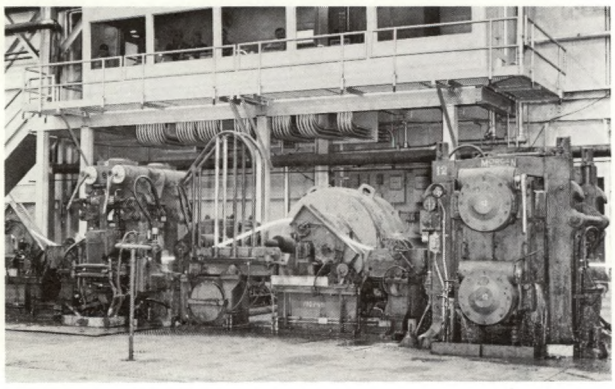
unions during the past 50 years has drastically reduced accident rates. Once an industry with a high rate of serious injuries, in recent years steel has had an accident rate only half as great as the average for all industry.

Because of increased output in 1964, steel firms in the Chicago-Gary area were unable to hire sufficient workers locally. As a result, recruiting teams were sent to Pittsburgh, northern Minnesota, Michigan and Wisconsin in an attempt to persuade workers to move. In the 1960-63 period, however, most steel centers reported substantial unemployment.

Steel is a highly cyclical industry and also an industry of rapid technological change. Union leaders, therefore, have placed heavy emphasis upon job security and seniority when layoffs occur or when jobs are eliminated by mechanization. In 1963, the number of production workers in steel was 23 per cent less than 10 years earlier. Output was only 6 per cent less. During the same period, the number of workers in administrative, supervisory, research, engineering and other jobs not directly associated with production rose slightly.

Electronic devices form part of computer controlled rolling mill

Looping bar mill controlled from overhead booth



New steel plant under construction in Porter County, Indiana

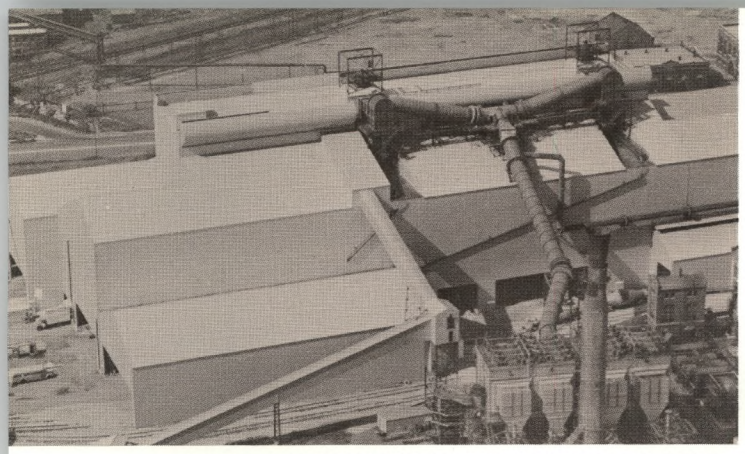
Estimates of the U.S. Department of Labor indicate that increases in output per man-hour, counting both production and nonproduction workers, have been sufficiently great that, since 1958, employment costs per unit of output in the steel industry have remained relatively constant despite substantial increases in worker compensation. From 1947 to 1958, employment costs per unit of output had risen more than 80 per cent. This type of estimate should be used with caution, of course, because of variations between firms, changes in product mix, the importance of changes in the volume of operations and the disruptive effects of work stoppages. Consideration must be given, moreover, to increases in non-labor expenses such as depreciation, which has increased sharply in the postwar period as the result of heavy investments in capital goods.

Concentration and competition

At present the largest steel firm accounts for about 25 per cent of steel output and the eight largest producers account for about 75 per cent of the total. Concentration to this degree prevails to a greater or lesser extent in other durable goods industries, for example, aluminum, copper, motor vehicles and cement. When an industry is dominated by a relatively small number of firms, "oligopoly" is said to exist: market decisions of one or a few large producers strongly influence policies of the others.

The steel industry was not always concentrated. Until 1898, according to economic historians, there were many individual producers and vigorous price competition. Some termed this "destructive" or "cut-throat" competition. Starting in 1898 a series of mergers occurred that culminated in the creation of the U. S. Steel Corporation–the first billion dollar enterprise. Capitalized at 1.4 billion dollars, U. S. Steel has been known in the industry ever since simply as "The Corporation."

The U. S. Steel Corporation combined the integrated properties of the Carnegie holdings headquartered in Pittsburgh and the Federal Steel Corporation



Large pipes carry dust from oxygen converters to precipitators

based in Chicago and other facilities. These enterprises had been engaging in expansion programs that would have resulted, it was feared, in bitterly fought "price wars."

For some years after the formation of the Corporation, prices were quite stable. Because of its widespread operations, price cutting in local markets usually could be matched by the Corporation without disrupting markets elsewhere. Most smaller firms were said to follow the "price leadership" of U. S. Steel or another large producer.

The Department of Justice instituted an antitrust proceeding against the Corporation in 1911 in an attempt to break it up into smaller units as had been done with the Standard Oil Company and the American Tobacco Company. Delayed by World War I the U. S. Steel case was not decided by the Supreme Court until 1920. By a 4-3 decision, the Corporation was allowed to remain intact. A majority of the Supreme Court decided that its market power had not been used "unreasonably" to harm competitors. Moreover, the share of the steel market accounted for by the Corporation, once over 50 per cent, had declined.

During the Twenties and Thirties, firms other than U. S. Steel strengthened their market positions. Bethlehem Steel Corporation increased greatly in size as it acquired the large Lackawanna Steel Corporation with major works near Buffalo, and built its vast Sparrows Point Works. At the end of the Twenties the last major combinations in the industry resulted in the creation of Republic Steel Corporation and National Steel Corporation.

For many years Bethlehem sought to merge with Youngstown Sheet and Tube to gain entrance to the Midwest steel markets. When it was finally determined by a court decision in 1957 that this merger would not be permitted, Bethlehem decided to enter the Chicago area as a producer through construction of new facilities in northern Indiana.

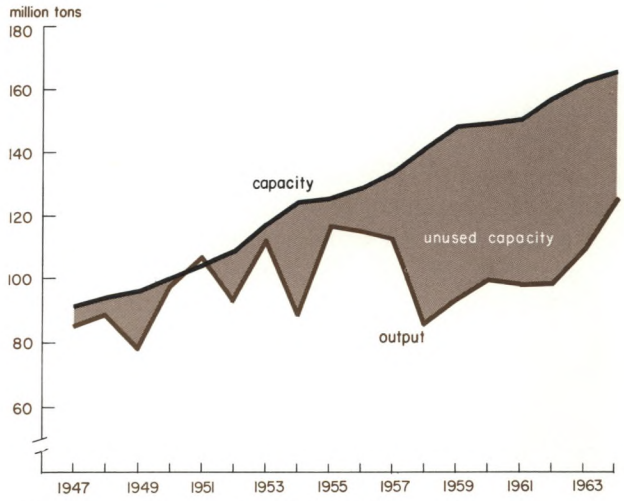
One practice that helped maintain stable prices in the steel industry for decades was the "basing point" pricing system. This system was abandoned after 1948 when the Supreme Court held that the method was illegal in the cement industry. Until 1924 the basing point system was known as "Pittsburgh plus." Prices throughout the nation were quoted as the price established at Pittsburgh plus the freight from Pittsburgh, regardless of the location of the mill from which the products were shipped. On some shipments freight was "absorbed;" on others "phantom freight" was charged.

