**The Expansion of Commerce**

Although the Constitution organized the American states into what was then the largest free-trade zone in the world, geographical constraints sorely inhibited trade and commerce. Enormous physical obstacles and great distances divided the republic. Henry Adams wrote, "No civilized country had yet been required to deal with physical difficulties so serious, nor did experience warrant conviction that such difficulties could be overcome."

From colonial times to the beginning of the nineteenth century, the movement of goods from the places of production to the points of sale continued to be a major problem for merchants and consumers alike. Throughout much of the nation, goods were transported by water from coastal port to coastal port and along navigable rivers and streams. Some freight moved over primitive, rutted roads, but in many areas, the absence of roads meant that commodities could be transported only by packhorse.

The cost of shipping items in such fashion often exceeded their value. Conditions for travelers were equally as bad. A five-day trip north from Philadelphia would take a traveler only as far as Connecticut. The political and economic leaders of the country recognized the obstacles to commerce that distance and geographical barriers presented. Entrepreneurs and politicians proposed many internal development schemes to improve transportation. In most instances, these involved local and state improvements, and the projects called invariably for the expenditure of substantial amounts of capital.

GOVERNMENT AID AND TRANSPORTATION

It became clear to many Americans that the transportation needs of the country were so large that more than private, state, and local government support was necessary—the aid of the federal government was essential. When Secretary of the Treasury Albert Gallatin issued his report on "Roads and Canals" in 1808, he emphasized the necessity of federal involvement in the transportation system.

Business leaders and politicians knew that the nation had vast resources, but they were of modest value without transportation. Farms and factories could only be located near navigable waterways or the few improved roads. Although by the time of the War of 1812 the frontier stretched beyond the Alleghenies, commerce remained dominated by the seaports along the Atlantic coast where the majority of America's over 8 million people lived.

Large-scale economic development would be limited until the coming of more efficient and less expensive transportation and that could only be achieved when the issue of providing capital for internal improvements had been resolved. The marketing and distribution of goods de- pended upon an expanded transportation system. People of vision who seized the opportunities that the nation provided created the transportation revolution that occurred after 1800.

Business owners, whether they were natives or immigrants, prospered be- cause the social structure allowed for their emergence, as did the open nature of the economic order. No less important was the aid of government. The United States government from its beginnings promoted transportation, encouraged manufacturing, and protected commerce. While it had no central plan, there was, nevertheless, a deliberate effort to stimulate economic growth. The federal government did not engage directly in massive public enterprises, but political leaders believed in the importance of aiding transportation whether it be the building of roads, improving rivers, developing canals, or, later, promoting railroads.

The federal role was still less important, however, than that of the state, county, and city governments. The federal government subsidized transportation through tariffs, engineering surveys, and land grants. Only to a limited extent did it pro- vide cash loans and subsidies, but between 1816 and 1830 it completed the Cumberland or National Road and purchased securities in four canal companies.

Some economists debated that economic growth in this period was the function of the marketplace, and that the price of goods and services and production factors generally explain the economic expansion and change. It is evident that government as an institution played a major role in the transportation sector.

In the first half of the nineteenth century, several competing forms of transportation emerged with technological change stimulated by private and public investment. As each new mode developed, it largely replaced the preceding system. The turnpike with its stagecoaches and wagons gave way to the canal with its packets and line boats. In turn, the canal would be supplemented by the steamboat, and then replaced by the railways. Private investors and state and local governments promoted and developed the turnpikes and canals.

Similarly, the federal government supported the expansion of foreign commerce and an American merchant marine. These transportation systems provided the base for an industrial economy that became firmly established by the time of the Civil War. The first major effort to improve transportation was the construction of roads and turnpikes.

ROADS AND TURNPIKES

The American colonists did not build roads. Their primary commercial arteries were the creeks, rivers, and bays along the coast. As they moved into the interior, they followed the Indian trails. The trails were narrow but direct, and with the removal of trees and underbrush it was possible for wagons to traverse some of the routes. The wagon traffic that developed was intermittent, and freight rates were extraordinarily high. Wagoners charged as much as $5 to transport a barrel of flour ten miles.

In the 1790s state governments sponsored road-building programs to facilitate the movement of freight and people. By 1815, a system of roads joined much of the settled area of the United States, but the roads were often simply cleared spaces between the trees. In swampy areas, the roads became a series of mud holes, and in dry periods, the surface turned to a deep layer of dust. Some roads surfaces were covered with logs placed side by side to form what became known as a "corduroy road."

There were few bridges; rivers crossed at fords or on ferries. Country roads tied farms to nearby towns where produce could be taken to mills, gins, and stores. Usually the villages were located on navigable water allowing for commerce beyond the immediate locality. Bulky produce could not be moved far beyond the waterways, however.

