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Forging the National Economy

1790–1860

The progress of invention is really a threat [*to monarchy*].
Whenever I see a railroad I look for a republic.

RALPH WALDO EMERSON, 1866

The new nation went bounding into the nineteenth century in a burst of movement. New England Yankees, Pennsylvania farmers, and southern yeomen all pushed west in search of cheap land and prodigious opportunity, soon to be joined by vast numbers of immigrants from Europe, who also made their way to the country's fast-growing cities. But not only people were in motion. Newly invented machinery quickened the cultivation of crops and the manufacturing of goods, while workers found themselves laboring under new, more demanding expectations for their pace of work. Better roads, faster steamboats, farther-reaching canals, and tentacle-stretching railroads all helped move people, raw materials, and manufactured goods from coast to coast and Gulf to Great Lakes by the mid-nineteenth century. The momentum gave rise to a more dynamic, market-oriented, national economy.

The Westward Movement

The rise of Andrew Jackson, the first president from beyond the Appalachian Mountains, exemplified the inexorable westward march of the American people. The West, with its raw frontier, was the most typically American part of America. As Ralph Waldo Emerson wrote in 1844, "Europe stretches to the Alleghenies; America lies beyond."

The Republic was young, and so were the people—as late as 1850, half of Americans were under the age of thirty. They were also restless and energetic, seemingly always on the move, and always westward. One "tall tale" of the frontier described chickens that voluntarily crossed their legs every spring, waiting to be tied for the annual move west. By 1840 the "demographic center" of the American population map had

crossed the Alleghenies. By the eve of the Civil War, it had marched across the Ohio River.

Legend portrays an army of muscular axmen triumphantly carving civilization out of the western woods. But in reality life was downright grim for most pioneer families. Poorly fed, ill-clad, housed in hastily erected shanties (Abraham Lincoln's family lived for a year in a three-sided lean-to made of brush and sticks), they were perpetual victims of disease, depression, and premature death. Above all, unbearable loneliness haunted them, especially the women, who were often cut off from human contact, even their neighbors, for days or even weeks, while confined to the cramped orbit of a dark cabin in a secluded clearing. Breakdowns and even madness were all too frequently the "opportunities" that the frontier offered to pioneer women.

Frontier life could be tough and crude for men as well. No-holds-barred wrestling, which permitted such niceties as the biting off of noses and the gouging out of eyes, was a popular entertainment. Pioneering Americans, marooned by geography, were often ill informed, superstitious, provincial, and fiercely individualistic. Ralph Waldo Emerson's popular lecture-essay "Self-Reliance" struck a deeply responsive chord. Popular literature of the period abounded with portraits of unique, isolated figures like James Fenimore Cooper's heroic Natty Bumppo and Herman Melville's restless Captain Ahab—just as Jacksonian politics aimed to emancipate the lone-wolf, enterprising businessperson. Yet even in this heyday of "rugged individualism," there were important exceptions. Pioneers, in tasks clearly beyond their own individual resources, would call upon their neighbors for logrolling and barn raising and upon their governments for help in building internal improvements.

Shaping the Western Landscape

The westward movement also molded the physical environment. Pioneers in a hurry often exhausted the land in the tobacco regions and then pushed on, leaving behind barren and rain-gutted fields. In the Kentucky bottomlands, cane as high as fifteen feet posed a seemingly insurmountable barrier to the plow. But settlers soon discovered that when the cane was burned off, European bluegrass thrived in the charred canefields. "Kentucky bluegrass," as it was somewhat inaccurately called, made ideal pas-

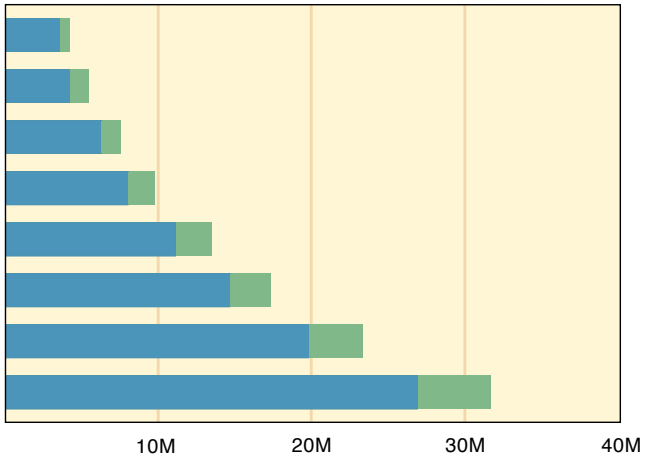
ture for livestock—and lured thousands more American homesteaders into Kentucky.

The American West felt the pressure of civilization in additional ways. By the 1820s American fur-trappers were setting their traplines all over the vast Rocky Mountain region. The fur-trapping empire was based on the "rendezvous" system. Each summer, traders ventured from St. Louis to a verdant Rocky Mountain valley, made camp, and waited for the trappers and Indians to arrive with beaver pelts to swap for manufactured goods from the East. This trade thrived for some two decades; by the time beaver hats had gone out of fashion, the hapless beaver had all but disappeared from the region. Trade in buffalo robes also flourished, leading eventually to the virtually total annihilation of the massive bison herds that once blanketed the western prairies. Still farther west, on the California coast, other traders bought up prodigious quantities of sea-otter pelts, driving the once-bountiful otters to the point of near-extinction. Some historians have called this aggressive and often heedless exploitation of the West's natural bounty "ecological imperialism."

Yet Americans in this period also revered nature and admired its beauty. Indeed the spirit of nationalism fed the growing appreciation of the uniqueness of the American wilderness. Searching for the United States' distinctive characteristics in this nation-conscious age, many observers found the wild, unspoiled character of the land, especially in the West, to be among the young nation's defining attributes. Other countries might have impressive mountains or sparkling rivers, but none had the pristine, natural beauty of America, unspoiled by human hands and reminiscent of a time before the dawn of civilization. This attitude toward wilderness became in time a kind of national mystique, inspiring literature and painting, and eventually kindling a powerful conservation movement.

George Catlin, a painter and student of Native American life, was among the first Americans to advocate the preservation of nature as a deliberate national policy. In 1832 he observed Sioux Indians in South Dakota recklessly slaughtering buffalo in order to trade the animals' tongues for the white man's whiskey. Appalled at this spectacle and fearing for the preservation of Indians and buffalo alike, Catlin proposed the creation of a national park. His idea later bore fruit with the creation of a national park system, beginning with Yellowstone Park in 1872.