After a Federal Trade Commission "cease and desist" order in 1924 the industry gradually shifted to a multiple basing point system, using several centers rather than Pittsburgh alone. The basing point system is believed to have helped to stabilize steel prices and with slowing the movement of the industry away from the Pittsburgh area.

Steel prices dropped sharply in 1920, along with the severe decline in commodity prices generally, and drifted downward between 1923 and 1928. During the early Thirties and again in the 1938 recession, the price structure was described as "chaotic." National Recovery Administration (NRA) codes established by the directors of the American Iron and Steel Institute under Government auspices were credited with raising and maintaining prices in the 1934-38 period.

Without implicit or explicit cooperation among all producers, or at least those accounting for the bulk of production, there are strong pressures to cut prices in an industry such as steel when excess capacity exists. Investment in plant and other fixed costs is heavy. Fixed assets account for 50 per cent of the steel firm's

Capacity to produce steel ingots has exceeded requirements since 1955



SOURCE: American Iron and Steel Institute

assets compared with 38 per cent for all manufacturing. As a result, any price that more than covers current costs, principally labor and materials, appears worthwhile if some overhead costs can be recovered. When other producers meet these cuts, however, the advantage disappears and markets become "demoralized."

Demand for steel is said to be "inelastic," that is, appreciable changes in prices do not lead to appreciable changes in the amount used. One reason is that there are no close substitutes for a large range of the uses for steel, giving consideration to relative costs. In addition, although steel is a vital ingredient in many commodities, its cost rarely exceeds 20 per cent of the cost of the finished product and often amounts to only 1 or 2 per cent. Automobiles are made largely of steel, but the cost of the steel is unlikely to exceed 10 percent of the retail price of automobiles. A 10 per cent change in the price of steel, therefore, would amount to only 1 per cent of the retail price of a car.

For any given producer, however, demand for steel is highly elastic to the extent that markets can be bid away from competitors. This is also true for foreign markets.

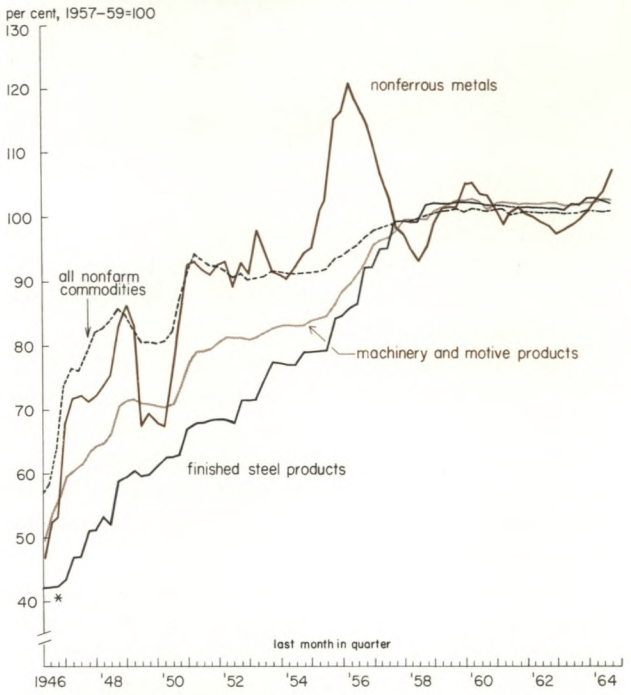
Steel prices on a plateau

In no other industry have postwar price trends been watched more closely and commented upon at such length as in steel. Steel prices in 1946 were not much higher than the prewar level, as a result of price controls during the war when the industry operated under forced draft. Demand continued strong in the postwar years as civilian requirements were very large. Production of durable goods for purposes not connected with the war had been negligible from 1942 through 1945, with the result that a large backlog of "pent-up" demand accumulated during the period.

Steel capacity, for 12 years after World War II, was one of the important bottlenecks limiting total industrial output in periods of high level economic activity. Customers of steel firms were placed on "allocation" schedules, that is, they were allowed portions of available supplies based upon their previous purchases. Some steel firms held prices below the level users of steel were willing to pay. This gave rise to "gray markets" in which steel was traded above list prices. (A form of allocation was in effect late in 1964.)

Why, in the absence of Government price regulation, did these firms hold down prices in years when demand was strong? Leading firms in the industry maintained that they were satisfied with a "fair price" that yielded an "adequate" profit, a situation often

Steel prices have stabilized since 1958, along with the average of all nonfarm wholesale prices

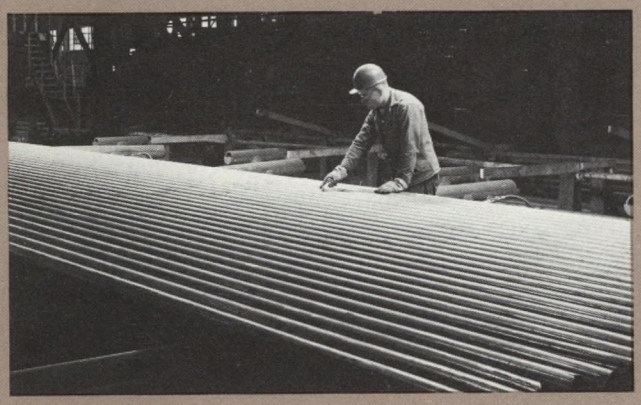


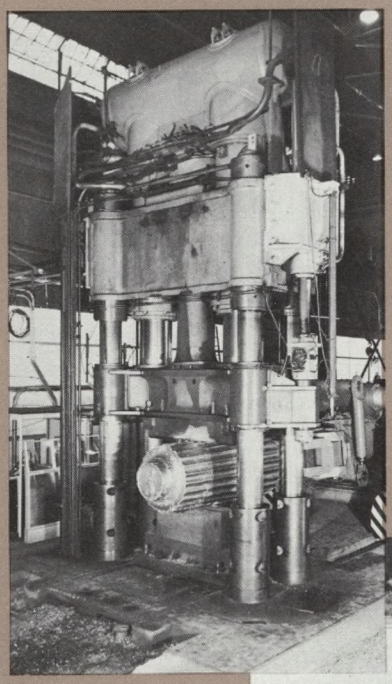
*World War II price controls removed.

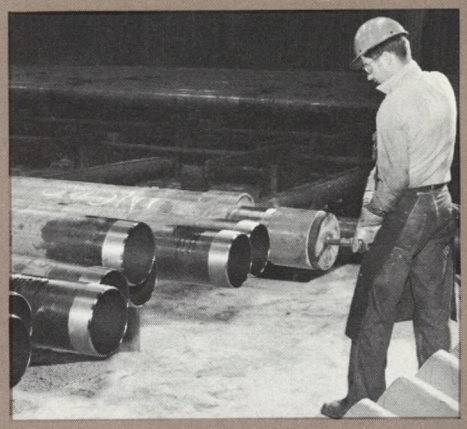
referred to as an "administered price" system. Probably they also believed price increases would have had undesirable consequences. The general inflationary wage-price spiral might have been stimulated further. Higher profits might have encouraged unions to demand larger wage hikes and stockholders to press for more generous dividends. Also, there was the possibility that the Federal Government might re-institute price and materials controls. This was done when the Korean War began in 1950.

