Railroads and Business Expansion

Before the coming of the railroad, virtually no basic changes in transportation had taken place for two thousand years. People and goods moved as they had during the Roman Empire, by packhorse, wagon, or boat.

Beginning in the late 1820s the railroad revolutionized transportation in the United States and laid the basis for a modern industrial economy. The railroad was invented in Western Europe (mostly England), but by 1840, European countries had only 1,818 miles of track while the United States had almost 3,000 miles.

The United States became the leader in the development of the railroad because of the vast distances to overcome, and because it was not hampered by the entrenched stakes and long-established customs that hindered European rail expansion. Although some opposition to railroads did exist (one Ohio school board held that the steam railroad was "a device of Satan to lead immortal souls down to Hell") such sentiment was rare.

The American people welcomed the railroad with unbounded enthusiasm, invested their savings, and supported the promoters who built the lines across the virgin territories of the country. Their enthusiasm reflected the pioneering spirit of the people of the United States.

The experience of three major commercial centers, Baltimore, Charleston, and Boston, illustrate America's fervor for railways. Each city sought to expand its hinterland to the west, and each pioneered in the construction of railroads. Baltimore built the Baltimore and Ohio Railroad, chartered in 1828, across the Alleghenies to tap markets in the Ohio River Valley. The people of Charleston constructed a railroad inland to the Savannah River, where they hoped to divert the cotton trade to their port, thereby defeating their archrival Savannah.

Frightened by the sudden rise of New York after the completion of the Erie Canal, Bostonians sought to build a railroad westward to Albany on the Hudson River and take away traffic going to the port of New York. These three cities initiated the railroad era in their respective regions.

On July 4, 1828, Charles Carroll, one of the signers of the Declaration of Independence, turned the first earth to initiate the construction of the horse-drawn Baltimore and Ohio Railroad. Later that summer steam power came to the B&O when Peter Cooper, a part-time inventor from New York, brought the locomotive "Tom Thumb" to the line. The "Tom Thumb" was not a success, however, and lost a race with a horse-powered vehicle. Not until 1831 did, steam locomotives replace horse-drawn wagons on the railroad. The successful utilization of steam power and construction to the west enhanced the profitability of the B&O, which soon had gross revenues of over a quarter of a million dollars per year.

On Christmas Eve 1852, the B&O reached the Ohio River at Wheeling, Virginia, and traffic from the Ohio River Valley began to flow east to Baltimore. Meanwhile, the South Carolina Canal and Railroad Company constructed its line westward from Charleston. On Christmas Day 1830, the "Best Friend of Charleston," the first locomotive built for sale in the United States, carried over 140 passengers on the first scheduled steam railroad in this country. The 136-mile route to Hamburg, South Carolina, completed in 1833, was the longest continuous railroad in the world.

Railroad promoters in Boston soon had three fledgling lines extending from that city to Lowell, Providence, and Worcester. They formed the basis of a New England railway system. The success of these cities generated a wave of railway construction in the 1830s. Railroad enthusiasm became wild and boisterous railway fever as every town and city sought to emulate Baltimore, Charleston, and Boston. From then on, the rail system grew rapidly: Of the twenty-six states in the union in 1840, only four were without railroads.

The lines largely served the cities along the Atlantic coast, and New England and the Mid - Atlantic States had over 60 percent of the total mileage in the country. Only the Panic of 1837 and the subsequent depression slowed the expansion of the railroads. Some states, particularly those in the Old Northwest, suffered heavily because of their investments in railroad projects. Nevertheless, by the end of the decade the United States far outstripped European countries in the development of this new transportation artery.

Throughout the 1830s and 1840s, the railroads constantly improved their track and rolling equipment. The first railroads had been built on tracks of iron straps or bars fastened to wooden rails that, in turn, were attached to blocks of granite or other stones imbedded in the earth. The iron-strap rails, only 20 to 25 feet long, often broke loose and curled under the weight of passing trains to form "snake heads" that tore through the bottoms of the cars.

The solution to the problem appeared in 1831, when Robert L. Stevens, an engineer and president of the Camden and Amboy Railroad of New Jersey, designed the T-rail. Supporting the T-rail were wooden sleepers or ties that replaced the heavy stones or granite blocks under the rails. A roadbed surfaced with crushed stone or gravel supported the track.

American railroads did not have a uniform track gauge, or distance between the rails. In England, the standard gauge was 4 feet 8.2 inches. This became the usual track gauge in New England and portions of the North, but some railways, the Erie for example, were 6-foot gauge. Other railroads, particularly in the southern states, had 5-foot gauge. This necessitated transshipment of goods where lines of different gauges intersected. (Think how the first computers and software were unable to communicate).