Prior to the War of 1812, the New England states, and to some extent turnpikes linked the Mid-Atlantic States. The turnpikes charged tolls, and in most cases were built by private-stock companies chartered by the state governments. The turnpikes connected the most important cities, and some of the best "pikes" were built with stone foundations and a gravel surface. Drainage ditches on either side kept the roads dry, and some of the turnpikes reduced grades by cuts and fills.

From the time of the War of 1812 through the mid-1830s, the states chartered numerous turnpike companies. Pennsylvania alone issued 86 charters to firms that built more than 2,000 miles of road at an expenditure of almost $40 million. New York had 135 companies that constructed over 1,500 miles of roads. The turnpike developers formed corporations to build the roads. Most of the companies were small in terms of capitalization, but hundreds of thousands of dollars were invested in some of the larger schemes.

Farmers, business leaders, storekeepers, manufacturers, and wealthy merchants bought the securities. State and local governments participated in the financing by purchasing securities, and occasionally they acquired complete ownership. In Pennsylvania, the state owned almost one- third of the securities of the turnpikes. In Ohio, the government purchased a similar share, and even Virginia, a state that did not normally engage in support of commerce, purchased $5 million in turnpike stocks and bonds.

The Expansion of Commerce 95 The turnpikes often reduced the time necessary to ship commodities by as much as 50 percent, but still the movement of goods remained very slow. Wagoners averaged only 20 miles a day or 2 miles an hour. For example, it took almost a month to ship goods from Boston to Baltimore. The turnpikes also reduced shipping costs, but hauling remained a very expensive form of transportation. At fifteen cents a mile, flour could be profitably shipped no more than 150 miles.

Turnpikes failed to provide cheap transportation for bulky goods. The turnpike movement declined during the 1830s and 1840s. The toll roads were often crowded, but rarely did the traffic generate substantial financial rewards for the owners. Even the most profitable routes rarely paid dividends exceeding 5 percent. In Pennsylvania, a few of the turnpikes provided revenue sufficient to pay for repairs and maintenance, but as business enterprises the turnpikes were poorly organized and managed.

Financial difficulties became the rule rather than the exception, problems that led the states to acquire the pikes and turn them into free public roads. It became evident by the 1820s that any large-scale road system needed the support of the federal government.

THE NATIONAL ROAD

Within the federal government, voices in both the Congress and the cabinet called for federal aid to construct a road network. The postmaster general pointed to the need for adequate transportation to move the mail, and the secretary of war noted the difficulties of moving troops in the absence of a road system. The only significant federal road-building project, however, was the Cumberland Road, or the National Road, extending from Cumber- land, Maryland, west to Wheeling, Virginia, and on to Ohio, Indiana, and Illinois.

Construction of the National Road was underway by the time the War of 1812 ended. The federal government extended the road west across the Allegheny Mountains to Wheeling by 1818, but intermittent funding slowed construction. Only in 1833 did the National Road reach Columbus, Ohio; by 1850, the road extended into central Illinois.

For more than half a century the National Road represented the largest federal internal improvement project. Conestoga wagons and stagecoaches followed the advance of the National Road into the Old Northwest, and by the 1840s traffic on the road boomed. In states like Ohio, Indiana, and Illinois, the public and politicians clamored for additional federal projects and improvement of the National Road, but this would not be done.

Many citizens felt that those who used the roads should pay for their maintenance. Indeed, in Indiana the Hoosiers chanted: “The roads are impassable— Hardly jackassable; I think those that travel 'em - Should turn out and gravel 'em.”

ROADS TO THE WEST

The Hoosiers were not alone in demanding federal aid for roads, and the government responded indirectly. With the admission of Ohio to the Union in 1803, Congress required that 5 percent of the money from the sale of public lands in that state be allocated for road construction. Two-fifths of these funds were appropriated by Congress and three-fifths disbursed by the Ohio legislature.

It appears, however, that a substantial amount of the proceeds was used for political purposes. While some presidents, including James Madison, urged the construction of roads under national authority, and numerous road bills were introduced in Congress, opposition by other politicians precluded such developments. Arguing that federally sponsored internal improvements were unconstitutional, Andrew Jackson vetoed an appropriation for the Maysville Road.

Congress divided sharply when it attempted to allocate money for federal projects. Southerners wanted roads in their region, while westerners fought for roads in the Old Northwest. Some federal funds were appropriated for the construction of post roads, that is, roads designed to transport the mail, but the monies provided were always very small. In only one respect did the federal government provide important and continuous aid to road construction, and that was in engineering support for such projects.

The United States Military Academy at West Point represented the primary source of engineers in the United States. The engineers who graduated from West Point surveyed routes for roads, canals, and railroads. Even river dredging and harbor improvements came under the direction of the Corps of Engineers. Their duties included not only supervising the construction of roads and canals but also the removal of snags from rivers, the deepening of harbors, and the drawing of maps and topographical surveys for road, and later railroad, builders. The government justified the use of the engineers on the grounds that these projects were "defense-related."