From 1946 through 1958 prices of finished steel products were increased virtually every year. Average steel prices rose 136 per cent during the interval while the average of all nonfarm wholesale prices increased 37 per cent. The last general steel price increase came when the economy was in the initial stages of recovery from the 1957-58 recession and the steel industry was operating at less than 60 per cent of capacity. Nevertheless, average prices were raised about 3 per cent in the summer of 1958 after wage increases agreed to in earlier negotiations became effective.

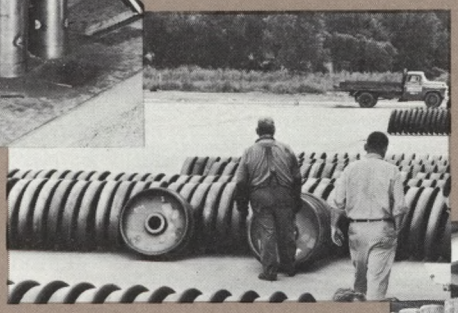
Prices of steel have fluctuated moderately up and down since 1958 with no appreciable overall change. A similar trend has been evident in the average of nonfarm prices.

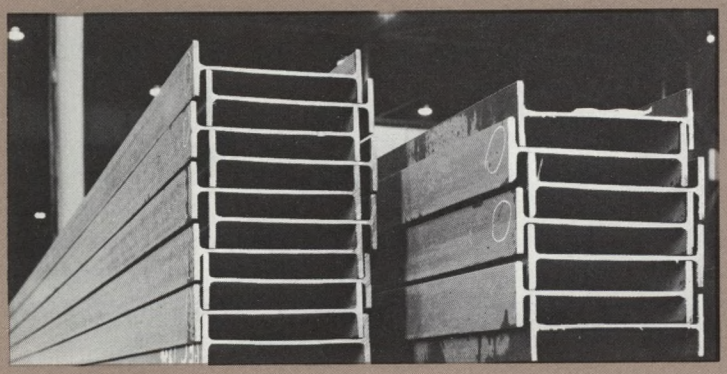






Thousands of finished steel products include pipe, reinforcing bars, heavy forgings, cast railroad car wheels, structural beams and wire fencing



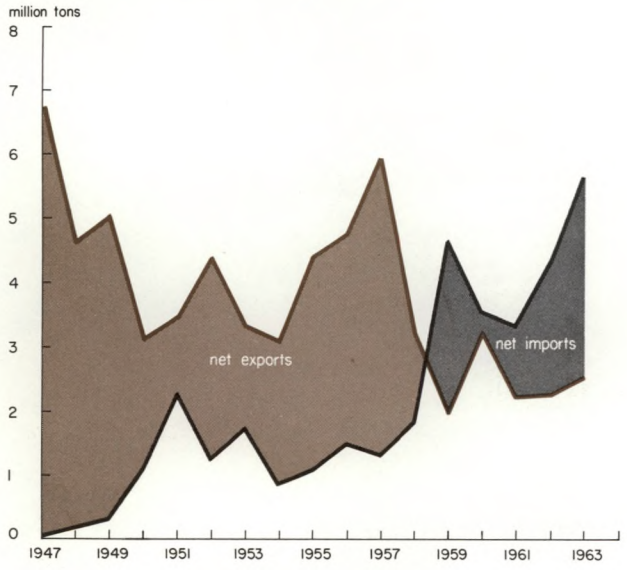


As the economy advanced from the 1960-61 recession, there were widespread reports in trade circles that steel prices would be increased on October 1, 1961, when wages were to be raised under the union contract. But prices were not increased at that time.

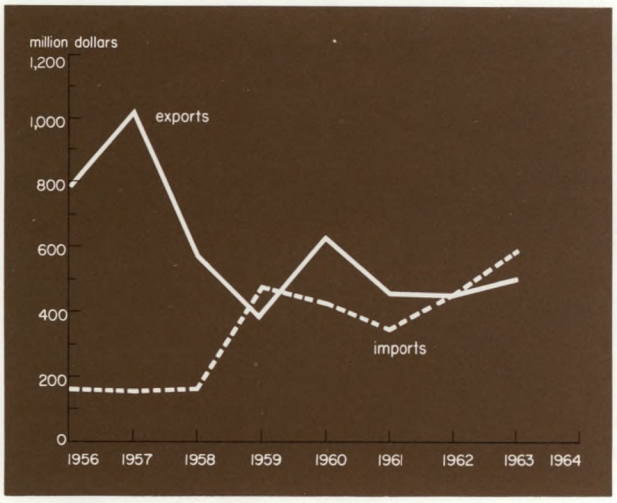
Inventories were increased by steel users in the first quarter of 1962 while labor negotiations were in progress. In April and May, orders were being cancelled and users began to reduce excess stocks. Moreover, competition from imports and other materials were helping to soften the price structure in steel. As a result, average steel prices declined somewhat in the late spring and summer of 1962, after an abortive attempt of some producers to increase prices in April.

Selective steel price increases were announced as demand strengthened in April and again in October 1963. Since then adjustments up and down have occurred, but average prices in the fourth quarter of 1964 were at virtually the same level as after the increases of 1958.

Imports of steel products have exceeded exports since 1958 on a tonnage basis . . .



. . . while dollar value of exports has about matched imports



Note: Data not available prior to 1956.

Change in competitive pressures

A number of developments have tended to restrain price increases since 1958 and to raise a question whether the industry continues to offer a clear example of an "administered price" system. On the cost side it appears that labor expense per unit of output for the industry as a whole has remained relatively stable, with increased output per man-hour about offsetting increases in worker compensation. On the supply side the waves of capital expenditures in the postwar period, culminating in outlays of 1.7 billion dollars in 1957, broke the bottlenecks in ingot capacity and in capacity to produce most finished products except in periods of extremely high demand. There also appears to have been a lessening of concentration as medium-sized and specialized steel producers increased their shares of the market. Finally, a series of antitrust suits involving steel firms and producers of other commodities have aimed at maintaining or increasing price competition.

Since 1958 imports have played a larger role in domestic steel markets, and exports have declined as foreign firms expanded capacity and output. Steel exports substantially exceeded imports until 1959. In that year a long steel strike encouraged domestic users to order from producers abroad, especially in Western Europe and Japan. Once established, these trade relationships have been expanded and broadened. Industry executives complain that some of the foreign steel sold in this nation is "dumped," a term describing the practice of maintaining prices in home markets while charging less for "excess" output shipped abroad.

Imports of steel reached 5.6 million tons in 1963 and were 7.5 per cent as great as shipments from United States mills, in contrast to exports that year of only 2.5 million tons. A large share of imported steel consists of lower priced types, such as reinforcing bars and wire products. Nevertheless, the dollar value of imports exceeded the dollar volume of exports in 1963 and probably in 1964 as well.