Year	White	Nonwhite	Percent Nonwhite	Total Population
1790	3,172,000	757,000	19	3,929,000
1800	4,306,000	1,002,000	19	5,308,000
1810	5,862,000	1,378,000	19	7,240,000
1820	7,867,000	1,772,000	18	9,639,000
1830	10,537,000	2,329,000	18	12,866,000
1840	14,196,000	2,874,000	17	17,070,000
1850	19,553,000	3,639,000	16	23,192,000
1860	26,922,000	4,521,000	14	31,443,000



Population Increase, Including Slaves and Indians, 1790–1860
Increasing European immigration and the closing of the slave trade gradually "whitened" the population beginning in 1820. This trend continued into the early twentieth century.

The March of the Millions

As the American people moved west, they also multiplied at an amazing rate. By midcentury the population was still doubling approximately every twenty-five years, as in fertile colonial days.

By 1860 the original thirteen states had more than doubled in number: thirty-three stars graced the American flag. The United States was the fourth most populous nation in the western world, exceeded only by three European countries—Russia, France, and Austria.

Urban growth continued explosively. In 1790 there had been only two American cities that could boast populations of twenty thousand or more souls: Philadelphia and New York. By 1860 there were forty-three, and about three hundred other places claimed over five thousand inhabitants apiece. New York was the metropolis; New Orleans, the "Queen of the South"; and Chicago, the swaggering lord of the Midwest, destined to be "hog butcher for the world."

Such overrapid urbanization unfortunately brought undesirable by-products. It intensified the problems of smelly slums, feeble street lighting,

Westward Movement of Center of Population, 1790–1990 The triangles indicate the points at which a map of the United States weighted for the population of the country in a given year would balance. Note the remarkable equilibrium of the north-south pull from 1790 to about 1940, and the strong spurt west and south thereafter. The 1980 census revealed that the nation's center of population had at last moved west of the Mississippi River. The map also shows the slowing of the westward movement between 1890 and 1940—the period of heaviest immigration from Europe, which ended up mainly in East Coast cities.

inadequate policing, impure water, foul sewage, ravenous rats, and improper garbage disposal. Hogs poked their scavenging snouts about many city streets as late as the 1840s. Boston in 1823 pioneered a sewer system, and New York in 1842 abandoned wells and cisterns for a piped-in water supply. The city thus unknowingly eliminated the breeding places of many disease-carrying mosquitoes.

A continuing high birthrate accounted for most of the increase in population, but by the 1840s the tides of immigration were adding hundreds of thousands more. Before this decade immigrants had been flowing in at a rate of sixty thousand a year, but suddenly the influx tripled in the 1840s and then quadrupled in the 1850s. During these two feverish decades, over a million and a half Irish, and nearly as many Germans, swarmed down the gangplanks. Why did they come?

The immigrants came partly because Europe seemed to be running out of room. The population of the Old World more than doubled in the nineteenth century, and Europe began to generate a

Irish and German Immigration by Decade, 1830–1900

Years	Irish	Germans
1831–1840	207,381	152,454
1841–1850	780,719	434,626
1851–1860	914,119	951,667
1861–1870	435,778	787,468
1871–1880	436,871	718,182
1881–1890	655,482	1,452,970
1891–1900	388,416	505,152
TOTAL	3,818,766	5,000,519

A German immigrant living in Cincinnati wrote to his relatives in Germany in 1847:

"A lot of people come over here who were well off in Germany but were enticed to leave their fatherland by boastful and imprudent letters from their friends or children and thought they could become rich in America. This deceives a lot of people, since what can they do here? If they stay in the city they can only earn their bread at hard and unaccustomed labor. If they want to live in the country and don't have enough money to buy a piece of land that is cleared and has a house then they have to settle in the wild bush and have to work very hard to clear the trees out of the way so they can sow and plant. But people who are healthy, strong, and hard-working do pretty well."

seething pool of apparently "surplus" people. They were displaced and footloose in their homelands before they felt the tug of the American magnet. Indeed at least as many people moved about *within* Europe as crossed the Atlantic. America benefited from these people-churning changes but did not set them all in motion. Nor was the United States the sole beneficiary of the process: of the nearly 60 million people who abandoned Europe in the century after 1840, about 25 million went somewhere other than the United States.

Yet America still beckoned most strongly to the struggling masses of Europe, and the majority of migrants headed for the "land of freedom and opportunity." There was freedom from aristocratic caste and state church; there was abundant opportunity to secure broad acres and better one's condition. Much-read letters sent home by immigrants—"America letters"—often described in glowing terms the richer life: low taxes, no compulsory military service, and "three meat meals a day." The introduction of transoceanic steamships also meant that the immigrants could come speedily, in a matter of ten or twelve days instead of ten or twelve weeks. On board, they were still jammed into unsanitary quarters, thus suffering an appalling death rate from infectious diseases, but the nightmare was more endurable because it was shorter.

The Emerald Isle Moves West

Ireland, already groaning under the heavy hand of British overlords, was prostrated in the mid-1840s. A terrible rot attacked the potato crop, on which the people had become dangerously dependent, and about one-fourth of them were swept away by disease and hunger. Starved bodies were found dead by the roadsides with grass in their mouths. All told, about 2 million perished.

Tens of thousands of destitute souls, fleeing the Land of Famine for the Land of Plenty, flocked to America in the "Black Forties." Ireland's great export has been population, and the Irish take their place beside the Jews and the Africans as a dispersed people (see "Makers of America: The Irish," pp. 294–295).

These uprooted newcomers—too poor to move west and buy the necessary land, livestock, and equipment—swarmed into the larger seaboard cities. Noteworthy were Boston and particularly New York, which rapidly became the largest Irish city in the world. Before many decades had passed, more people of Hibernian blood lived in America than on the "ould sod" of Erin's Isle.

The luckless Irish immigrants received no red-carpet treatment. Forced to live in squalor, they were rudely crammed into the already-vile slums. They were scorned by the older American stock, especially "proper" Protestant Bostonians, who regarded the scruffy Catholic arrivals as a social menace. Barely literate "Biddies" (Bridgets) took jobs as kitchen maids. Broad-shouldered "Paddies" (Patricks) were pushed into pick-and-shovel drudgery on canals and railroads, where thousands left their bones as victims of disease and accidental explosions. It was said that an Irishman lay buried under every railroad tie. As wage-depressing competitors for jobs, the Irish were hated by native workers. "No Irish Need Apply" was a sign com-

Margaret McCarthy, a recent arrival in America, captured much of the complexity of the immigrant experience in a letter she wrote from New York to her family in Ireland in 1850:

"This is a good place and a good country, but there is one thing that's ruining this place. The emigrants have not money enough to take them to the interior of the country, which obliges them to remain here in New York and the like places, which causes the less demand for labor and also the great reduction in wages. For this reason I would advise no one to come to America that would not have some money after landing here that would enable them to go west in case they would get no work to do here. But any man or woman without a family are fools that would not venture and come to this plentiful country where no man or woman ever hungered or ever will. I can assure you there are dangers upon dangers, but my friends, have courage and come all together courageously and bid adieu to that lovely place, the land of our birth."