Roads became the primary means of transportation first in the Old Northwest and then in the trans-Mississippi West. Throughout much of the nineteenth century, wagon freighting left a record of service to frontier development. Huge Conestoga wagons pulled by teams of oxen, mules, or horses moved goods from river ports and railroad terminals to the isolated settlements of the West. The wagoner represented an important link between the centers of trade in the East and the frontier merchants, farmers, and miners. The federal government recognized the importance of the roads, and in the 1840s and 1850s it dispatched the Corps of Engineers into the West to help in the selection of routes.

The expansion of the nation's road system did not prove revolutionary in terms of freight rates. The transportation of heavy and bulky goods, particularly agricultural commodities, remained tedious and expensive. As late as 1850, the cost of moving freight by wagon averaged fifteen cents a ton-mile.

Skeptical farmers and merchants believed that water-borne commerce would be much cheaper and, in many instances, faster. Water- borne commerce remained limited until a better source of power could be found. And indeed, the coming of the steamboat and the canal era would, in many parts of the country, diminish the importance of the wagoner. By the 1830s, the canals and steamboats had reduced freight rates and stimulated the growth of the nation's cities.

THE CANAL ERA

Even as Americans extended their road network, they also determined to improve water-borne transportation. It has been estimated that as early as 1818, two-thirds of all marketable crops in some regions had to be grown within five miles of a navigable stream. However, river traffic was often limited; it was seasonal, there were floods, or alternatively, low water could halt the flatboats. The movement was nearly all downstream with little upstream traffic because of the enormous expenditure of time and effort required to fight the current.

Many Americans eagerly sought to remove the natural restraints on waterborne commerce. Both Benjamin Franklin and George Washington had endorsed the improvement of rivers and the construction of canals even before the American Revolution. A few short canals had been built near Boston, Norfolk, and Charleston, but none was significant. Most Americans probably agreed with Thomas Jefferson when he wrote in 1808, concerning a proposal for a canal across upstate New York, "It is a splendid project and may be executed a century hence. ... It is little short of madness to think of it at this day!"

Many Americans thought the canal seemed the answer to their transportation needs, and they embraced it with extraordinary enthusiasm. The great canal building era occurred between 1815 and 1860 and was supported by land grants and stock subscriptions from government at all levels. More than 4,200 miles of canals were built at a cost exceeding $200 million. However, this transportation breakthrough occurred only after great effort.

Canal construction in Great Britain had begun as early as the 1760s, but because of the heavy expenditure of capital required little had been done in the United States. The nation needed a successful example to show that capital investment could be raised and that a profit could be returned to the investors. The example the Americans needed was the Erie Canal.

Easily the largest internal improvement project in the nation's history until that time, the Erie Canal was built for many reasons, not the least of which was nationalism. Americans in the period after the War of 1812 subscribed to a nationalism that emphasized unity, and the Erie Canal was seen not only as an important economic development for the state of New York but also as an internal improvement that would help bring the country together. Designed to cut through the Mohawk gap in the Appalachian chain—thereby linking the Great Lakes near Buffalo with the Hudson River in upstate New York—the canal was a bold and dramatic scheme based on an optimistic view of the future.

The population in the area along the route was quite small, the largest town having only 6,000 people in 1820. In 1816, the legislature passed an act allowing construction of the canal, and a subsequent law created a canal fund with state support. Those who promoted the project argued that it would not only develop the land, improve the economy, and enhance communications, but that it would also help to meet military threats directed from Canada.

Construction began in 1817, and continued for eight years. Forty feet wide, 4 feet deep, and some 363 miles long, the canal overcame 565 feet of elevation by eighty-three locks and crossed numerous streams on eighteen aqueducts. The New York legislature appropriated $2 million for the canal, but this sum proved inadequate as the total cost exceeded $7 million.

In October 1825 completion of the Erie Canal was celebrated with "the Wedding of the Waters" of Lake Erie and the Atlantic Ocean. Completion of the canal led to the development of packet lines. The packet vessels, usually 80 feet long and 14 feet wide, carried forty to fifty passengers. By 1836 over 3,000 boats traveled the length of the canal. A vast freight business developed with wheat and flour being brought from the Great Lakes east along the canal and down the Hudson River to the port of New York. It also proved an important route west for immigrants from Europe. Reaching New York City, they then took riverboats up the Hudson, and packet boats on to Buffalo. From there they journeyed into the Old Northwest.

Traffic exceeded expectations, particularly coal shipments, and by the 1850s, the canal had to be enlarged. At no point did the federal government provide aid for this project. DeWITT CLINTON Political detractors in New York referred to the Erie Canal as "Clinton's Ditch," and some opponents wished to deny him credit as its primary promoter. However, DeWitt Clinton, who combined careers as officeholder, lawyer, and businessperson, became the most powerful politician in New York.