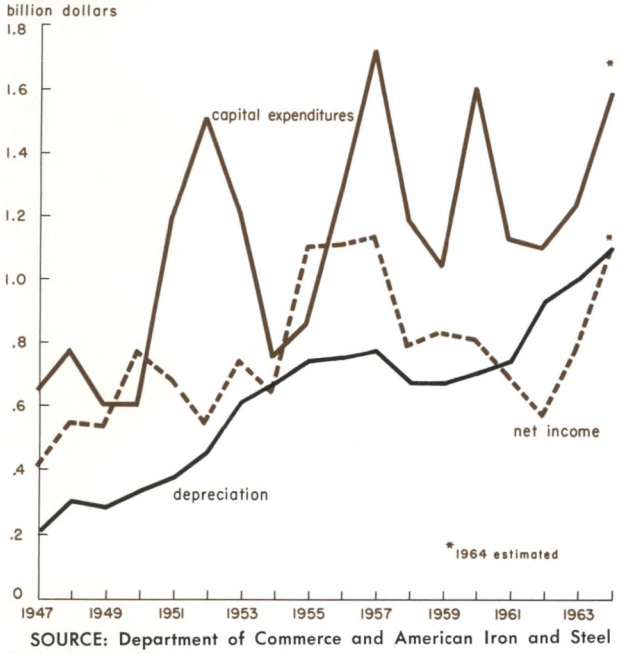
Even before 1958 steel producers began to note

increased competition from other materials. Reinforced and prestressed concrete in the mid-Fifties began to take a greater share of the construction market from structural steel, partly because of architectural and engineering developments but also because of the availability of cement while steel was in short supply. Aluminum has made inroads into the use of steel in containers, construction, motor vehicles, pipe and a variety of fabricated metal products. Plastics also have replaced steel in some applications.

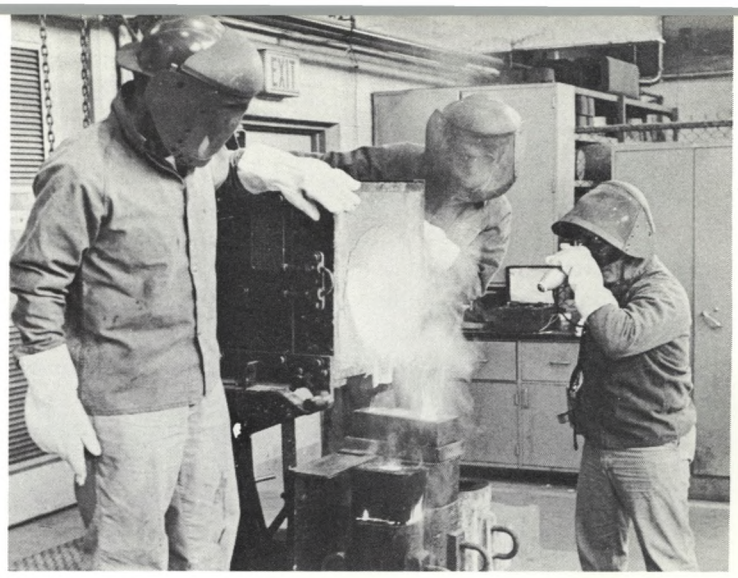
Competition among regions for markets also has been increased in recent years. Large eastern producers have been attempting to increase sales in the Midwest, as a prelude to the establishment or expansion of facilities in this area.

Appreciable strengthening or weakening of markets has caused steel price adjustments that were not reflected in published price indexes. "Extras" are charged for steel products depending upon special characteristics, for example, dimensions or finish. When competition is strong, charges for extras are reduced or eliminated. Quantity discounts are raised or lowered and shipments are "undergraded" or "overgraded" as market conditions permit. Freight can be absorbed in whole or in part. Rebates for defective shipments can be adjusted. Altogether these devices provide a fairly wide area for price competition without changes in the list prices used to calculate indexes.

Steel industry capital expenditures continue in fourth postwar expansion



SOURCE: Department of Commerce and American Iron and Steel Institute.



Pouring of test heat in the laboratory

In addition to price adjustments made to meet competition of other materials and imports, steels have been developed that do jobs more effectively and at lower cost. Various structural alloy steels have been created with several times the strength of equivalent shapes made of carbon steel. Also, steels have been designed to "weather" and acquire an attractive protective coating that does not require painting or other maintenance.

New rolling facilities are being constructed to produce "thin" tin plate in an attempt to win back part of the container market gained by aluminum. Other developments are progressing in the fields of coatings —metallic, plastic and organic—that will strengthen the market for steel in uses where corrosion resistance and appearance are important.

Steel firms have urged more vigorous enforcement of antidumping laws to limit imports. But they also are emphasizing the benefits of the superior quality of American-made steels in many applications and are exploiting their natural advantage of being able to service nearby accounts more effectively than foreign producers located thousands of miles away.

The postwar expansion

During the period since World War II, the steel industry has participated in five waves of outlays on new plant and equipment corresponding to the five general business expansions: capital outlays hit successive peaks in 1948, 1952, 1957 and 1960. Expenditures were rising as 1964 drew to a close and the prospect was for a further increase in 1965.

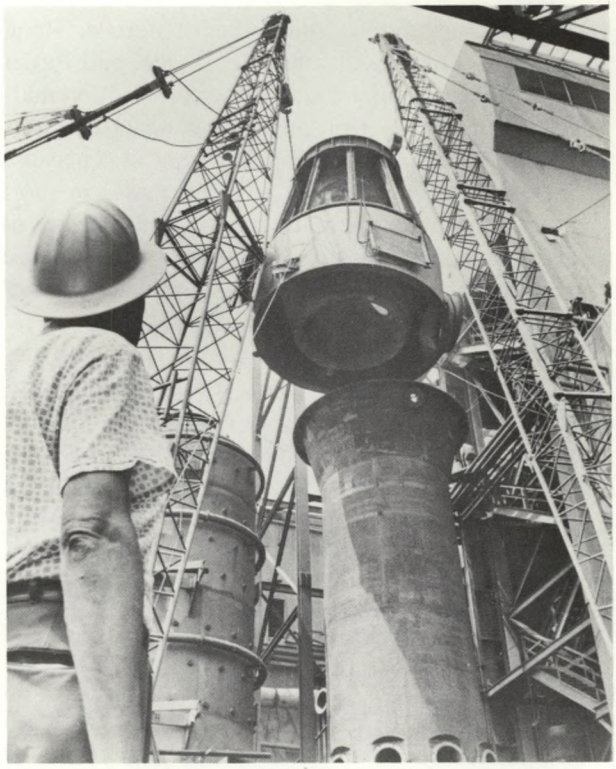
The Federal Government financed the construction of important new facilities during World War II. These plants, after hostilities were concluded, were sold at public auction to private firms, usually those that had operated them. Retirement of older plants caused a

temporary reduction in the industry's rated capacity in 1946 and 1947. Capacity at the start of 1950, however, was at a new high of 100 million tons (compared with 82 million tons in 1939) and output that year reached 97 million tons.