Locomotive design also improved. Originally, most of the engines were imported from England, but Philadelphia jewelry manufacturer Matthias Baldwin began to build locomotives, and soon other locomotive builders emerged in the Northeast. Passenger cars, which were nothing more than stagecoaches with railroad wheels, evolved into longer, more comfortable accommodations. The diminutive freight cars, usually with only four wheels, became longer and heavier with greater carrying capacity, and most were outfitted with eight wheels. Thus, the railways spawned auxiliary enterprises in T-rail manufacturing, locomotive works, and car and wheel shops, and they gave impetus to the lumber industry, which furnished the wooden ties.

Railroad construction, which had rapidly expanded in the 1840s, turned into a veritable explosion of new tracks and rail lines in the prosperous 1850s. In 1850, the nation's railway mileage was 8,879; by 1860, the total exceeded 30,000 miles. The 1850s also saw the consolidation of many short rail lines into large companies, particularly in the North and Northeast. While a few roads like the Erie and the Baltimore and Ohio had been built as single companies, most of the trunk lines were created through mergers. Yet the nation did not have a unified rail system.

The railways north of the Ohio River and those in the south connected in only three places. The proliferation of railways in the 1850s resulted from financial stimulation by private capital and by government.

FINANCING THE RAILROADS

The federal, state, and local governments aided the financing of the railroad boom in the 1850s. State governments granted liberal railroad charters, and in a few cases, they actually built the lines. State and local governments supplied money and credit for many of the private railroads. The federal government also contributed by making surveys at government expense and by reducing the tariff on iron used by the railroads. Between 1845 and 1860 state governments borrowed more than $90 million, largely to finance railroad construction and state and local governments often purchased securities in the railway corporations.

The federal government also supported the railways by providing almost 25 million acres of land for railroad construction before the Civil War. The debate over the use of federal lands to aid railroads deeply divided the Congress, with members from the Northeast generally opposed while those from the West and South strongly urged such help. On September 20, 1850, the government made its first significant railroad land grant: a railway was built from northern Illinois to Mobile, Alabama. The grant included a 200-foot right-of-way and alternate even-numbered sections of land on each side of the track for a depth of 6 miles.

If the granted lands were occupied, the railroad could have other sections within 15 miles of its track. The law if railroads constructed with the land grant should transport the property or troops of the United States free from any toll or charge and that Congress would determine the rate of the mails that the lines would carry. This initial rail grant created a precedent, and additional grants before the Civil War benefited forty-five railroads.

The federal land grant program expanded rapidly after the Civil War. Many politicians believed that western settlement would take place on a large scale only if people were induced to go west where railroads already existed; tracks had to be laid ahead of demand. The national government subsidized the railroads because the existing populations were sparse and state, territorial, and local governments were unable to provide the level of support that had existed in the South and the East before 1860.

Between 1850 and 1871, Congress granted 175 million acres of land to railroads, although 35 million acres were eventually forfeited and returned when contracts were not fulfilled. While seventy railroads received federal land grants, four (the Northern Pacific, Santa Fe, Southern Pacific, and Union Pacific) received over 70 percent of the total. Yet, the land grants covered only 20,000 miles of railroad, or only 8 percent of the nation's total. The grants did give impetus to railroad construction, and they nourished the belief that the railroads would eventually pay interest and dividends: Land grants were often necessary to attract capital for construction.

In all cases, the government required that railroads built with land grants reduce charges for federal shipments, the general reduction being 50 percent from ordinary rates. A congressional report in 1945 estimated that the government had saved $900 million because of this clause. A long and heated debate has continued as to whether or not the land grants were justified or even if they were required. Clearly, the major contribution of grants was to furnish a basis for credit so that construction could begin.

The belief that the land grants would provide instant profits proved an illusion, but they did encourage the construction of railroads in advance of settlement. Unfortunately, the lines were most often built quickly and poorly. The economic consequences of the land grants did not bring a halt to such aid; rather, revelations of corruption and bribery caused public opinion to demand that such assistance end. Direct federal aid terminated early in the 1870s, and most state and local support for railroads ceased during the next decade.

However, as will be seen, governmental aid was relatively small in comparison with investment by private capital. Private investors largely financed the construction of the railway system. Merchants, farmers, manufacturers, and professional men and women bought stocks and bonds in rail companies. In cities such as Boston, New York, and Philadelphia, investors purchased the securities of lines in the West and South. Boston, for example, became a major contributor the construction of lines west of Chicago.

Some railway bonds sold in London before the Civil War, but most of the capital came from the United States. Investors were willing to purchase the securities because the railroad had triumphed over other forms of transportation. Turnpike and plank road companies disappeared, and canals, even before the 1850s, were being abandoned.