Clinton belonged to that segment of American society, which believed national development was dependent upon internal improvements; he spent much of his life urging the state of New York to build the Erie Canal. Born in New York in 1769, Clinton graduated from Columbia College, studied law, and was admit- ted to the bar. In 1797, he initiated his lengthy political career, being elected to the New York State Assembly.

The leading Democratic Republican in New York, he won a United States Senate seat in 1802 but resigned the following year to become mayor of New York City, a position he would hold three times. As mayor, he not only developed the city and its services, particularly public education, but also became the primary advocate of a water route connecting the Hudson River and Lake Erie. His advocacy of internal improvements gained him the support of northeastern Federalists in 1812 when he ran against James Madison for the presidency.

Many fellow Democratic Republicans never forgave Clinton for his opposition to Madison. After 1815, Clinton devoted himself to promoting the canal. Clinton proved inept at political intrigue; nevertheless, he developed a coalition in support of "Clinton's Ditch." As early as 1810, Clinton began service on a canal commission that sought unsuccessfully to obtain federal aid for the project.

Elected governor in 1817, he continued to fight for the canal because he believed that the project would not only aid the port of New York, but it would also help to develop the whole state. In 1824 Clinton's political opponents removed him from the New York Canal Commission; however, an irate public reelected him governor, and when the Erie Canal was completed in 1825, Governor Clinton participated in the opening ceremony. Throughout his career, Clinton emphasized that canals would bind the nation together, and his motivations were largely those of an American nationalist.

In that respect he is not unlike Daniel Webster, Henry Clay, and other leading politicians of the pre—Civil War era who saw internal improvements not only as aiding the economic development of the United States but also as creating an American nation. The Erie Canal had been built because a generation of New Yorkers determined to exploit the underdeveloped economic resources of their state. The New York government took on this vast project and its several branches because the huge capital expenditure proved too large for any individual or for a private corporation. As one student of the Erie Canal has written, "The canals marked a turning point in the tradition of state intervention in the economy."

Traffic on the canal expanded rapidly following reductions in tolls in the 1830s and 1840s. It became a cheap means of conveyance, and even after the completion of competing rail lines canal traffic continued to grow. Low-value tonnage shifted to the canal, particularly agricultural and forest products. By the time of the Civil War most of the canal traffic moved from west to east, some 80 percent, indicating the degree to which the Old Northwest had become settled and how its economy had matured.

The economy of New York City boomed with the opening of the Erie Canal. The city's competitors—Boston, Philadelphia, Baltimore, and Charleston—sought similar projects to reach their hinterlands. Despite their serious efforts, however, its rivals, financially and economically, could not challenge New York’s predominance.

The wave of enthusiasm for canals led to the construction of projects to improve transportation between the upcountry and tidewater in states along the Atlantic from Maine to Virginia. Other projects sought to link the Atlantic coast states with the Ohio River valley, and western canals connected the Ohio and Mississippi river systems with the Great Lakes.

In Pennsylvania, canals brought coal to Philadelphia. The anthracite canals, as they were called, were often built with private funds rather than with state money. Philadelphia sponsored the so-called Pennsylvania system, a 394- mile-long route extending from Philadelphia west to Pittsburgh. The Alleghenies proved too steep for a lock system, so incline planes were developed that pulled the barges up one side of the mountain and lowered them down the other side.

Canal boats moved westward with cargoes of hardware, notions, calico, and manufactured goods, and they returned carrying timber, wheat, whiskey, furs, and livestock. Sometimes enthusiasm for the canals led to projects of dubious economic viability. In several states, millions of dollars were invested in canals. Following the models of Pennsylvania and New York, the states of Ohio and Indiana built elaborate systems.

In Ohio, canals interlaced the state, connecting its major cities and navigable rivers. State securities, marketed in England, paid for these projects. In 1836, the state of Indiana began a massive canal program, and within five years the state debt exceeded $13 million, of which $9 million had been spent on the canals.17 by 1840 over $125 million had been expended on the construction of more than 3,000 miles of canals in twenty states. Much of the financing came from the state and local governments, probably 70 percent of the total investment. The canals had often been conceived of as civic rather than business enterprises. Why had public rather than private enterprise been the vehicle for canal construction? It was clear that public investment was necessary because of the size of the projects. However, the questionable private rate of return was outweighed by the larger benefits to society—the social rate of return.

Congress recognized the need for federal aid for internal improvements, and, despite denying funds to the Erie Canal; it subsequently contributed toward the construction of other projects. The federal government by the time of the Civil War had granted approximately 4 million acres of the public domain to help finance construction of canals in the Old Northwest. In addition, it subscribed to over $3 million in the securities of canal companies.

The states, however, were the major sources of capital for their construction. Therefore, state debts became enormous, and the funding of these debts exceeded the ability of the states to pay. Indiana and Pennsylvania were virtually bankrupted by their canal bonds, and Ohio's credit was badly strained. Nevertheless, the canals made important contributions to the economic growth of the nation. The canals drastically lowered freight rates. Where canals had been built, the rates fell from an average of 15 cents a ton mile by road to 2.3 cents by canal boat. These low rates spurred the development of the upper Midwest and reoriented trade routes from a north-south axis along the Mississippi River to an east-west traffic along the major canals.