After the Korean War began, strong pressure was placed upon the industry by the Government to expand capacity further. Encouragement was offered through the provision of five-year write-offs for tax purposes. With heavy excess profit taxes, this was a strong inducement.

Capacity at the start of 1955 reached 126 million tons. For the entire year 1955, the industry operated its steel furnaces at 93 per cent of estimated capacity. Without direct Government urging, profit prospects stimulated a new capital expenditure surge that boosted capacity to 149 million tons at the start of 1960. In 10 years the industry had increased its ability to produce steel ingots by 49 per cent! Such an increase in capacity would not have been outstanding in a new industry, but for an industry nearing completion of its first century it was noteworthy.

In the early postwar years there had been apprehension that a sharp slump for steel and durable goods generally lay ahead once demand backlogs were satisfied. Memories were still clear of the 1929-32 decline in steel output—from 62 million to 15 million tons. (The 1929 output had not been exceeded until military needs boosted demand in 1940.) Later opinion shifted to the view that the long-term uptrend of the Forties and Fifties would continue indefinitely. The pendulum had swung too far toward optimism. Output in 1955 set a record that was not exceeded until 1964.

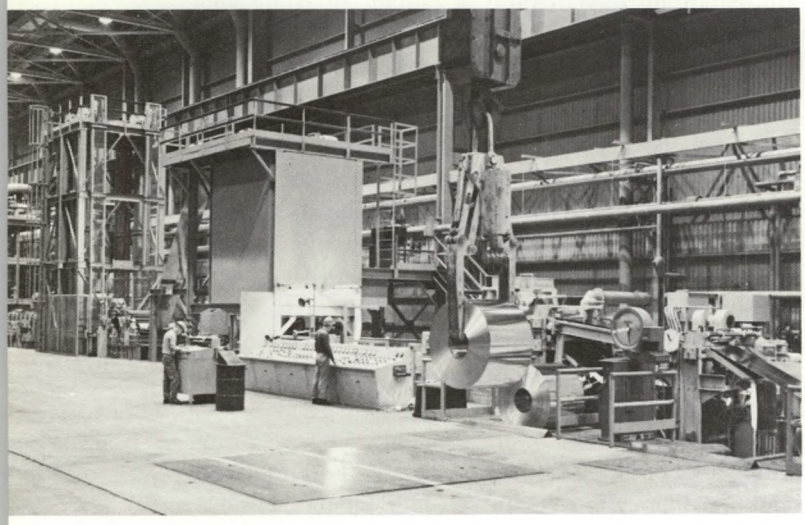


Cupola for heating pig iron and scrap under construction

There are a number of reasons for the sluggish demand for steel after 1955. Probably important in general was the strong rise of steel prices through 1958. This contributed to the increased use of imported steel, to the decline of exports and the larger use of competitive materials. More important, and probably not unrelated, were the short recessions in 1957-58 and 1960-61. These periods marked a slowing in the rate of economic growth, in which expansion of spending on consumer and business durable goods was dampened more than proportionally. Meanwhile, military needs for steel were drastically reduced as requirements shifted from conventional arms to aircraft and missiles. Finally, there were improvements in the design of goods and structures and the introduction of better steels, both of which permitted equivalent jobs to be done with a lesser weight of metal.

Whatever the reasons for reduced output relative to capacity, the fact remains that a substantial part of the steel industry's multi-billion dollar investment in structures and equipment has stood idle for long periods since 1957. Most of the newly constructed facilities have been in use almost continually because of

Modern tin mill capable of producing "thin tin" plate



lower operating costs and higher quality products. Nevertheless, the profits of some steel firms probably would have been higher in recent years had their capital expenditure programs been paced more evenly in the Fifties.

Older facilities represent "sunk" costs, but they yield nothing if not employed. Also, it is apparent that if a portion of the ingot expansion programs of the Fifties had been delayed a few years, they would have taken the form of oxygen converters rather than open hearths. New finishing capacity also would have taken a somewhat different form. Finally, prices of many types of capital goods declined after 1957 once order backlogs of producers of these items were worked down.

Profits and stock prices

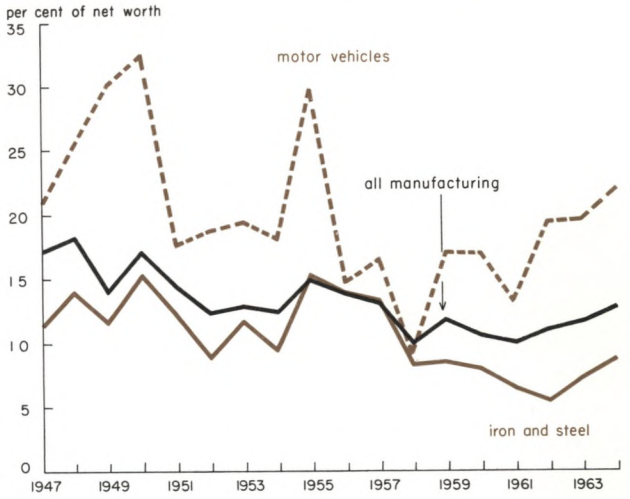
Steel industry profits after taxes amounted to 7.2 per cent of net worth in 1963, according to compilations of the First National City Bank, compared with 11.5 per cent for all manufacturing industries. Profits in steel during the past five years have averaged 7.0 per cent of net worth as compared with 10.9 per cent for all manufacturing. For both steel and manufacturing, these ratios are well below the averages of the earlier postwar period, but they are almost identical with the average for the years 1925-29.

One factor holding down the increase in steel industry profits after 1961 has been the application of the Treasury's new depreciation guidelines under which facilities are written off in an average period of 18 years in comparison to 25 years prior to 1962. Even without this factor, however, steel industry profits relative to invested capital have been lower in recent years than in the earlier postwar period and the reduction has been greater than for manufacturing as a whole.

Investors have not favored steel common stocks in recent years. Standard and Poor's index of steel stocks was 15 per cent below its 1957-59 average in December 1964 while that of 425 industrial stocks was 65 per cent higher. When reported, steel industry profits in 1964 are expected to be about 25 per cent above profits in the preceding year. Maintenance or improvement of this level of earnings in 1965 doubtless would tend to raise the standing of steel shares.

Rising profits are related to capital expenditures in two ways. First, profitability suggests that a favorable yield may be realized on new investments. Second, after-tax earnings in excess of dividends provide

After-tax earnings of steel firms have been below total manufacturing



SOURCE: First National City Bank. 1964 estimate by Federal Reserve Bank of Chicago.