The railroads could transport goods cheaper than the turnpikes and more efficiently than the canals. By 1860, the railways provided much of the nation with fast and economical transportation. Tonnage rates fell, and increased speeds reduced the financial burdens of other industries. Wagon rates for wheat had been as high as 30 cents per ton-mile in the Old Northwest. By the time of the Civil War, farmers could ship a bushel of wheat from Chicago to New York for only 1.2 cents per ton-mile. Only half of this reduction reflected the general price decline of the period. The consequences for domestic commerce were important indeed.

The building of the railroads, more than any other factor, gave rise to industrialization. Markets for manufacturers, miners, and commercial firms expanded with the rail network, and additional markets encouraged more complex machinery in manufacturing. In turn, machinery increased output even further, providing yet another impetus for expansion and continued growth. The railroads also proved to be important in war as well as peace.

THE IMPACT OF WAR

When the Civil War broke out in April of 1861, the rail systems of the Union and the Confederacy stood in sharp contrast. The eleven Confederate states claimed only one-third of the nation's total rail with only 9,000 miles of line of the 117 mileage. The railways of the South were lightly constructed and less systematic in design and operation; rolling stock and locomotives were less numerous and had smaller capacities.

The South had few facilities for the construction and maintenance of rolling stock, and the modest locomotive-building facilities were soon pressed into the production. As the war expanded, it became clear that the American Civil War would be the first in which railroads were vital tactically and strategically. Shortages of basic commodities, such as lubricating oil and car wheels, soon made effective management of the railways in the South a virtual impossibility; but in the North, the railroads prospered.

The Illinois Central, for example, carried heavy trainloads of troops, animals, forage, and ammunition south to Kentucky and Tennessee, while the Baltimore and Ohio moved troops from Maryland into western Virginia and to Ohio. Some northern railway companies paid their first dividends in 1863—1864. Neither the Confederate nor the Union governments took complete control of their railway systems. Both armies, however, recognized that successful campaigns often depended on possession of major railroad junctions, and both engaged in widespread railroad destruction in order to deny opponents use of the lines.

The end of the war found the railway system of the South generally in ruins, and a massive rehabilitation pro- gram began almost immediately. The northern system, however, was in excellent condition. War demands resulted in greater cooperation among the railways, and the increased traffic led to the replacement of iron rails with steel and of wood with coal for fuel. The era of expansion in the 1850s—and of consolidated operations to meet the challenges of the war— placed the railroads on the threshold of even more rapid growth after 1865.

THE TRANSCONTINENTALS

The post-Civil War era saw track mileage double in the first eight years after 1865, and double again in the next fourteen years. The construction of the transcontinental railroads dramatized this expansion. The Pacific Railway Act of 1862 authorized construction of the Union Pacific and Central Pacific railroads, which built toward each other from Omaha, Nebraska, and Sacramento, California. Completed in 1869, the Union Pacific—Central Pacific route proved to be the forerunner of additional transcontinentals.

In 1883, the Northern Pacific extending west from Minneapolis and St. Paul reached Tacoma, Washington, and a few years later, the Southern Pacific and the Santa Fe linked the west coast to New Orleans and Chicago. While the transcontinentals railroad were the work of many men, James J. Hill provided the leadership in the construction and operation of the Great Northern Railway. Born in 1838, Hill left Canada as a young man and settled in St. Paul, Minnesota, in 1856. He entered business, engaging in freighting, merchandising, and transportation. With a group of Canadian investors, he took over the small St. Paul and Pacific Railroad and expanded the line north and west to Winnipeg to connect with the Canadian Pacific. He organized another railroad to build westward, reaching Great Falls, in 1887.

Hill constructed feeder lines only where he saw potential profitable traffic, and he encouraged immigrant farmers by providing cheap passage westward if they agreed to homestead near his line. His company, which had become the Great Northern Railway, reached Seattle in 1893. The panic of that year destroyed other Transcontinental’s, but not Hill's Great Northern. Indeed, the Great Northern paid dividends during the depression years. This resulted from his requirements that the construction be sound, that the financial operations be conservative, and that he control the management.

Between 1891 and 1907, the Great Northern built one new mile of road every working day of the year. When Hill retired in 1907, he had won the name "Empire Builder" because of his encouragement of agricultural and industrial development in the Northwest. Few railroad leaders could rival Hill for the imaginative development of an entire region of the United States.

Even as construction of the transcontinentals proceeded, the railroads improved and standardized operations. New giant bridges spanned the Ohio, Mississippi, and Missouri rivers. In 1871 over twenty different track gauges still were in use. By 1880, however, 80 percent of the mileage had been converted to standard gauge (4 feet 8'/2 inches), and during the next decade, virtually the entire network was converted to standard gauge.

The railroads recognized that interchange of traffic required other forms of cooperation and soon standardized coupling devices, car trucks, bills of lading, and classification of products. Larger locomotives and freight cars with increased carrying capacities required the replacement of iron rails May 10, 1869, at Promontory, Utah, the first transcontinental railroad is completed.