An early-nineteenth-century French traveler recorded his impressions of America and Ireland:

"I have seen the Indian in his forests and the Negro in his chains, and thought, as I contemplated their pitiable condition, that I saw the very extreme of human wretchedness; but I did not then know the condition of unfortunate Ireland."

monly posted at factory gates and was often abbreviated to NINA. The Irish, for similar reasons, fiercely resented the blacks, with whom they shared society's basement. Race riots between black and Irish dockworkers flared up in several port cities, and the Irish were generally cool to the abolitionist cause.

The friendless "famine Irish" were forced to fend for themselves. The Ancient Order of Hibernians, a semisecret society founded in Ireland to fight rapacious landlords, served in America as a benevolent society, aiding the downtrodden. It also helped to spawn the "Molly Maguires," a shadowy Irish miners' union that rocked the Pennsylvania coal districts in the 1860s and 1870s.

The Irish tended to remain in low-skill occupations but gradually improved their lot, usually by acquiring modest amounts of property. The education of children was cut short as families struggled to save money to purchase a home. But for humble Irish peasants, cruelly cast out of their homeland, property ownership counted as a grand "success."

Politics quickly attracted these gregarious Gaelic newcomers. They soon began to gain control of powerful city machines, notably New York's Tammany Hall, and reaped the patronage rewards. Before long, beguilingly brogued Irishmen dominated police departments in many big cities, where they now drove the "Paddy wagons" that had once carted their brawling forebears to jail.

American politicians made haste to cultivate the Irish vote, especially in the politically potent state of New York. Irish hatred of the British lost nothing in the transatlantic transplanting. As the Irish-Americans increased in number—nearly 2 million arrived between 1830 and 1860—officials in Washington glimpsed political gold in those emerald green hills. Politicians often found it politically profitable to fire verbal volleys at London—a process vulgarly known as "twisting the British lion's tail."

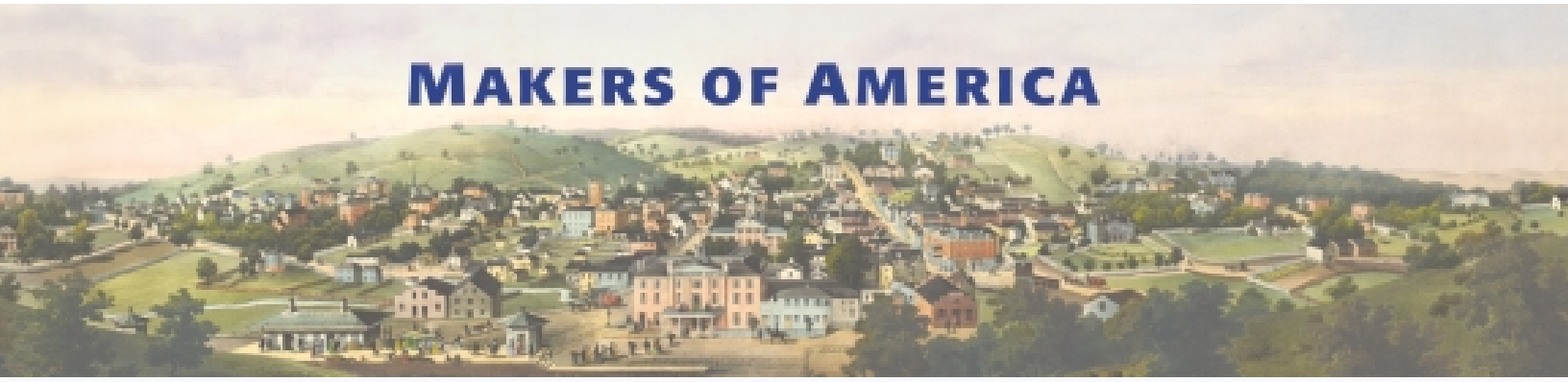
The German Forty-Eighters

The influx of refugees from Germany between 1830 and 1860 was hardly less spectacular than that from Ireland. During these troubled years, over a million and a half Germans stepped onto American soil (see "Makers of America: The Germans," pp. 298–299). The bulk of them were uprooted farmers, displaced by crop failures and other hardships. But a strong sprinkling were liberal political refugees. Saddened by the collapse of the democratic revolutions of 1848, they had decided to leave the autocratic fatherland and flee to America—the brightest hope of democracy.

Germany's loss was America's gain. Zealous German liberals like the lanky and public-spirited Carl Schurz, a relentless foe of slavery and public corruption, contributed richly to the elevation of American political life.

Unlike the Irish, many of the Germanic newcomers possessed a modest amount of material goods. Most of them pushed out to the lush lands of the Middle West, notably Wisconsin, where they settled and established model farms. Like the Irish, they formed an influential body of voters whom American politicians shamelessly wooed. But the Germans were less potent politically because their strength was more widely scattered.

The hand of Germans in shaping American life was widely felt in still other ways. The Conestoga wagon, the Kentucky rifle, and the Christmas tree were all German contributions to American culture. Germans had fled from the militarism and wars of Europe and consequently came to be a bulwark of isolationist sentiment in the upper Mississippi Valley. Better educated on the whole than the stump-grubbing Americans, they warmly supported public schools, including their *Kindergarten* (children's garden). They likewise did much to stimulate art and music. As outspoken champions of freedom, they became relentless enemies of slavery during the fevered years before the Civil War.



The Irish

For a generation, from 1793 to 1815, war raged across Europe. Ruinous as it was on the Continent, the fighting brought unprecedented prosperity to the long-suffering landsmen of Ireland, groaning since the twelfth century under the yoke of English rule. For as Europe's fields lay fallow, irrigated only by the blood of its farmers, Ireland fed the hungry armies that ravened for food as well as territory. Irish farmers planted every available acre, interspersing the lowly potato amongst their fields of grain. With prices for food products ever mounting, tenant farmers reaped a temporary respite from their perpetual struggle to remain on the land. Most landlords were satisfied by the prosperity and so relaxed their pressure on tenants; others, stymied by the absence of British police forces that had been stripped of manpower to fight in Europe, had little means to enforce eviction notices.

But the peace that brought solace to battle-scarred Europe changed all this. After 1815 war-inflated wheat prices plummeted by half. Hard-pressed landlords resolved to leave vast fields unplanted. Assisted now by a strengthened British constabulary, they vowed to sweep the pesky peasants from the retired acreage. Many of those forced to leave sought work in England; some went to America. Then in 1845 a blight that ravaged the potato crop sounded the final knell for the Irish peasantry. The resultant famine spread desolation throughout the island. In five years, more than a million people died. Another million sailed for America.