Most of the canals lost money yet; they provided benefits in the form of better transportation at lower rates. The completion of the canal systems was particularly important for the development of major cities. The anthracite coal brought to Philadelphia by the canal system helped to create heavy industry in that city; in turn, the growth of the coal and iron industries caused the merchants of Philadelphia to shift their investments from shipping to manufacturing.

The canals contributed to the organization of American business. Because the canals operated over substantial distances, a complex organizational structure had to be created. The executives of the canal companies initially had little knowledge of managerial functions. Actual construction forced the development of a structure that organized the canal into divisions. Each division was the responsibility of an engineer who would survey the route and then inspect the progress of construction. A chief engineer at the canal headquarters supervised the work of the men in the field. A technical task rather than administrative, all they had to do was lay out the line and see that the contractors carried out the construction. A board of directors, either public or private, raised the funds and made the ultimate decisions on terminals and general locations.

The operation of the canal called for a more complex administration than had its construction. In some cases, the chief engineer in charge of planning became the general superintendent. He supervised the employees who operated the locks, collected the tolls, and maintained and repaired the canal. While essentially a simple organization, it was more complex than that of most businesses in the nation.

THE CHESAPEAKE AND DELAWARE CANAL

Even before the Revolutionary War, the cities of Philadelphia and Baltimore became intense rivals for the trade of the Mid-Atlantic States. Philadelphia, located on the Delaware River above Delaware Bay, had access by water to western New Jersey and eastern Pennsylvania. Baltimore dominated Chesapeake Bay and the Susquehanna River valley that extended north and west into Pennsylvania. The merchants of Philadelphia looked askance as its rival drained away the wheat, flour, and lumber of a part of Pennsylvania that Philadelphia considered its own.

The merchants of Baltimore sought to gain a more direct route to the Atlantic Ocean than that which extended south through Chesapeake Bay to its perilous entrance into the Atlantic. Therefore, leaders of both cities saw an advantage in digging a canal across the narrow isthmus that separated the Delaware River from the upper reaches of Chesapeake Bay. At one point, the isthmus was only about 14 miles wide, and the terrain extended only 100 feet in elevation above sea level. Boats from Philadelphia could use the canal to reach the Susquehanna, and ships from Baltimore could save many miles on trips to the Atlantic. By the 1790s, considerable agitation had developed in Maryland and Pennsylvania for the construction of what became known as the Chesapeake and Delaware Canal.

In 1804-1806, the famous engineer and architect Benjamin Latrobe surveyed the route for the Chesapeake and Delaware Canal Company. Subsequent efforts to obtain federal support for the canal were unsuccessful until 1823, when Secretary of War John C. Calhoun agreed to provide army engineers to consult with the canal company on the site and the excavation work. Recognizing the military and strategic value of such a canal, the federal government in 1825 purchased $300,000 in stock of the company.

The company initiated construction in 1824, and during the next five years excavation work proceeded. In 1829 the canal opened, but not until the federal government had purchased an additional $150,000 in stock. The Chesapeake and Delaware Canal symbolized the canal era, but while most of the canals would fall into disuse and disrepair during the railroad era, it remained operative.

The Chesapeake and Delaware connected two of the most important waterways, and by the time of the Civil War, it had become part of the national transportation network. Eventually, because of the need to deepen and widen the channel, the federal government took over the route, which became a part of the Intercostal Waterway System. The Chesapeake and Delaware Canal is yet another example of the importance of federal and state aid to internal improvements before the Civil War. The canal era ended because of a number of factors. The financial crisis of 1837 brought catastrophe to some of the states that had invested heavily in canals. Their costs often exceeded engineering estimates, and revenues fell far short of expectations. Poor management in many instances precluded the generation of profits.

Canals in the Northeast and the upper Midwest were often closed in the winter because of ice. These factors contributed to their financial woes, which worsened with the coming of the railroads. Nevertheless, the canals served as effective links to the large river systems, particularly the Mississippi River and its tributaries. It would be on these rivers that another form of transportation would add a new dimension to the transportation revolution. On the rivers of the West, as well as in the East, the steamboat would provide a faster and more effective conveyance for water-borne commerce.

THE STEAMBOATS

While the canals eased the problems of large-scale commerce in the North- east and the Old Northwest, the rivers in the central portion of the United States remained the primary means of transporting goods to the Gulf of Mexico. Agricultural products were floated downriver in flatboats on journeys of a thousand or more miles.