Steel rails provided a smoother, safer, and faster track. More apparent to the public than any of the technical changes was division of the nation into four time zones to enhance the movement of trains.

Yet an even more significant contribution to the development of business enterprise in America was the creation by the larger railroads of complex, but highly efficient, managerial systems.

The railroads created the modern business structure. While management of canals, steamboats, and turnpikes had been relatively simple, distance, complexity, and size required a larger and more systematic business organization for the railroads. Before the 1840s, businesses operated not unlike those of fifteenth-century Venice, but the railways needed system and order to move freight and passengers efficiently, quickly, and safely.

The companies had to provide direct, scheduled, and reliable delivery of freight. Internal procedures had to be routinized and accounting, maintenance, and statistical controls devised. The modern manager emerged to meet these needs. Many of the initial railway employees were civil engineers; a handful had military experience, and most had some knowledge of bureaucratic process.

The railroad managers did not copy European models; rather, they designed rational responses to the problems they faced. They established divisions of responsibilities with specific functions throughout the corporation and developed ways to discover costs and methods to reduce them. This involved daily detailed reports from all segments of the railroad. They devised new accounting procedures and created billing systems. Many of the brightest and most promising young men in the country became part of these new railway enterprises, which offered many challenges and financial rewards. They formed structures to manage hundreds, and even thousands, of employees scattered across a number of states.

As Alfred D. Chandler has written, "The railroad and the telegraph provided the fast, regular, and dependable transportation and communication so essential to high-volume production and distribution—the hallmark of large modern manufacturing or marketing enterprises. As important, the rail and telegraph companies were themselves the first modern business enterprises to appear in the United States." Because of the scope and intricacies of their operations, the railroads demand absolute discipline from employees. Technically skilled employees were placed on strict schedules, thus creating managerial problems. Detailed work rules were required in a society based on equalitarianism; individuals suffered a loss of rights.

Workers often felt that the rules were arbitrary and against their interests. The railroads demanded minute controls over their employees, and consequently labor relations were extremely difficult and occasionally violent. In order to cope with management, some railroad workers joined one of the four large brotherhoods—the engineers, conductors, firefighters, and enginemen, or trainmen—but relatively few were members of labor unions before 1890. Nevertheless, in times of strife the workers coalesced in order to cope with their employers.

In July of 1877, for example, in the midst of the depression following the Panic of 1873, the Baltimore and Ohio Railroad twice cut wages by 10 percent. It also increased the length of freight trains without expanding crews. After its firefighters and brakemen struck, violence ensued. Mobs in Baltimore and in Pittsburgh attacked company property, and in Pittsburgh, damages exceeded $5 million.

The violence spread, and soon police, the militia, and regular army regiments were called out. The strike was broken, but the public knew that while the workers suffered wage cuts, dividends were still being paid on the B&O and other railroads. Considerable sympathy developed for the Pullman workers when they struck George M. Pullman's car works in 1894—after he reduced wages but not the rents on company-owned housing.

Railroad employees in the Chicago area attempted to aid the Pullman workers by refusing to haul the Pullman Palace sleepers on passenger trains. The federal government and local courts intervened on the side of Pullman, and the strike failed.

The railway companies exacerbated the situation by creating blacklists of workers who were union members or who were sympathetic to the brotherhoods. Undoubtedly, these events played a large part in creating a negative image of the corporations. The public also resented the scandals that surrounded the construction and operation of some of the nation's major railways. During the building of the Union Pacific Railroad a construction company, the Credit Mobilier, distributed shares of stock to members of Congress and even the vice president of the United States.

The Credit Mobilier received contracts to build the Union Pacific far in excess of the value of the track that the railroad acquired. It is estimated that those involved in the Credit Mobilier pocketed $23 million. The public was incensed at revelations that the Union Pacific had a capitalization of $110 million, but perhaps as much as half-represented "watered stock."

Railway companies often sold more securities, or "watered stock," than the lines were actually worth. This was justified because capital was extremely difficult to obtain—that investors would buy securities only if interest rates were high and if they received more in stocks and bonds than the cash they had actually paid. The result, of course, was overcapitalization, which made it extremely difficult for those companies to pay interest on bonds and dividends on stocks. Some Americans believed that this corruption was primarily to be found in the South and in the far West, and yet a corruption of a different sort, the manipulation of the prices of securities, became a common practice in the money markets of the Northeast.

In 1867, Commodore Cornelius Vanderbilt attempted to add the Erie Railroad to his collection of lines in New York. Vanderbilt had created the New York Central and Hudson River Railroad, which largely replaced the Erie Canal in moving goods from Lake Erie to New York City. Competing with the Commodore's line was the Erie, controlled by Daniel Drew, who reduced rates, thereby causing Vanderbilt enormous difficulty.