Of the emigrants, most were young and literate in English, the majority under thirty-five years old. Families typically pooled money to send strong young sons to the New World, where they would earn wages to pay the fares for those who waited at home. These "famine Irish" mostly remained in the port cities of the Northeast, abandoning the farmer's life for the dingy congestion of the urban metropolis.

The disembarking Irish were poorly prepared for urban life. They found progress up the economic ladder painfully slow. Their work as domestic ser-

vants or construction laborers was dull and arduous, and mortality rates were astoundingly high. Escape from the potato famine hardly guaranteed a long life to an Irish-American; a gray-bearded Irishman was a rare sight in nineteenth-century America. Most of the new arrivals toiled as day laborers. A fortunate few owned boardinghouses or saloons, where their dispirited countrymen sought solace in the bottle. For Irish-born women, opportunities were still scarcer; they worked mainly as domestic servants.

But it was their Roman Catholicism, more even than their penury or their perceived fondness for alcohol, that earned the Irish the distrust and resentment of their native-born, Protestant American neighbors. The cornerstone of social and religious life for Irish immigrants was the parish. Worries about safeguarding their children's faith inspired the construction of parish schools, financed by the pennies of struggling working-class Irish parents.

If Ireland's green fields scarcely equipped her sons and daughters for the scrap and scramble of economic life in America's cities, life in the Old Country nevertheless had instilled in them an aptitude for politics. Irish-Catholic resistance against centuries of English-Anglican domination had instructed many Old Country Irish in the ways of mass politics. That political experience readied them for the boss system of the political "machines" in America's northeastern cities. The boss's local representatives met each newcomer soon after he landed in America. Asking only for votes, the machine supplied coal in wintertime, food, and help with the law. Irish voters soon became a bulwark of the Democratic party, reliably supporting the party of Jefferson and Jackson in cities like New York and Boston. As Irish-Americans like New York's "Honest John" Kelly themselves became bosses, white-collar jobs in government service opened up to the Irish. They became building inspectors, aldermen, and even policemen—an astonishing irony for a people driven from their homeland by the nightsticks and bayonets of the British police.

Yet the Germans—often dubbed "damned Dutchmen"—were occasionally regarded with suspicion by their old-stock American neighbors. Seeking to preserve their language and culture, they sometimes settled in compact "colonies" and kept aloof from the surrounding community. Accustomed to the "Continental Sunday" and uncurbed by Puritan tradition, they made merry on the Sabbath and drank huge quantities of an amber beverage called *bier* (beer), which dates its real popularity in America to their coming. Their Old World drinking habits, like those of the Irish, spurred advocates of temperance in the use of alcohol to redouble their reform efforts.

Flare-ups of Antiforeignism

The invasion by this so-called immigrant "rabble" in the 1840s and 1850s inflamed the prejudices of American "nativists." They feared that these foreign hordes would outbreed, outvote, and overwhelm the old "native" stock. Not only did the newcomers take jobs from "native" Americans, but the bulk of the displaced Irish were Roman Catholics, as were a substantial minority of the Germans. The Church of Rome was still widely regarded by many old-line Americans as a "foreign" church; convents were commonly referred to as "popish brothels."

Roman Catholics were now on the move. Seeking to protect their children from Protestant indoctrination in the public schools, they began in the 1840s to construct an entirely separate Catholic educational system—an enormously expensive undertaking for a poor immigrant community, but one that revealed the strength of its religious commitment. They had formed a negligible minority during colonial days, and their numbers had increased gradually. But with the enormous influx of the Irish and Germans in the 1840s and 1850s, the Catholics became a powerful religious group. In 1840 they had ranked fifth, behind the Baptists, Methodists, Presbyterians, and Congregationalists. By 1850, with some 1.8 million communicants, they had bounded into first place—a position they have never lost.

Strong antiforeignism was reflected in the platform of the American (Know-Nothing) party in 1856:

"*Americans must rule America;* and to this end, native-born citizens should be selected for all state, federal, or municipal offices of government employment, in preference to naturalized citizens."

Older-stock Americans were alarmed by these mounting figures. They professed to believe that in due time the "alien riffraff" would "establish" the Catholic Church at the expense of Protestantism and would introduce "popish idols." The noisier American "nativists" rallied for political action. In 1849 they formed the Order of the Star-Spangled Banner, which soon developed into the formidable American, or "Know-Nothing," party—a name derived from its secretiveness. "Nativists" agitated for rigid restrictions on immigration and naturalization and for laws authorizing the deportation of alien paupers. They also promoted a lurid literature of exposure, much of it pure fiction. The authors, sometimes posing as escaped nuns, described the shocking sins they imagined the cloisters concealed, including the secret burial of babies. One of these sensational books—Maria Monk's *Awful Disclosures* (1836)—sold over 300,000 copies.

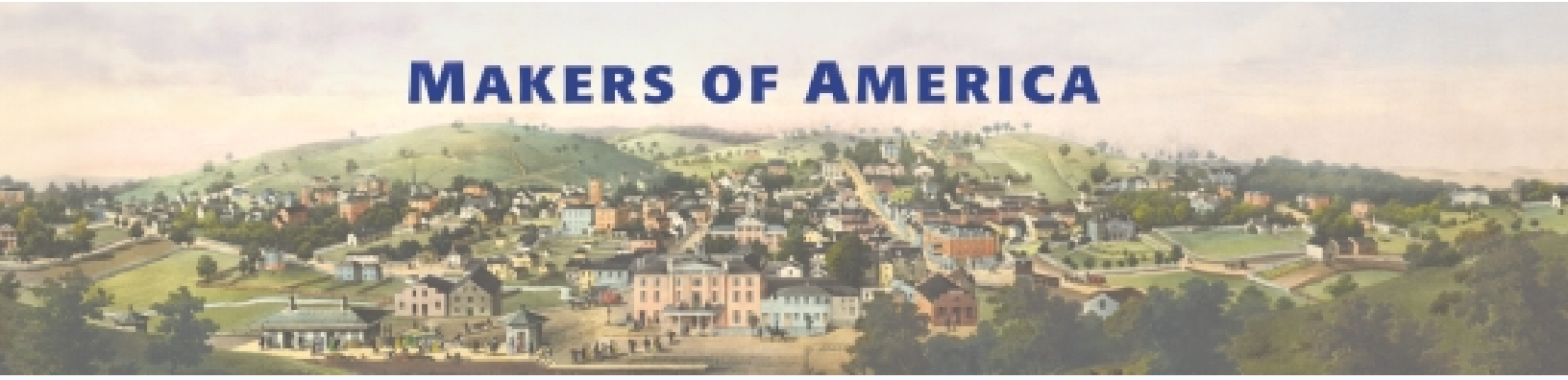
Even uglier was occasional mass violence. As early as 1834, a Catholic convent near Boston was burned by a howling mob, and in ensuing years a few scattered attacks fell upon Catholic schools and

churches. The most frightful flare-up occurred during 1844 in Philadelphia, where the Irish Catholics fought back against the threats of the "nativists." The City of Brotherly Love did not quiet down until two Catholic churches had been burned and some thirteen citizens had been killed and fifty wounded in several days of fighting. These outbursts of intolerance, though infrequent and generally localized in the larger cities, remain an unfortunate blot on the record of America's treatment of minority groups.