Flatboats from western Pennsylvania, for example, reached New Orleans in a month to six weeks, but only a few keelboats or barges returned upriver. Moving a flatboat from New Orleans to Pittsburgh, a journey of almost 2,000 miles, could consume four months or longer. On a few expanses of the great rivers, sails could be used, but generally to move upstream flatboat men simply poled their vessel or some- times rowed. On some tributaries, the swift currents, shallow water, or narrow, winding channels precluded the use of even a flatboat. In order to make maximum usage of the navigable waters, a new power source had to be found. The solution was the application of steam power to water transportation.

Several American inventors and engineers demonstrated that river- boats could be moved by steam engines, but the means to apply steam power was limited by the available technology. Finally, in 1807, Robert Fulton demonstrated the commercial feasibility of a steamboat on the Hudson River. The War of 1812 precluded further immediate developments, but after basic technical problems had been resolved and engineering concepts were devised for the construction of steam-powered vessels, Americans created a new business.

Extensive steamboat service could soon be found in the northeastern, southern, and western portions of the United States. Numerous inland towns became great river ports—cities such as Louisville, St. Louis, and Memphis. While the steamboat had been first used in the East, it was the tremendous Mississippi River system that saw this form of transportation achieve its greatest success. Army engineers estimated that 16,000 miles of waterway were available to steam navigation, which by 1830 dominated river transportation. During the next four decades, steamboats played an important part in the development of the United States.19 Steamboats drastically reduced the cost and time necessary to transport goods on the inland waterways.

By 1850 trips along the Mississippi River, which had taken ninety days or more by flatboat, could be made in less than a week. Some flatboats and keelboats remained in service on the Mississippi and its tributaries, particularly in isolated areas or where the rivers were shallow, but even there small steamboats were built that drove these crude craft from the waterways. Indeed, vessels moved up the Missouri River as far as Fort Benton, Montana. Furs, timber, lead, grain, and other products flowed downriver to the port of New Orleans. Many of the larger vessels were 300 feet long and carried three to four hundred passengers on the decks besides those in the palatial cabins.

The western steamboats looked like floating wooden castles as they glided along the river. Yet the average life span of a steamboat on the Mississippi was only five years. Snags, boiler explosions, collisions, and other catastrophes often destroyed these ornate vessels.

Steam navigation also appeared on the Great Lakes. By the 1830s, steam dominated the transportation of passengers on Lakes Huron and Michigan, and over 360 steam-driven ships could be found on the Great Lakes by 1860. Many of these lake steamships exceeded 1,000 tons, and a few, like the City of Buffalo of over 2,200 tons, were giants. In many ways, the lake steamers resembled ocean rather than river craft because of their deep hulls and low superstructures. These were not mere modifications of ocean ships, however, but entirely different vessels. By mid-century, the tonnage on the Mississippi River and on the Great Lakes exceeded that of all shipping from New York City by over 200 percent.

Shortly after Fulton demonstrated the economic viability of steam power, steamboat companies emerged. Little capital was required to enter the business: There was no construction or maintenance of a right-of-way, but simply the acquisition and operation of a vessel. A medium-sized steam- boat cost from $20,000 to $60,000, and such a sum was not beyond the ability of one person or a small group to raise.

Partnerships, corporations, and proprietorships operated the steamboats. Much of the original capital came from merchants, but soon other investors bought the securities of the steamboat companies. On the Mississippi River, each steamship was often a separate venture owned by a small group. A disastrous accident could wipe out such firms, but profit levels remained relatively high even after the coming of the railroads. Ironically, while the steamboat helped to stimulate the economic growth of the nation's heartland, ocean steamers signaled a decline in American maritime activity.

THE MERCHANT MARINE

The rise of steam navigation in the American maritime service paralleled the development of the steamboats in the rivers. The sail-powered shipping industry of the United States peaked in the early 1800s and entered a decline by the 1830s. The great increase in shipping at the outset of the nineteenth century can largely be explained by the wars in Europe. The military adventures of Napoleon kept Europe in turmoil until 1815, and the United States, taking advantage of its position as a neutral, became an important factor in international commerce. Americans provided Europe with imports from the rest of the world by utilizing the superiority of their ships and their entrepreneurial abilities.

The federal government also played an important role. From the time of the Constitution, the government strongly encouraged the maritime industry. Goods brought to the United States by American ships received a 10 percent reduction on tariffs. Another law gave United States shippers a virtual monopoly of the coastal trade. Yet another statute required that American ships pay the port tax only once a year if engaged in coastal shipping; foreign ships were required to pay the tax at each port. Likewise, state governments in the Northeast and the Mid-Atlantic States, and the governments of the major port cities, attempted to stimulate international and coastal commerce.

Baltimore, Philadelphia, New York, and Boston labored mightily to promote their ports. Merchants in each of those cities often specialized in one commodity. Baltimore, for example, tended to be a major port for the export of wheat, while New York dominated the cotton trade. Indeed, by 1810 New York became the nation's major port of entry, and its lead increased markedly by 1820.