The Commodore proceeded to purchase Erie securities to rid himself of this competitor. Aided by Jim Fisk and Jay Gould, Drew provided Vanderbilt with securities to purchase, selling the Commodore 100,000 unauthorized shares of Erie stock. Vanderbilt obtained from a friendly judge a warrant to arrest Drew, Fisk, and Gould, but the trio fled across the Hudson River to safety in Jersey City, surrounded by $6 million in cash and a group of guards.

Gould traveled secretly to Albany, where he spent half a million dollars bribing the legislature to legalize the issuance of the securities that the Commodore had purchased. Vanderbilt would say that fighting to gain control of the Erie and losing had "learned me it never pays to kick a skunk." Such scandals angered the public, which soon saw all railroad leaders typified by Vanderbilt, Drew, Fisk, and Gould.

JAY GOULD

For decades, American historians have titillated undergraduates with stories of the "Robber Barons," and frequently the businessperson used to illustrate the unrelieved rapaciousness of those Gilded Age vulgarians is Jay Gould, who is exhibit A for unrestrained capitalism. Journalistic accounts and "popular" historians such as Matthew Josephson and Burton Hendrick created a portrait of the "Mephistopheles of Wall Street" showing Gould to be a wizened, avaricious coward who helped form a legacy of unethical conduct that revealed the worst aspects of capitalism. Jay Gould (1836-1892) was known as "The Mephistopheles of Wall Street."

In 1986, historian Maury Klein published a lengthy, detailed biography of Gould that presented both an entirely different picture of the man and an analysis of the myths surrounding Gould. Born in rural Roxbury, New York, in 1836, the son of a farmer, Gould was not Jewish, as detractors later charged, and his given name was Jason, not Jay. A small, frail young man, he resisted farming and became successively a surveyor, tanner, and leather merchant. In the latter capacity, he journeyed to New York and discovered the stock ex- change. There his intensity and single-mindedness brought financial success. Not until the 1860s did Gould enter the railroad security market, but in 1867 with Daniel Drew and Jim Fisk, he formed the Erie Ring that became synonymous with fraud, manipulation, corruption, bribery, and ruthlessness.

An effort to corner the Gold Market two years later led to a national financial collapse on "Black Friday." Certainly to this point Gould's behavior appeared to justify the legend. Klein contends that once Gould had acquired a modest fortune, and rid himself of some unsavory associates, his renewed entry into the railway industry produced positive results. He argues that Gould was not a "raider" on the market and that after gaining control of the Union Pacific, Missouri Pacific, and Wabash railroads he committed himself to developing the properties.

Klein shows Gould constantly touring the railroads, seeking new industries for their territories, demanding improvements in equipment and operations, and often providing cash to the carriers when they were hard pressed. Despite ill health, family problems, and fiscal crises in New York, Gould labored to create viable, profitable railways. He reinvested profits to improve the system and introduced new technological advances. Klein argues that Joseph Pulitzer's statement that Gould was "one of the most sinister figures that have ever flitted bat-like across the vision of the American people" is simply wrong.

The Gould who emerges from this revisionist study is a builder, not a raider. He attempted to form the nation's first communications conglomerate with Western Union, the New York World, and the Atlantic cables. Gould loved his family and tried to protect his financial interests so that at the time of his death (in 1892), they would be secure. This new interpretation of Jay Gould stands in sharp contrast with earlier views and forces scholars to take yet another look at this so-called Robber Baron. Where intense competition existed between railroads, a reduction in railway rates often resulted.

The railroads established the concept of charging on the basis of the value of the product carried, and the railroads classified freight for rate-almost 50 percent, and the Northern Pacific by 46 percent. These reductions were more substantial than the decline in agricultural prices. Farmers received 37 percent less for their wheat in this period, and 25 percent less for their corn. Nevertheless, farmers, small businesspersons, and shippers in general argued that the rates were still too high.

The public believed that when the companies charged more for short hauls than for long hauls, it was discriminatory. Yet it was clear that such rates were necessary if the corporation were to have an equitable return on their investment. The railroads had higher rates for short hauls because their fixed charges had to be paid, and terminal charges were the same whether the haul was for 100 or 1,000 miles.

It was also evident that large corporations had distinct advantages in dealing with the railways and, where multiple-line service was available, could threaten to move their traffic if the railroads did not reduce rates or give a rebate on part of the charges. The debilitating effect of rate wars led the railroads to seek solutions.

The railroads created pools that divided traffic and income between particular points along competing lines. For example, the three major railroads between Chicago and Omaha decided in 1870 to split the traffic by thirds. The Iowa Pool gave rise to the development of freight associations, or pools, in various regions of the country. The pools worked relatively well, but in the early 1880s a series of railroad wars broke out, and many of these gentlemen's agreements collapsed.