Immigrants were undeniably making America a more pluralistic society—one of the most ethnically and racially varied in the history of the world—and perhaps it was small wonder that cultural clashes would occur. Why, in fact, were such episodes not even more frequent and more violent? Part of the answer lies in the robustness of the American economy. The vigorous growth of the economy in these years both attracted immigrants in the first place and ensured that, once arrived, they could claim their share of American wealth without jeopardizing the wealth of others. Their hands and brains, in fact, helped fuel economic expansion. Immigrants and the American economy, in short, needed one another. Without the newcomers, a preponderantly agricultural United States might well have been condemned to watch in envy as the Industrial Revolution swept through nineteenth-century Europe.

The March of Mechanization

A group of gifted British inventors, beginning about 1750, perfected a series of machines for the mass production of textiles. This enslavement of steam multiplied the power of human muscles some ten-thousandfold and ushered in the modern factory system—and with it, the so-called Industrial Revolution. It was accompanied by a no-less-spectacular transformation in agricultural production and in the methods of transportation and communication.



The Germans

Between 1820 and 1920, a sea of Germans lapped at America's shores and seeped into its very heartland. Their numbers surpassed those of any other immigrant group, even the prolific and often-detested Irish. Yet this Germanic flood, unlike its Gaelic equivalent, stirred little panic in the hearts of native-born Americans because the Germans largely stayed to themselves, far from the madding crowds and nativist fears of northeastern cities. They prospered with astonishing ease, building towns in Wisconsin, agricultural colonies in Texas, and religious communities in Pennsylvania. They added a decidedly Germanic flavor to the heady brew of reform and community building that so animated antebellum America.

These "Germans" actually hailed from many different Old World lands, because there was no unified nation of Germany until 1871, when the ruthless and crafty Prussian Otto von Bismarck assembled the German state out of a mosaic of independent principalities, kingdoms, and duchies. Until that time, "Germans" came to America as Prussians, Bavarians, Hessians, Rhinelanders, Pomeranians, and Westphalians. They arrived at different times and for many different reasons. Some, particularly the so-called Forty-Eighters—the refugees from the abortive democratic revolution of 1848—hungered for the democracy they had failed to win in Germany. Others, particularly Jews, Pietists, and Anabaptist groups like the Amish and the Mennonites, coveted religious freedom. And they came not only to America. Like the Italians later, many Germans sought a new life in Brazil, Argentina, and Chile. But the largest number ventured into the United States.

Typical German immigrants arrived with fatter purses than their Irish counterparts. Small landowners or independent artisans in their native countries, they did not have to settle for bottom-rung industrial employment in the grimy factories of the Northeast and instead could afford to push on to the open spaces of the American West.

In Wisconsin these immigrants found a home away from home, a place with a climate, soil, and geography much like central Europe's. Milwaukee, a crude frontier town before the Germans' arrival, became the "German Athens." It boasted a German theater, German beer gardens, a German volunteer fire company, and a German-English academy. In distant Texas, German settlements like New Braunfels and Friedrichsburg flourished. When the famous landscape architect and writer Frederick Law Olmsted stumbled upon these prairie outposts of Teutonic culture in 1857, he was shocked to be

"welcomed by a figure in a blue flannel shirt and pendant beard, quoting Tacitus." These German colonies in the frontier Southwest mixed high European elegance with Texas ruggedness. Olmsted described a visit to a German household where the settlers drank "coffee in tin cups upon Dresden saucers" and sat upon "barrels for seats, to hear a Beethoven symphony on the grand piano."

These Germanic colonizers of America's heartland also formed religious communities, none more distinctive or durable than the Amish settlements of Pennsylvania, Indiana, and Ohio. The Amish took their name from their founder and leader, the Swiss Anabaptist Jacob Amman. Like other Anabaptist groups, they shunned extravagance and reserved baptism for adults, repudiating the tradition of infant baptism practiced by most Europeans. For this they were persecuted, even imprisoned, in Europe. Seeking escape from their oppression, some five hundred Amish ventured to Pennsylvania in the 1700s, followed by three thousand in the years from 1815 to 1865.

In America they formed enduring religious communities—isolated enclaves where they could shield themselves from the corruption and the conveniences of the modern world. To this day the German-speaking Amish still travel in horse-drawn carriages and farm without heavy machinery. No electric lights brighten the darkness that nightly envelops their tidy farmhouses; no ringing telephones punctuate the reverent tranquility of their mealtime prayer; no ornaments relieve the austere simplicity of their black garments. The Amish remain a stalwart, traditional community in a rootless, turbulent society, a living testament to the religious ferment and social experiments of the antebellum era.

The factory system gradually spread from Britain—"the world's workshop"—to other lands. It took a generation or so to reach western Europe, and then the United States. Why was the youthful American Republic, destined to be an industrial giant, so slow to embrace the machine?

For one thing, virgin soil in America was cheap. Land-starved descendants of land-starved peasants were not going to coop themselves up in smelly factories when they might till their own acres in God's fresh air and sunlight. Labor was therefore generally scarce, and enough nimble hands to operate the machines were hard to find—until immigrants began to pour ashore in the 1840s. Money for capital investment, moreover, was not plentiful in pioneering America. Raw materials lay undeveloped, undiscovered, or unsuspected. The Republic was one day to become the world's leading coal producer, but much of the coal burned in colonial times was imported all the way from Britain.

Just as labor was scarce, so were consumers. The young country at first lacked a domestic market large enough to make factory-scale manufacturing profitable.

Long-established British factories, which provided cutthroat competition, posed another problem. Their superiority was attested by the fact that a few unscrupulous Yankee manufacturers, out to make a dishonest dollar, stamped their own products with fake English trademarks.

The British also enjoyed a monopoly of the textile machinery, whose secrets they were anxious to hide from foreign competitors. Parliament enacted laws, in harmony with the mercantile system, forbidding the export of the machines or the emigration of mechanics able to reproduce them.

Although a number of small manufacturing enterprises existed in the early Republic, the future industrial colossus was still snoring. Not until well past the middle of the nineteenth century did the value of the output of the factories exceed that of the farms.