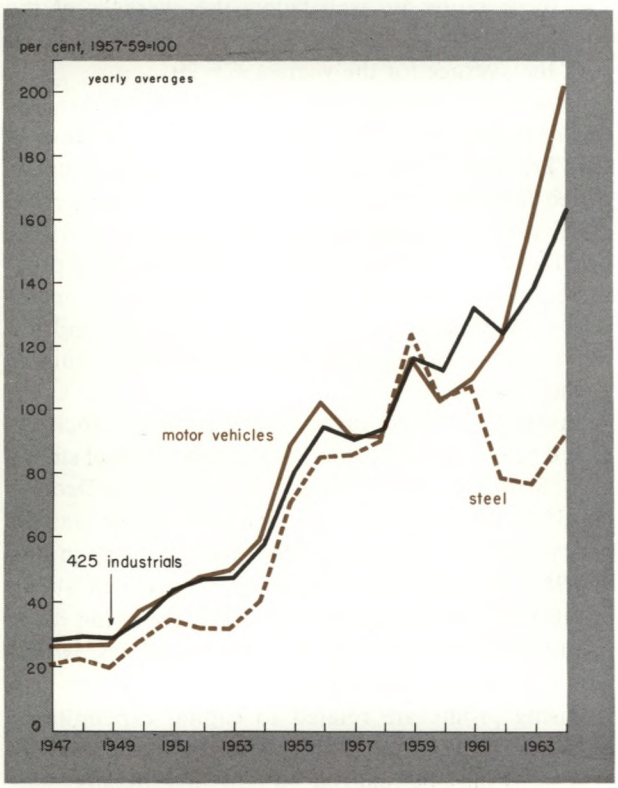
Dry box used in steel research

a portion of the funds needed to finance outlays on plant and equipment. Dividends paid to stockholders were reduced by some major steel firms in 1962 and 1963, in part, to help pay for planned increases in capital expenditures.

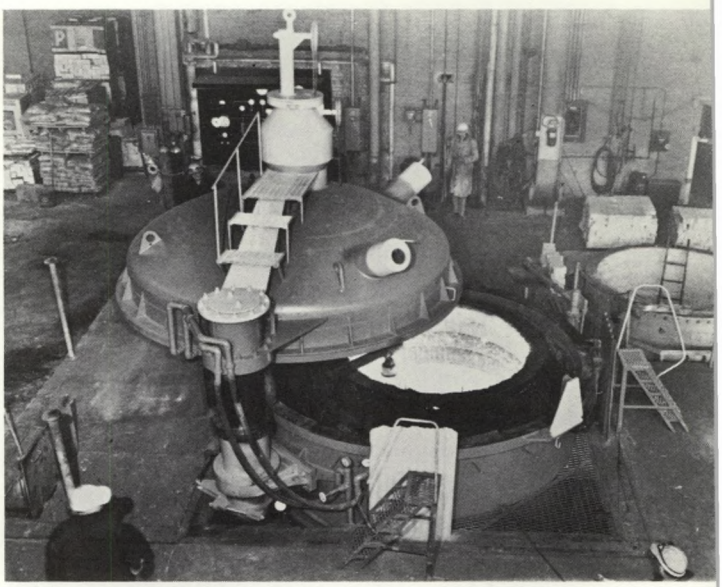
Heavy fixed capital investments encourage the use of debt in some industries. Executives of the largest steel firms, however, have been reluctant to go into debt to pay for expansion programs. This is partially because of the cyclical history of the industry. Outstanding debt was considered to have been burdensome in the Thirties when production was reduced.

Steel firms have invested more than 20 billion dollars in new plant and equipment since 1945. Outstanding long-term debt and bank loans, nevertheless, totaled only 3.1 billion dollars in mid-1964. This debt amounted to 15 per cent of total assets, almost exactly the same as for all manufacturing. From 1945 through 1964 over 11 billion dollars had been provided through depreciation and 6 billion through retained earnings.

Prices of steel common stocks have not risen as strongly as the averages in recent years



SOURCE: Standard and Poor's.



Vacuum degassing chamber for producing flawless alloy steel

For the steel industry as a whole, internally generated funds (depreciation plus retained earnings) exceeded capital expenditures in 1962 and 1963 and possibly in 1964 as well. Heavy reliance upon internally generated funds has placed the industry in a strong position to finance the large capital expenditure programs that are likely to be needed in the years ahead.

Steel's future

With a new record of output in 1964, the steel industry rounds out its first century with order books full and hopes high for another good year in 1965. In the months ahead the nation will look forward to an early successful settlement in the pending labor-management negotiations. Continuous operation of this industry is a requisite to a healthy economy, and strike-hedge inventory building is disruptive.

Steel in recent years has provided an excellent example of how a great industry, dominated by a relatively small number of firms, can perform successfully in a competitive enterprise system. Nevertheless, there is a realization that this industry, perhaps to a greater extent than any other in manufacturing, is "clothed with the public interest." Since the turn of the century, the Government has felt called upon to take a direct interest in steel because this industry's problems have such widespread effects.

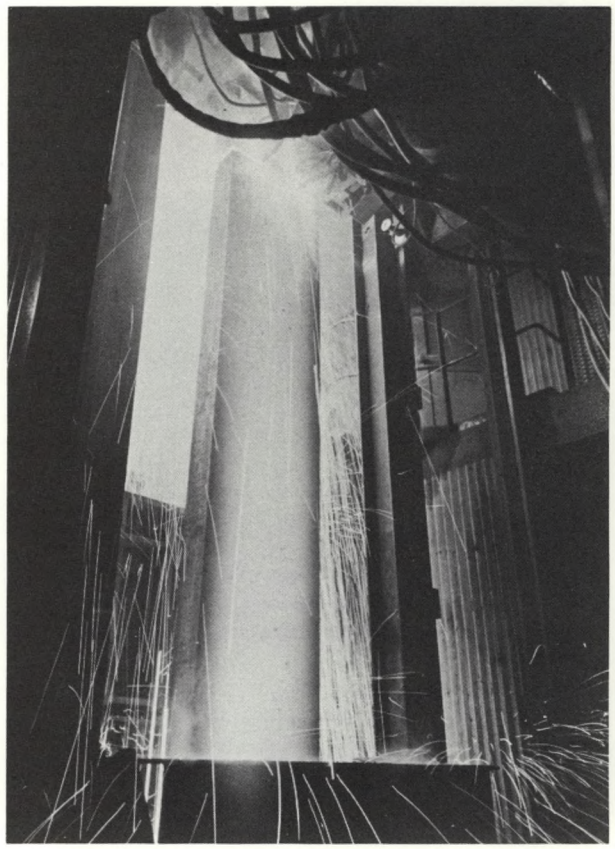
Despite inroads on steel's domain by other materials, this metal remains unchallenged in its ability to perform more varied tasks at lower cost than any other material. The surge of rapid technological change in

today's steel industry probably is more vigorous than ever before. A growing portion of the industry's resources is being devoted to research and engineering in an attempt to improve products and their applications.

As the oxygen converter takes a rapidly expanding place in steel production, interest is growing in a new process to prepare steel for hot rolling. Continuous casting, employed successfully in Europe for several years, permits bypassing the soaking pits and roughing mills as a continuous flow of steel poured from steel furnaces is cooled and cut to lengths for further processing. Experiments are under way on processes that permit the reduction of iron directly from ores without the use of blast furnaces. Substantial outlays continue to be made on facilities to enrich ores for blast furnace use. Strides are being made in the computer control of rolling mills and in new techniques, such as vacuum degassing and pressure pouring for stronger castings and forgings. In short, a large part of steel's existing facilities may be replaced in the next decade or two as newly developed processes are introduced that do jobs better, faster and at lower cost.