Small shippers complained bitterly that the railroads granted rebates to larger customers. Standard Oil Company, for example, forced the railroads in its area to rebate over $10 million in only a year and a half. The railroads gave free passes to politicians, ministers, and community leaders to gain support. It became necessary for the railroads to seek such favor because of the ratemaking philosophy they had adopted. Most railroad managers firmly believed that they should, and could, "charge all the traffic will bear."

The railroads moved people and products at a fraction of the rates that had prevailed in 1860, but because of their heavy indebtedness, wildly fluctuating stock prices, short-haul—long-haul discrimination, rebating, and the granting of passes, the alienated public demanded regulation. Farmers in the West, small-business persons in upstate New York, grain elevator owners in Iowa, and other groups sought regulation in response to what they perceived to be abuses of economic power by the railroads.

In the 1870s, several states in the upper Midwest passed statutes known as Granger Laws. Named after their sponsors, the National Grange of the Patrons of Husbandry, or the Grangers, these laws created state railway commissions to establish maximum rates and end discrimination. The railroads fought back in the courts; but in 1877, in Munn v. Illinois, the Supreme Court upheld such state regulation.

Ratemaking by the states proved complex and difficult, and state legislatures and railroad commissions were often uninformed and disinterested in the plight of the companies being regulated. A series of appeals by the railways led to partial reversals of the earlier decision, and in 1886, the Supreme Court in the Wabash Case severely limited state regulation of railroads. Rates plunged and the carriers suffered.

Economies of scale did allow the railroads to reduce some rates drastically. Between 1866 and 1897, the rate for carrying wheat fell by 70 percent and the rate for dressed beef decreased 55 percent, but during those same period general prices declined by only 43 percent. The expansion of lines in the Great Plains brought further reductions. Between 1879 and 1889, the Santa Fe Railroad cut rates by 42 percent.

FEDERAL REGULATION

In 1887, the federal government responded to cries for national railroad regulation with the passage of the Interstate Commerce Act. This act created the Interstate Commerce Commission (ICC) whose primary responsibility was, according to the law, the regulation of the rail system. However, its vague language said only that rates should be "reasonable and just," that is, not so high as to destroy the traffic. The law prohibited rebates, pools, and higher rates for noncompetitive short hauls with the five-person ICC to administer and enforce the act.

The ICC could hear shipper complaints and examine witnesses, but the commission did not specifically receive the power to set maximum railroad rates. The commission could enforce its decisions only through the federal courts. The first five commissioners proved to be qualified and capable people, but in the following decade, the federal judiciary undermined their efforts to implement the law. Between 1887 and 1905, the Supreme Court ruled in favor of the railroads and against the government in fifteen of sixteen cases. The courts found that the ICC had no ratemaking power and that it could not effectively prohibit discrimination.

The Interstate Commerce Act did create a regulatory precedent. Perhaps more important than regulation was the impact of the depression of 1893 on the nation's rail system, as well as the subsequent reorganization of the carriers by the investment bankers of Wall Street and State Street. Companies operating one-third of the mileage of the American railroads entered bankruptcy between 1873 and 1897. A federal court decision in 1882 made it possible for the railroads to enter receivership with the management of the line acting as receivers. This decision allowed the railroads to recover financially and pay their creditors, but it also enabled the investment-banking houses to play highly influential roles in their reorganization.

By the late 1880s J. P. Morgan and Company and other banking houses not only refinanced the railroads but also came to dominate their boards of directors. Morgan reorganized the Reading Railroad in 1886, the Chesapeake and Ohio two years later, and the Baltimore & Ohio in 1896. Following the Panic of 1893, many railroads declared bankruptcy, and in four years over 40,000 miles of line with a capitalization (stocks and bonds) of more than $2.5 billion entered receivership. Morgan then reorganized the Erie, Northern Pacific, and Richmond Terminal (Southern Railway) during the 1890s.

Similar functions were provided by other banking houses such as Kuhn, Loeb, and J. and W. Seligman. The investment bankers reduced the debt structures and rationalized the distribution of routes; they also reduced competition. Nearly two-thirds of the nation's rail mileage fell under the control of seven financial investment groups. These transportation "communities of interest" came under increasing criticism from the reform-minded Progressives.

After 1903, state and federal investigations of the financial manipulations of the railroad companies were conducted, and charges of "loose, extravagant, and improvident" management were rife. Higher railroad operating costs led to increases in average freight rates after 1900, adding to general public hostility.

Consequently, pressure developed for further federal regulation of the industry. President Theodore Roosevelt and his attorney general sued under the Sherman Anti-Trust Act to dissolve Northern Securities Company, a giant holding corporation put together by E. H. Harriman and James J. Hill. Northern Securities controlled several of the major railways in the Pacific Northwest after 1902, but two years later the Supreme Court ordered Northern Securities dissolved. The year be- fore, Congress passed the Elkins Act, which made both the giver and the receiver of a railroad rebate liable for prosecution.