No other city could rival New York's geo- graphical setting, and none was more strategically located. Further, the citizens of New York engaged in an aggressive policy to attract foreign trade. The city established an auction system for disposing of imports; merchants organized regularly scheduled transatlantic packet services; investors created a coastal trade that brought the cotton traffic to the city; and finally, as has been seen, residents of New York promoted the Erie Canal. Therefore, the city received an enormous flow of goods from the West.

Although Philadelphia continued to remain important as an exporter of wheat, its future seemed to rest in finance rather than in trade. Baltimore's merchants developed the swift clipper schooners in the coastal trade, created markets in Latin America, and aggressively sought the pro- duce of the Ohio valley. Charleston, South Carolina, once one of the nation's leading ports, declined and was stagnant by the 1830s. New Orleans, however, entered its greatest growth period after 1815 with products from the Ohio, Tennessee, Mississippi, and Missouri valleys flowing downriver to the Crescent City. With steam transportation firmly established, New Orleans became the nation's second major port. For a few years in the late 1830s and early 1840s, the exports from New Orleans actually exceeded in value those from New York.

Those who dominated the seaports and the ships that plied the coastal waters were merchant capitalists, often the leading citizens of the cities in which they resided. They bought and sold goods, both at wholesale and retail, owned and sometimes built their own ships, and in many cases had commission agents or factors in other coastal cities performing functions that included banking. The commercial newspapers in the ports reported their activities, and these newspapers advertised the wide variety of services they offered. Their warehouses, wharves, and stores filled with commodities from all over the world.

Casks, bales, barrels, and boxes contained the agricultural products and industrial goods from American farms and factories being exported for the world market. These merchant capitalists located credit or working capital both in this country and abroad, and in many cases they borrowed from local banks to cover their charges. As American trade expanded, specialization by merchants increased, and by the middle of the 1840s, there were sixty different types of importers in New York City alone.

One of the most profitable of the maritime ventures was the China trade. As early as 1784, a group of New York and Philadelphia merchants sent the vessel The Empress of China to the Far East. After a 15-month voyage, The Empress returned with a cargo of tea and silk. The profits proved extraordinary, and Philadelphia soon became the center for trade with China. Ships sailed to China carrying cargoes of turpentine, tar, wine, brandy, and hard cash, but perhaps their most important item was ginseng, a root, which the Chinese believed, slowed advancing years and acted as an aphrodisiac.

Not all of the thirty to forty ships that sailed to China each year matched the 25 percent profit returned by The Empress of China, but between 1804 and 1846 the trade made wealthy people of some residents of the City of Brotherly Love. Stephen Girard, a Philadelphia merchant, be- came a leader in this trade. Girard placed his profits in more ships, land speculation, banking, manufacturing, and other forms of transportation. The Philadelphia merchants became deeply involved in the opium traffic. The British had imported opium from India to China for many years, but after 1800, the Chinese government had banned opium.

Philadelphia merchants purchased Turkish opium for resale in China, and many of the merchants had great difficulties with the Chinese government. During the Opium War (1839-1842), military forces sent by the United States intervened on behalf of the American merchants, but by 1846, the Chinese trade had ended. Between 1815 and 1860, world shipping witnessed almost revolutionary changes. Not only did the shipping companies alter their organizations, but the size, speed, construction, and propulsion of ocean-going vessels shifted dramatically.

The United States developed regular transatlantic scheduled service, and by 1845 over fifty packets to Europe operated out of New York City alone. The ships increased in size, and the square-rigged vessels of 200 to 300 tons became the backbone of the American fleet. With the streamlining of the hull, the clipper ship emerged. By the 1840s, the clippers dominated the seas.

Ocean steamers did not enter the transatlantic trade until after the 1840s. Serious technological and economic problems had to be surmounted, primarily because of the crudity and bulkiness of the steam engine and its enormous fuel consumption. By the early 1840s new engine designs and safety features allowed for the profitable utilization of the steamships in the Atlantic. The technological evolution included the use of the iron hull and screw propulsion. Again the United States government intervened in the economy when, in the late 1840s, it began to subsidize ship lines to Europe. Nevertheless, the subsidized lines proved unsuccessful, and federal financial support ended by 1858.

European companies took over much of the transatlantic trade by the time of the Civil War, as Americans turned inward; fortunes made in shipping were invested in other forms of transportation, in banking, and in industry. The nation began to produce more of the goods it needed; imports for consumption purposes fell from almost $10 per person in the 1800s to slightly over $5 per person in the 1840s. The supremacy of American shipping had rested on superior timber and able seamen. As iron ships replaced wood and steam replaced sail, America not only lost its advantages but also its incentive to continue to dominate the seas.

The merchant capitalist declined in importance as the manufacturer became the dominant figure in the American economy. This change can be seen dramatically in the career of John Jacob Astor. Astor, the richest man in America before the Civil War, lived in New York City, and his extensive interests in the fur trade and foreign commerce made him almost the perfect merchant capitalist. A seller, promoter, speculator, and trader, Astor had virtually a Midas touch. In addition, he pioneered in the creation of a pre-modern business structure. Born in southern Germany in 1763, Astor lived in London briefly before coming to the United States, where he found a job as a clerk in a fur-trading establishment.