Europe has led the way in some important new steel making processes, but usually United States producers have found ways to use these techniques in larger and more efficient applications. The fact that a high proportion of Europe's steel facilities have been constructed in the postwar period has placed some foreign firms at an advantage. Steel's new wave of capital outlays may permit the domestic industry to leap ahead once again.

In the decades to come steel will continue to play its major role in our lives. We will live and work in structures made partly of steel, ride in steel vehicles and consume food and commodities processed or fabricated by steel machinery. The major customers of steel firms have been, and will continue to be, the manufacturers of transportation equipment and farm, construction and industrial machinery—all symbols of American prosperity. The product mix will change in the future, as it has in the past, but the next hundred years probably will continue to be characterized as the Age of Steel.



Experimental continuous casting unit
—part of steel's future

Acknowledgments

The photographs used in this section of the Annual Report were provided by: Acme Steel Company: p. 13—top, p. 15—top, p. 26—top right (United Press International photo); Amsted Industries, Incorporated: p. 11—middle, p. 23—middle right; Bethlehem Steel Company: p. 20—top; Great Lakes Steel Corporation, Division of National Steel Corporation: p. 11—bottom, p. 20—middle; Ford Motor Company: p. 17—top right; Don Heaton Associates: p. 23—middle left, p. 28; Hyman-Michaels Company: p. 12—middle, p. 12—bottom; Inland Steel Company: p. 11—top, p. 14, p. 15—middle, p. 25, p. 27; International Harvester Company: p. 21; McLouth Steel Corporation: p. 18; Midwest Steel Company Division; National Steel Corporation: p. 26—bottom left; Republic Steel Corporation: p. 8, p. 12— top, p. 13—bottom, p. 20—bottom, p. 23—bottom right, p. 23—top left, p. 23—middle right; Joseph T. Ryerson and Son, Inc.: p. 17—bottom left; United States Steel Corporation: p. 15—bottom, p. 16, p. 23—top right, p. 23—bottom left, p. 29. Cover, Inland Steel Company.

STATEMENT OF CONDITION

Assets	December 31, 1964	December 31, 1963
Gold certificate account	$ 2,206,999,165	$2,426,548,270
Redemption fund for Federal Reserve notes	286,967,695	256,162,875
Total gold certificate reserves	$ 2,493,966,860	$2,682,711,145
Federal Reserve notes of other Banks	61,576,000	50,379,000
Other cash	25,467,304	25,167,317
Discounts and advances:		
Secured by U. S. Government securities	$ 2,250,000	$ 3,300,000
Other	4,230,000	4,512,000
Total discounts and advances	$ 6,480,000	$ 7,812,000
U. S. Government securities	6,301,968,000	5,395,397,000
Total loans and securities	$ 6,308,448,000	$5,403,209,000
Cash items in process of collection	1,401,288,509	1,277,431,307
Bank premises	21,531,320	22,531,377
Other assets	85,007,199	60,982,753
Total assets	$10,397,285,192	$9,522,411,899
Liabilities		
Federal Reserve notes	$ 6,386,416,530	$5,891,488,210
Deposits:		
Member bank reserves	$ 2,638,238,929	$2,497,543,874
U. S. Treasurer—general account	81,055,420	65,425,787
Foreign	31,020,000	22,560,000
Other	17,652,737	33,279,542
Total deposits	$ 2,767,967,086	$2,618,809,203
Deferred availability cash items	999,000,819	788,877,255
Other liabilities	94,695,057	13,470,481
Total liabilities	$10,248,079,492	$9,312,645,149
Capital accounts		
Capital paid in	74,602,850	69,922,250
Surplus	74,602,850	139,844,500
Total liabilities and capital accounts	$10,397,285,192	$9,522,411,899
Ratio of gold certificate reserves to deposit and Federal Reserve note liabilities combined	27.2%	31.5%
Contingent liability on acceptances purchased for foreign correspondents	$ 17,314,800	$ 12,957,900

STATEMENT OF EARNINGS AND EXPENSES

	1964	1963
Current earnings:		
Discounts and advances	$ 2,774,280	$ 1,679,049
U. S. Government securities	223,502,248	190,404,300
Foreign currencies	901,823	288,100
All other	48,541	42,590
Total current earnings	$227,226,892	$192,414,039
Current expenses:		
Operating expenses	$ 28,372,033	$ 27,766,864
Federal Reserve currency	3,117,641	1,712,708
Assessment for expenses of Board of Governors	1,224,500	1,069,700
Total	$ 32,714,174	$ 30,549,272
Less reimbursement for certain fiscal agency and other expenses	3,691,606	3,697,765
Current net expenses	$ 29,022,568	$ 26,851,507
Current net earnings	$198,204,324	$165,562,532
Additions to current net earnings:		
Profit on sales of U. S. Government securities (net)	$ 103,881	$ 51,785
All other	94,065	54,159
Total additions	$ 197,946	$ 105,944
Deductions from current net earnings	35,766	113,302
Net deductions from (—) or additions to current net earnings	$ 162,180	$ —7,358
Net earnings before payments to U. S. Treasury	$198,366,504	$165,555,174
Dividends paid	4,373,219	4,069,450
Payments to U. S. Treasury (interest on Federal Reserve notes)	259,234,935*	153,713,724
Transferred to surplus	$—65,241,650	$ 7,772,000
Surplus account		
Surplus, January 1	$139,844,500	$132,072,500
Transferred to surplus—as above	—65,241,650	7,772,000
Surplus, December 31	$ 74,602,850	$139,844,500

*See note on page 33.

OPERATIONS

		1964	1963
Clearing and collection	Dollar amount (in millions)		
	Commercial bank checks	237,462	220,840
	Government checks*	16,777	16,693
	Other items	519	440
	Number of pieces (in thousands)		
	Commercial bank checks	687,893	628,341
	Government checks*	93,759	95,219
	Other items	1,716	1,649
Currency and coin	Dollar amount (in millions)		
	Currency received and counted	5,559	5,115
	Coin received and counted	47	130
	Coin wrapped	67	141
	Unfit currency withdrawn from circulation	864	867
	Number of pieces (in millions)		
	Currency received and counted	893	864
	Coin received and counted	348	1,103
	Coin wrapped	703	1,281
	Unfit currency withdrawn from circulation	222	235
Safekeeping of securities†	Dollar amount (in millions)		
	Securities received	16,792	15,969
	Securities released	16,410	16,374
	Coupons detached	262	259
	In safekeeping on December 31	8,637	8,255
	Number of pieces (in thousands)		
	Securities received	426	384
	Securities released	369	304
	Coupons detached	2,913	2,747
	In safekeeping on December 31	1,493	1,436
Discount and credit	Dollar amount (in millions)		
	Total loans made during year	11,384	6,716
	Daily average outstanding	77	49
	Number of banks accommodated during year	179	192
Investment	Purchases and sales of securities for member banks		
	Dollar amount (in millions)	1,799	1,878
	Number of transactions	17,150	16,199
Transfer of funds	Dollar amount of funds transferred (in millions)	570,905	485,705
	Number of transfers (in thousands)	615	548

*Includes postal money orders. †Including collateral custodies.