Whitney Ends the Fiber Famine

Samuel Slater has been acclaimed the "Father of the Factory System" in America, and seldom can the paternity of a movement more properly be ascribed to one person. A skilled British mechanic of twenty-one, he was attracted by bounties being offered to British workers familiar with the textile machines. After memorizing the plans for the machinery, he escaped in disguise to America, where he won the backing of Moses Brown, a Quaker capitalist in Rhode Island. Laboriously reconstructing the essential apparatus with the aid of a blacksmith and a carpenter, he put into operation in 1791 the first efficient American machinery for spinning cotton thread.

The ravenous mechanism was now ready, but where was the cotton fiber? Handpicking one pound of lint from three pounds of seed was a full day's work for one slave, and this process was so expensive that cotton cloth was relatively rare.

Another mechanical genius, Massachusetts-born Eli Whitney, now made his mark. After gradu-

EXAMINING THE EVIDENCE

The Invention of the Sewing Machine Historians of technology examine not only the documentary evidence of plans and patents left behind by inventors, but surviving machines themselves. In 1845, Elias Howe, a twenty-six-year-old apprentice to a Boston watchmaker invented a sewing machine that could make two hundred and fifty stitches a minute, five times what the swiftest hand sewer could do. A year later Howe received a patent for his invention, but because the hand-cranked machine could only stitch straight seams for a short distance before requiring resetting, it had limited commercial appeal. Howe took his sewing machine abroad where he worked with British manufacturers to improve it, and then returned to America and combined his patent with those of other inventors, including Isaac M. Singer. Hundreds of thousands of sewing machines were produced beginning in the 1850s for commercial manufacturing of clothing, books, shoes, and many other products and also for home use. The sewing machine became the first widely advertised consumer product. Due to its high cost, the Singer company introduced an installment buying plan, which helped to place a sewing machine in most middle-class households. Why was the sewing machine able to find eager customers in commercial workshops and home sewing rooms alike? How might the sewing machine have changed other aspects of American life, such as work patterns, clothing styles, and retail selling? What other advances in technology might have been necessary for the invention of the sewing machine?

ating from Yale, he journeyed to Georgia to serve as a private tutor while preparing for the law. There he was told that the poverty of the South would be relieved if someone could only invent a workable device for separating the seed from the short-staple cotton fiber. Within ten days, in 1793, he built a crude machine called the cotton gin (short for en*gin*e) that was fifty times more effective than the handpicking process.

Few machines have ever wrought so wondrous a change. The gin affected not only the history of America but that of the world. Almost overnight the raising of cotton became highly profitable, and the South was tied hand and foot to the throne of King Cotton. Human bondage had been dying out, but the insatiable demand for cotton reriveted the chains on the limbs of the downtrodden southern blacks.

South and North both prospered. Slave-driving planters cleared more acres for cotton, pushing the Cotton Kingdom westward off the depleted tidewater plains, over the Piedmont, and onto the black loam bottomlands of Alabama and Mississippi. Humming gins poured out avalanches of snowy fiber for the spindles of the Yankee machines, though for decades to come the mills of Britain bought the lion's share of southern cotton. The American phase of the Industrial Revolution, which first blossomed in cotton textiles, was well on its way.

Factories at first flourished most actively in New England, though they branched out into the more populous areas of New York, New Jersey, and Pennsylvania. The South, increasingly wedded to the production of cotton, could boast of comparatively little manufacturing. Its capital was bound up in slaves; its local consumers for the most part were desperately poor.

New England was singularly favored as an industrial center for several reasons. Its narrow belt of stony soil discouraged farming and hence made manufacturing more attractive than elsewhere. A relatively dense population provided labor and accessible markets; shipping brought in capital; and snug seaports made easy the import of raw materials and the export of the finished products. Finally, the rapid rivers—notably the Merrimack in Massachusetts—provided abundant water power to turn the cogs of the machines. By 1860 more than 400 million pounds of southern cotton poured annually into the gaping maws of over a thousand mills, mostly in New England.

Marvels in Manufacturing

America's factories spread slowly until about 1807, when there began the fateful sequence of the embargo, nonintercourse, and the War of 1812. Stern necessity dictated the manufacture of substitutes for normal imports, while the stoppage of European commerce was temporarily ruinous to Yankee shipping. Both capital and labor were driven from the waves onto the factory floor, as New Eng-

land, in the striking phrase of John Randolph, exchanged the trident for the distaff. Generous bounties were offered by local authorities for home-grown goods, "Buy American" and "Wear American" became popular slogans, and patriotism prompted the wearing of baggy homespun garments. President Madison donned some at his inauguration, where he was said to have been a walking argument for the better processing of native wool.

But the manufacturing boomlet broke abruptly with the peace of Ghent in 1815. British competitors unloaded their dammed-up surpluses at ruinously low prices, and American newspapers were so full of British advertisements for goods on credit that little space was left for news. In one Rhode Island district, all 150 mills were forced to close their doors, except the original Slater plant. Responding to pained outcries, Congress provided some relief when it passed the mildly protective Tariff of 1816—among the earliest political contests to control the shape of the economy.

As the factory system flourished, it embraced numerous other industries in addition to textiles. Prominent among them was the manufacturing of firearms, and here the wizardly Eli Whitney again appeared with an extraordinary contribution. Frustrated in his earlier efforts to monopolize the cotton gin, he turned to the mass production of muskets for the U.S. Army. Up to this time, each part of a firearm had been hand-tooled, and if the trigger of one broke, the trigger of another might or might not fit. About 1798 Whitney seized upon the idea of having machines make each part, so that all the triggers, for example, would be as much alike as the successive imprints of a copperplate engraving. Journeying to Washington, he reportedly dismantled ten of his new muskets in the presence of skeptical officials, scrambled the parts together, and then quickly reassembled ten different muskets.

The principle of interchangeable parts was widely adopted by 1850, and it ultimately became the basis of modern mass-production, assembly-line methods. It gave to the North the vast industrial plant that ensured military preponderance over the South. Ironically, the Yankee Eli Whitney, by perfecting the cotton gin, gave slavery a renewed lease on life, and perhaps made inevitable the Civil War. At the same time, by popularizing the principle of interchangeable parts, Whitney helped factories to flourish in the North, giving the Union a decided advantage when that showdown came.

One observer in 1836 published a newspaper account of conditions in some of the New England factories:

"The operatives work thirteen hours a day in the summer time, and from daylight to dark in the winter. At half past four in the morning the factory bell rings, and at five the girls must be in the mills. . . . So fatigued . . . are numbers of girls that they go to bed soon after receiving their evening meal, and endeavor by a comparatively long sleep to resuscitate their weakened frames for the toil of the coming day."