THE ATCHISON, TOPEKA AND SANTA FE RAILWAY

On April 26, 1869, the management of the Atchison, Topeka, and Santa Fe Railroad hosted a picnic to celebrate the opening of the first seven miles of track from Topeka to Wakarusa Creek, Kansas. Cyrus K. Holliday, the company president, predicted that this short, jerkwater line would soon extend to the Rocky Mountains, across the deserts of the Southwest to California, and even to the Gulf of Mexico at Galveston. In a flight of fancy, Colonel Holliday predicted that Santa Fe rails might one day reach Mexico City. His unbounded optimism was typical of the promoters of the American railroads in the three decades after 1865.

Holliday, however, was far more accurate in his predictions than the promoters and managers of most lines. Indeed, the Santa Fe, as it was soon known, did ultimately reach the destinations forecast by the colonel, with the exception of Mexico City. In the period from 1869 until 1892, the Santa Fe Railroad expanded rap- idly. Its base was Kansas and the wheat traffic, but soon lines reached Colorado, and then south through New Mexico and Arizona to the California border. There Collis P. Huntington and the Southern Pacific Railroad blocked expansion to the Pacific coast.

The Santa Fe then built a line into northern Mexico seeking a port on the Pacific. A series of battles with Huntington led the Santa Fe to construct lines to San Diego and Los Angeles. Kansas wheat farmers sought an outlet for their grain on the Gulf of Mexico, and the Santa Fe built a line south through Indian Territory to join the Gulf, Colorado and Santa Fe, which served Galveston, Houston, Fort Worth, and Dallas. Seeking an independent entry to the East, the Santa Fe built a line to Chicago.

The expansion in the 1880s increased at a rapid rate as the company sought to prevent competitors from acquiring lines in its territory. The company purchased the Colorado Midland in the Rocky Mountains and acquired control of the Frisco Railroad in the late 1880s. This heedless overexpansion brought the railroad to fiscal disaster. Santa Fe stocks and bonds sold at heavy discount with the interest on the bonds at an excessive rate.

The management concluded that it could no longer service these heavy debts, and on December 23, 1893, the railroad entered bankruptcy; a federal court appointed receivers. In 1894—1895, investment bankers in New York and Boston reorganized the Santa Fe Railroad. Many of the acquisitions were simply lost, including the Colorado Midland and the Frisco. The new management was led by E. P. Ripley. He served as president of the Atchison, Topeka, and the Santa Fe Railway from 1896 until 1918.

The Santa Fe before reorganization included track 9,328 miles of track and was capitalized at $647 million. The new operation began with a much-reduced mileage and capitalization. By the turn of the century, however, Ripley was once again expanding the company, but at a much slower rate and only where potential traffic justified growth. A new line was built to San Francisco, for example, and short cuts were constructed from the Santa Fe's tracks in New Mexico to its main line in Texas.

By 1906, the Santa Fe had 9,624 miles of track, but its capitalization was only $502 million. Indeed, Ripley not only expanded the company at a justifiable rate but also rehabilitated existing lines, purchased new locomotives and equipment, and rebuilt tracks laid before the reorganization. In two decades, Ripley created a vital and profitable corporation in the transportation sector of the economy. However, leading political figures, such as William Jennings Bryan, advocated federal ownership of the railroads, not regulation, as a solution. President Roosevelt, who opposed nationalization of the rail network, finally agreed to federal legislation incorporated in the Hepburn Act of 1906.

The Hepburn Act expanded the powers of the ICC to include express and sleeping car companies and pipelines, abolished the granting of passes, and strengthened the law against rebating. More importantly, the Hepburn Act gave the ICC power to establish "just and reasonable" maximum freight rates, thereby becoming a landmark in the development of federal regulatory policy. During the administration of William Howard Taft, the Mann- Elkins Act of 1910 further expanded the jurisdiction of the ICC. The burden of proof as to the "reasonableness" of rates fell on the carriers. The Progressives capped their regulatory efforts with the Railroad Valuation Act of 1913.

This legislation ordered the ICC to evaluate all railroad property. The law proposed to estimate the "true" worth of the lines for the basis of establishing freight rates. Senator Robert M. LaFollette argued that the railroads wished to base rates on inflated values, or "watered stock," rather than upon the actual value of their operating properties.

Ironically, the Progressives limited the ability of the railroads to raise additional investment capital at the very time when hundreds of millions of dollars were needed to modernize the system. The railroads invested in larger, more powerful locomotives, freight-car fleets were expanded, and passenger cars became longer, heavier, and more luxurious as steel replaced wood construction. Some railroads built extensive new city terminals.