Services to the U.S. Treasury

	1964	1963
Marketable securities		
Dollar amount (in millions)		
Issued	15,200	15,619
Servicing:		
Securities received	15,806	14,627
Securities delivered	20,961	18,848
Redeemed	20,050	19,955
Number of pieces (in thousands)		
Issued	348	316
Servicing:		
Securities received	209	206
Securities delivered	513	450
Redeemed	724	619
Savings bonds		
Dollar amount (in millions)		
Issued	1,576	1,509
Servicing:		
Bonds received for reissue	160	144
Bonds delivered on reissue	160	144
Bonds delivered on replacement	5	5
Redeemed	1,028	991
Number of pieces (in thousands)		
Issued	22,880	22,112
Servicing:		
Bonds received for reissue	699	666
Bonds delivered on reissue	779	750
Bonds delivered on replacement	60	53
Redeemed	15,313	14,859
Federal tax receipts processed		
Dollar amount (in millions)	7,793	8,030
Number of pieces (in thousands)	1,912	1,858

*Footnote to Statement of Earnings and Expense

The amount of payments to the U. S. Treasury as interest on Federal Reserve notes for the year 1964 totaled $259,234,935, compared with $153,713,724 in 1963, as shown in the statement of earnings and expenses. In that connection the Board of Governors of the Federal Reserve System issued the following statement on January 5, 1965:

Preliminary figures received from the Federal Reserve Banks indicate that during the year 1964 their earnings amounted to $1,344 million, an increase of $193 million compared with 1963. Earnings of $1,324 million on U. S. Government securities were $186 million more than in 1963, reflecting an increase in average holdings and a higher average yield. Earnings from discounts and advances were $10 million, compared with $9 million in 1963; and earnings on foreign currencies amounted to $6 million, compared with $2 million in 1963.

Expenses in 1964 amounted to $197 million, $10 million more than in 1963, leaving net earnings of $1,147 million before dividends and payments to the U. S. Treasury, compared with $964 million in 1963.

Payments of statutory dividends to member banks amounted to $31 million, up $2 million from 1963. Payments to the U. S. Treasury as interest on Federal Reserve notes for the year 1964 will total $1,582 million. These payments consist of all net earnings after dividends plus amounts necessary to reduce surplus to the level of paid-in capital, instead of subscribed capital, as heretofore.

Since 1959, the Federal Reserve System has been paying into the U. S. Treasury as interest on Federal Reserve notes all net earnings of the Federal Reserve Banks after payment of statutory dividends and amounts set aside to maintain the surplus accounts of the 12 Reserve Banks at a level equal to the amount of capital subscribed by their member banks.

Member banks are required to subscribe to Federal Reserve Bank capital stock in an amount equal to 6 per cent of their own capital and surplus, and to pay in one-half of the subscribed amount. Because of the growth of the capital structure of the 6,200 member banks, in reflection of the growth of the economy, the subscribed capital of the Reserve Banks at the end of 1964 had reached $1,048 million, an increase of nearly $300 million since 1959.

Accordingly, the Board has concluded that the growth in the capital and accumulated surplus of the several Reserve Banks, as well as in their net earnings (which rose from $840 million in 1959 to $1,147 million in 1964), warrants reducing the surplus of the Reserve Banks to the level of paid-in capital instead of subscribed capital as has heretofore been the case. This decision will add $524 million to the amount paid into the Treasury in 1965.

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Decatur, Illinois

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Milwaukee, Wisconsin

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Giddings & Lewis Machine Tool Company
Fond du Lac, Wisconsin

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Storm Lake, Iowa

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St. Clair, Michigan

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Federal-Mogul-Bower Bearings, Inc.
Detroit, Michigan

DONALD F. VALLEY, Director
National Bank of Detroit
Detroit, Michigan

MEMBER OF FEDERAL ADVISORY COUNCIL

EDWARD BYRON SMITH, Chairman of the Board
The Northern Trust Company
Chicago, Illinois

December 31, 1964

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LOUIS J. PUROL, Assistant Cashier

W. GEORGE RICKEL, Assistant Cashier

December 31, 1964

Appointments, Elections, Resignations and Retirements

During the year the following appointments and elections were announced:

John H. Crocker, Chairman of the Board, The Citizens National Bank of Decatur, Decatur, Illinois, was reelected Director for a three-year term ending December 31, 1967.

James H. Hilton, President, Iowa State University of Science and Technology, Ames, Iowa, a Director since 1960 and Deputy Chairman since 1961, was redesignated Deputy Chairman for 1965.

Franklin J. Lunding, Chairman of the Board, Jewel Tea Company, was appointed Director of the Bank for a three-year term ending December 31, 1967, and was designated Chairman of the Board and Federal Reserve Agent for 1965 to succeed Robert P. Briggs, Executive Vice President, Consumers Power Company, Jackson, Michigan. Mr. Lunding formerly served as Deputy Chairman of the Bank for one year (1949) and Chairman for three years (1950-52).

James W. Miller, President, Western Michigan University, Kalamazoo, Michigan, was reappointed Director of the Detroit Branch Board for a three-year term ending December 31, 1967. Mr. Miller was reelected Chairman of the Detroit Board for 1965.

Raymond T. Perring, Chairman, Detroit Bank and Trust Company, Detroit, Michigan, was appointed Director of the Detroit Branch Board for a three-year term ending December 31, 1967, to succeed Donald F. Valley, former Chairman, National Bank of Detroit, Michigan.

William E. Rutz, Director and Member of the Executive Committee, Giddings & Lewis Machine Tool Company, Fond du Lac, Wisconsin was reelected Director for a three-year term ending December 31, 1967.

Edward Byron Smith, Chairman of the Board, The Northern Trust Company, Chicago, Illinois, was reappointed member of the Federal Advisory Council of the Federal Reserve System for 1965.

Bruce L. Smyth, Assistant Vice President, was promoted to Vice President, effective January 1, 1965.

LeRoy A. Davis, LeRoy W. Dawson and Victor A. Hansen, Assistant Cashiers, were promoted to Assistant Vice Presidents, effective January 1, 1965.

Robert P. Briggs resigned as Chairman and Federal Reserve Agent of the Bank effective September 21, 1964. He had been a Director since 1956, Deputy Chairman in 1960 and Chairman and Federal Reserve Agent since 1961.

Donald F. Valley, former Chairman, National Bank of Detroit retired as Director of the Detroit Branch Board on December 31, 1964. Mr. Valley had been a Director since 1959.

The employes listed below, all with service records of more than 25 years, retired in the course of the year from the Bank:

John Egeland
John L. Hopcia
Helen Gloss
James Isherwood
Zenon Jerus
John A. Reiter
William Thau

The following employes had been associated with the Bank for more than 40 years before retiring in 1964:

Gerald L. Beyerlein
Roy C. Helsten
Gertrude Hoefer
Aloysius L. Kauth
Eugene Liday
Margaret C. Toomey
Robert Wilson

These 14 retired employes of the Bank represent more than 495 years of service to this institution.

Requests for additional copies of this report should be addressed to:

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