Said Abraham Lincoln (1809–1865) in a lecture in 1859,

"The patent system secured to the inventor for a limited time exclusive use of his invention, and thereby added the fuel of interest to the fire of genius in the discovery and production of new and useful things."

Ten years earlier Lincoln had received patent no. 6469 for a scheme to buoy steamboats over shoals. It was never practically applied, but he remains the only president ever to have secured a patent.

The sewing machine, invented by Elias Howe in 1846 and perfected by Isaac Singer, gave another strong boost to northern industrialization. The sewing machine became the foundation of the ready-made clothing industry, which took root about the time of the Civil War. It drove many a seamstress from the shelter of the private home to the factory, where, like a human robot, she tended the clattering mechanisms.

Each momentous new invention seemed to stimulate still more imaginative inventions. For the decade ending in 1800, only 306 patents were registered in Washington; but the decade ending in 1860 saw the amazing total of 28,000. Yet in 1838 the clerk of the Patent Office had resigned in despair, complaining that all worthwhile inventions had been discovered.

Technical advances spurred equally important changes in the form and legal status of business organizations. The principle of limited liability aided the concentration of capital by permitting the individual investor, in cases of legal claims or bankruptcy, to risk no more than his own share of the corporation's stock. Fifteen Boston families formed one of the earliest investment capital companies, the Boston Associates. They eventually dominated the textile, railroad, insurance, and banking business of Massachusetts. Laws of "free incorporation," first passed in New York in 1848, meant that businessmen could create corporations without applying for individual charters from the legislature.

Samuel F. B. Morse's telegraph was among the inventions that tightened the sinews of an increasingly complex business world. A distinguished but poverty-stricken portrait painter, Morse finally secured from Congress, to the accompaniment of the usual jeers, an appropriation of $30,000 to support his experiment with "talking wires." In 1844 Morse strung a wire forty miles from Washington to Baltimore and tapped out the historic message, "What hath God wrought?" The invention brought fame and fortune to Morse, as he put distantly separated people in almost instant communication with one another. By the eve of the Civil War, a web of singing wires spanned the continent, revolutionizing news gathering, diplomacy, and finance.

Workers and "Wage Slaves"

One ugly outgrowth of the factory system was an increasingly acute labor problem. Hitherto manufacturing had been done in the home, or in the small shop, where the master craftsman and his apprentice, rubbing elbows at the same bench, could maintain an intimate and friendly relationship. The industrial revolution submerged this personal association in the impersonal ownership of stuffy factories in "spindle cities." Around these, like tumors, the slumlike hovels of the "wage slaves" tended to cluster.

Clearly the early factory system did not shower its benefits evenly on all. While many owners waxed fat, workingpeople often wasted away at their workbenches. Hours were long, wages were low, and meals were skimpy and hastily gulped. Workers were forced to toil in unsanitary buildings that were poorly ventilated, lighted, and heated. They were forbidden by law to form labor unions to raise wages, for such cooperative activity was regarded as a criminal conspiracy. Not surprisingly, only twenty-four recorded strikes occurred before 1835.

Especially vulnerable to exploitation were child workers. In 1820 half the nation's industrial toilers were children under ten years of age. Victims of factory labor, many children were mentally blighted, emotionally starved, physically stunted, and even brutally whipped in special "whipping rooms." In Samuel Slater's mill of 1791, the first machine tenders were seven boys and two girls, all under twelve years of age.

By contrast, the lot of most adult wage workers improved markedly in the 1820s and 1830s. In the

full flush of Jacksonian democracy, many of the states granted the laboring man the vote. Brandishing the ballot, he first strove to lighten his burden through workingmen's parties. Eventually many workers gave their loyalty to the Democratic party of Andrew Jackson, whose attack on the Bank of the United States and against all forms of "privilege" reflected their anxieties about the emerging capitalist economy. In addition to such goals as the ten-hour day, higher wages, and tolerable working conditions, they demanded public education for their children and an end to the inhuman practice of imprisonment for debt.

Employers, abhorring the rise of the "rabble" in politics, fought the ten-hour day to the last ditch. They argued that reduced hours would lessen production, increase costs, and demoralize the workers. Laborers would have so much leisure time that the Devil would lead them into mischief. A red-letter gain was at length registered for labor in 1840, when President Van Buren established the ten-hour day for federal employees on public works. In ensuing years a number of states gradually fell into line by reducing the hours of workingpeople.

Day laborers at last learned that their strongest weapon was to lay down their tools, even at the risk of prosecution under the law. Dozens of strikes erupted in the 1830s and 1840s, most of them for higher wages, some for the ten-hour day, and a few for such unusual goals as the right to smoke on the job. The workers usually lost more strikes than they won, for the employer could resort to such tactics as the importing of strikebreakers—often derisively called "scabs" or "rats," and often fresh off the boat from the Old World. Labor long raised its voice against the unrestricted inpouring of wage-depressing and union-busting immigrant workers.

Labor's early and painful efforts at organization had netted some 300,000 trade unionists by 1830. But such encouraging gains were dashed on the rocks of hard times following the severe depression of 1837. As unemployment spread, union membership shriveled. Yet toilers won a promising legal victory in 1842. The supreme court of Massachusetts ruled in the case of *Commonwealth* v. *Hunt* that labor unions were not illegal conspiracies, provided that their methods were "honorable and peaceful." This enlightened decision did not legalize the strike

overnight throughout the country, but it was a significant signpost of the times. Trade unions still had a rocky row to hoe, stretching ahead for about a century, before they could meet management on relatively even terms.

Women and the Economy

Women were also sucked into the clanging mechanism of factory production. Farm women and girls had an important place in the preindustrial economy, spinning yarn, weaving cloth, and making candles, soap, butter, and cheese. New factories such as the textile mills of New England undermined these activities, cranking out manufactured goods much faster than they could be made by hand at home. Yet these same factories offered employment to the very young women whose work they were displacing. Factory jobs promised greater economic independence for women, as well as the means to buy the manufactured products of the new market economy.

"Factory girls" typically toiled six days a week, earning a pittance for dreary, limb-numbing, ear-splitting stints of twelve or thirteen hours—"from dark to dark." The Boston Associates, nonetheless, proudly pointed to their textile mill at Lowell, Massachusetts, as a showplace factory. The workers were virtually all New England farm girls, carefully supervised on and off the job by watchful matrons. Escorted regularly to church from their company boardinghouses and forbidden to form unions, they had few opportunities to share dissatisfactions over their grueling working conditions.