The Pennsylvania Railroad dug tunnels under the Hudson River to reach its new midtown New York City station, and both the Pennsylvania and the New York Central began to electrify major urban trackage. Most companies replaced lightweight rails with steel rails of much heavier carrying capacity. Even as major capital improvements were conducted, the railroads faced increasing demands for higher wages from railroad workers. Over a million rail employees in 1900 earned an average annual wage of $567.

By 1916, 1.7 million workers were earning an average of more than $880 per year. The unionization of the workers contributed to their relatively high wages. Increased wages and greater capital expenditures brought the operating ratio (the ratio of operating expenses to operating revenue) of the railroads from an average of 66 percent in 1890 to almost 70 percent by the time of World War I. When the railroads requested rate increases from the ICC, however, the commission denied them under the authority granted by the Hepburn Act and the Mann-Elkins Act.

The ICC simply inhibited the modernization efforts. Railroad mileage in the United States peaked in 1917, a year in which the companies were called upon not only to meet domestic demands but also to prepare for entering World War I. Despite the hindrances placed on the railroads by the Progressive legislation, modernized plants existed on some of the carriers. Between 1900 and 1915 general price levels in the country increased by 30 percent while average railroad wages rose by more than 50 percent.

The taxes paid by the carriers tripled, yet gross earnings only doubled in that decade and a half and freight rates remained almost unchanged. As the carriers sought to cope with traffic conditions produced by the war, management found only public ill will. When in 1916 the four operating brotherhoods demanded an eight-hour day instead of a ten-hour day, negotiations collapsed. President Woodrow Wilson attempted to serve as mediator, but his compromise proved unacceptable to management, and a general strike appeared imminent. When the negotiations between the president and the railroad companies broke down, Wilson complained bitterly, "I pray God to forgive you, I never can."

Threatened with a nationwide strike, Wilson asked Congress to approve legislation creating the eight-hour day, and the Adamson Act became law. The immediate issue had been re- solved, but labor relations remained highly unsatisfactory in the spring of 1917, when Wilson requested a special session of Congress to hear his request for a declaration of war. The outbreak of war in April found the railroads attempting to deal with a shortage of cars. Over 180,000 freight cars were blocked in America's ports with no place for their cargoes to be unloaded. The railroads attempted to meet the problem by forming the Railroads' War Board, which organized car pools and coordinated operations.

The railroad executives on the board were hampered by the Sherman Anti-Trust Act, which limited cooperation by the carriers. By December, the ICC recommended that President Wilson assume control of the nation's railroads, and on December 26, the president issued a proclamation for government operation to begin within forty-eight hours. Wilson appointed William G. McAdoo director general of the rail- roads. McAdoo formed the United States Railroad Administration (USRA), and throughout the remainder of the war, USRA brought the nation's railroads under one system. Duplicate trains were terminated, stations closed, unnecessary civilian traffic eliminated, and competing routes coordinated.

McAdoo declared stringent controls on utilization of freight cars and purchased 100,000 new freight cars and almost 2,000 locomotives built to standardized USRA specifications. McAdoo also granted a series of wage increases for the workers, including one of almost 40 percent. The workers on the USRA saw average wages increase from $1,000 a year to $1,800 a year in 1920. Total labor costs rose from $1.8 billion in 1917 to $2.7 billion in 1918.

Average railroad wages by 1920 stood more than a third higher than those in manufacturing; the proportion of each dollar the railroads earned going to labor costs rose from forty cents in 1917 to fifty-five cents in 1920. The cost of coal nearly doubled during the war years, although freight movements increased by only 11 percent in 1920. The average operating ratio of 65.5 percent in 1916 soared to 94.3 percent in 1920. Federal control of the nation's railroads cost the taxpayers over $1.1 billion before the government returned the companies to their owners on March 1, 1920.

Some Americans proposed federal ownership of the railroads, and one labor leader, Glenn E. Plumb, urged the government to purchase the railroads and operate them with a fifteen-person board. This plan won little public support. Congress, however, did pass the Transportation Act of 1920.

This new legislation again increased the power and responsibilities of the ICC; however, the law provided that the carriers should receive fair rates of return on their investment. The original figure was 5.5 percent. The ICC finally granted freight rate increases ranging upward to 40 percent. The act also encouraged mergers to provide operations that are more efficient and gave the ICC greater control over new construction and abandonments.

The ICC to prevent elimination of superfluous mileage would misuse the latter power. Ironically, the federal government expanded its regulatory authority at a time when the railroads faced increasing competition from other forms of transportation. Congress passed the Transportation Act of 1920 based on assumptions that had some validity in the 1890s.

However, Congress failed to perceive the major impact on the railroads of the automobile, pipelines, an expanding trucking industry, intercity buses, and the incipient airlines. The nation's rail industry had peaked in importance in 1920 as other transportation industries began to diminish the significance of the rail system.

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