Because of the demand for pelts in Europe, the fur trade was one of the most profitable industries in the country. Traders in the interior acquired furs from the Indian tribes, reselling them to the merchants in Albany and elsewhere. Astor determined to learn all aspects of the trade, and he journeyed west to visit the Indian villages. Marriage in 1785 brought not only a wife but also a dowry of $300, enabling him to open a general store. Astor quickly specialized in the trade of furs. He made commercial arrangements with trappers to cover the region between the Ohio River and the Great Lakes, but he realized that one of the most profitable aspects of the trade was the selling of pelts in China.

The Chinese especially prized the fur of the sea otter, which could be obtained in the Pacific Northwest. American ships entered the mouth of the Columbia River, traded for a cargo of sea otter pelts, and sailed across the Pacific to China. The ships returned with holds filled with silks, tea, and Chinese art objects. The risks in this traffic were extraordinary indeed, whether it be a hurricane in mid-Pacific or the danger of pirates along the Chinese coast. Though vessels were often lost, John Jacob Astor had a motto to cope with such risks: His response to bad news was, "Make the best of things!"

The Napoleonic Wars created a major market for American shipping, but they also increased losses. President Jefferson, afraid that intervention by European countries in American shipping and their frequent seizure of American ships would bring the United States into the war, enacted an embargo in 1807. The law terminated foreign trade and confined American ships to port. Astor, however, less concerned about the law than with the profits, told customs officials that his ship was sailing to China to return a Chinese governmental leader. In reality, it carried 3,000 otter skins. It returned with a cargo estimated to be worth more than $200,000.

Astor had learned his business methods in the notorious fur trade; he simply operated in the ethical milieu of his time. Astor obtained a charter from the New York legislature in 1808 for the American Fur Company. Capitalized at $ 1 million, he was the only security holder. The American Fur Company operated trading posts on the Great Lakes and along the Missouri River above St. Louis. When rivals appeared, Astor bought them out and made them part of his company. Astor's American Fur Company obtained a virtual monopoly on fur trapping and trading in the West. He divided the growing company into major departments. Each department administered a number of outfits, which, in turn, were led by a trader who supervised the day-to-day work of the clerks in the posts and those who did the actual trapping. The men who served as department heads became partners in the company.

Astor, as senior partner, found that his time was not wholly consumed by the American Fur Company, and he was able to engage in other profitable enterprises. Indeed, in 1834 he withdrew from the partnership. Nevertheless, Astor had discovered the necessity of organizing a more complex business structure in order to carry out his strategy of dominating the fur industry in the United States.25 Seventy-one years of age in 1834, Astor left the fur industry to engage in land speculation, one of the prime activities of American business leaders and merchants. More money could be made in land than in virtually any other activity.

Small American towns were growing into cities, and the phenomenal urban growth rates drove up the value of real estate. A speculator with a little money and more vision or foresight could make a huge profit. Astor bought his first lots in New York City as early as 1789. He did not believe in credit or in borrowing; he paid for his acquisitions in cash.

The town that numbered 25,000 when he arrived there became the nation's largest city in 1810. He bought a Dutch farm in the middle of Manhattan in 1797, paying $25,000 for the property; the farm would sell for that much per square yard by the time of Astor's death. Like many other merchants, Astor withdrew from shipping. Though much of Astor's reputation as a businessperson centered on his famous China enterprises, by 1825, he had discontinued using his own ships, and three years later, he withdrew from maritime activities entirely.

The merchants saw that the development of banking, credit agencies, mortgage markets, and, in particular, inland transportation provided other areas for potential investments. The merchants became leaders in the organization of factories and other businesses. The national economy had grown, industries developed, and trading facilities expanded because of the clipper ship, the steam- ship, and the Erie Canal. That growth accelerated in the 1830s and the 1840s because of the arrival of yet another more efficient transportation form: the railroad.

NOTES 1. Henry Adams, The United States in 1800 (Ithaca, New York: Cornell University Press, 1957), p. 11. 2. Albert Gallatin, "Roads and Canals," 10th Congress, 1st Sess., Document No. 250, April 4, 1808, American State Papers, Miscellaneous, vol. I, pp. 724-741.

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7J Railroads and Business Expansion Before the coming of the railroad, virtually no basic changes in transporta- tion had taken place for two thousand years. People and goods moved as they had during the Roman Empire, by packhorse, wagon, or boat. Begin- ning 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, particularly in 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 be overcome, and because it was not hampered by the entrenched vested interests 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 rail- road with unbounded enthusiasm and invested their savings and supported the promoters who built the lines across the virgin territories of the coun- try. Their enthusiasm reflected the pioneering spirit of the people of the United States.1 112