But factory jobs of any kind were still unusual for women. Opportunities for women to be economically self-supporting were scarce and consisted mainly of nursing, domestic service, and especially teaching. The dedicated Catharine Beecher, unmarried daughter of a famous preacher and sister of Harriet Beecher Stowe, tirelessly urged women to enter the teaching profession. She eventually succeeded beyond her dreams, as men left teaching for other lines of work and schoolteaching became a thoroughly "feminized" occupation. Other work "opportunities" for women beckoned in household service. Perhaps one white family in ten employed servants at midcentury, most of whom were poor white, immigrant, or black women. About 10 percent of white women were working for pay outside their

Violence broke out along the New York waterfront in 1836 when laborers striking for higher wages attacked "scabs." Philip Hone's diary records:

"The Mayor, who acts with vigour and firmness, ordered out the troops, who are now on duty with loaded arms. . . . These measures have restored order for the present, but I fear the elements of disorder are at work; the bands of Irish and other foreigners, instigated by the mischievous councils of the trades-union and other combinations of discontented men, are acquiring strength and importance which will ere long be difficult to quell."

A woman worker in the Lowell mills wrote a friend in 1844:

"You wish to know minutely of our hours of labor. We go in [to the mill] at five o'clock; at seven we come out to breakfast; at half-past seven we return to our work, and stay until half-past twelve. At one, or quarter-past one four months in the year, we return to our work, and stay until seven at night. Then the evening is all our own, which is more than some laboring girls can say, who think nothing is more tedious than a factory life."

Another worker wrote in 1845:

"I am here, among strangers—a factory girl—yes, a factory girl; that name which is thought so degrading by many, though, in truth, I neither see nor feel its degradation. But here I am. I toil day after day in the noisy mill. When the bell calls I must go: and must I always stay here, and spend my days within these pent-up walls, with this ceaseless din my only music?"

own homes in 1850, and estimates are that about 20 percent of all women had been employed at some time prior to marriage.

The vast majority of workingwomen were single. Upon marriage, they left their paying jobs and took up their new work (without wages) as wives and mothers. In the home they were enshrined in a "cult of domesticity," a widespread cultural creed that glorified the customary functions of the homemaker. From their pedestal, married women commanded immense moral power, and they increasingly made decisions that altered the character of the family itself.

Women's changing roles and the spreading Industrial Revolution brought some important changes in the life of the nineteenth-century home—the traditional "women's sphere." Love, not parental "arrangement," more and more frequently determined the choice of a spouse—yet parents often retained the power of veto. Families thus became more closely knit and affectionate, providing the emotional refuge that made the threatening impersonality of big-city industrialism tolerable to many people.

Most striking, families grew smaller. The average household had nearly six members at the end of the eighteenth century but fewer than five members a century later. The "fertility rate," or number of births among women age fourteen to forty-five, dropped sharply among white women in the years after the Revolution and, in the course of the nineteenth century as a whole, fell by half. Birth control was still a taboo topic for polite conversation, and contraceptive technology was primitive, but clearly some form of family limitation was being practiced quietly and effectively in countless families, rural and urban alike. Women undoubtedly played a large part—perhaps the leading part—in decisions to have fewer children. This newly assertive role for women has been called "domestic feminism,"

because it signified the growing power and independence of women, even while they remained wrapped in the "cult of domesticity."

Smaller families, in turn, meant child-centered families, since where children are fewer, parents can lavish more care on them individually. European visitors to the United States in the nineteenth century often complained about the unruly behavior of American "brats." But though American parents may have increasingly spared the rod, they did not spoil their children. Lessons were enforced by punishments other than the hickory stick. When the daughter of novelist Harriet Beecher Stowe neglected to do her homework, her mother sent her from the dinner table and gave her "only bread and water in her own apartment." What Europeans saw as permissiveness was in reality the consequence of an emerging new idea of child-rearing, in which the child's will was not to be simply broken, but rather shaped.

In the little republic of the family, as in the Republic at large, good citizens were raised not to be meekly obedient to authority, but to be independent individuals who could make their own decisions on the basis of internalized moral standards. Thus the outlines of the "modern" family were clear by midcentury: it was small, affectionate, and child-centered, and it provided a special arena for the talents of women. Feminists of a later day might decry the stifling atmosphere of the nineteenth-century home, but to many women of the time, it seemed a big step upward from the conditions of grinding toil—often alongside men in the fields—in which their mothers had lived.

Western Farmers Reap a Revolution in the Fields

As smoke-belching factories altered the eastern skyline, flourishing farms were changing the face of the West. The trans-Allegheny region—especially the Ohio-Indiana-Illinois tier—was fast becoming the nation's breadbasket. Before long it would become a granary to the world.

Pioneer families first hacked a clearing out of the forest and then planted their painfully furrowed fields to corn. The yellow grain was amazingly versatile. It could be fed to hogs ("corn on the hoof") or distilled into liquor ("corn in the bottle"). Both these products could be transported more easily than the bulky grain itself, and they became the early western farmer's staple market items. So many hogs were butchered, traded, or shipped at Cincinnati that the city was known as the "Porkopolis" of the West.

Most western produce was at first floated down the Ohio-Mississippi River system, to feed the lusty appetite of the booming Cotton Kingdom. But western farmers were as hungry for profits as southern slaves and planters were for food. These tillers, spurred on by the easy availability of seemingly boundless acres, sought ways to bring more and more land into cultivation.

Ingenious inventors came to their aid. One of the first obstacles that frustrated the farmers was the thickly matted soil of the West, which snagged and snapped fragile wooden plows. John Deere of Illinois in 1837 finally produced a steel plow that broke the virgin soil. Sharp and effective, it was also light enough to be pulled by horses, rather than oxen.

In the 1830s Virginia-born Cyrus McCormick contributed the most wondrous contraption of all: a mechanical mower-reaper. The clattering cogs of McCormick's horse-drawn machine were to the western farmers what the cotton gin was to the southern planters. Seated on his red-chariot reaper, a single husbandman could do the work of five men with sickles and scythes.

No other American invention cut so wide a swath. It made ambitious capitalists out of humble plowmen, who now scrambled for more acres on which to plant more fields of billowing wheat. Subsistence farming gave way to production for the market, as large-scale ("extensive"), specialized, cash-crop agriculture came to dominate the trans-Allegheny West. With it followed mounting indebtedness, as farmers bought more land and more machinery to work it. Soon hustling farmer-businesspeople were annually harvesting a larger crop than the South—which was becoming self-sufficient in food production—could devour. They began to dream of markets elsewhere—in the mushrooming factory towns of the East or across the faraway Atlantic. But they were still largely landlocked. Commerce moved north and south on the river systems. Before it could begin to move east-west in bulk, a transportation revolution would have to occur.

Highways and Steamboats

In 1789, when the Constitution was launched, primitive methods of travel were still in use. Waterborne commerce, whether along the coast or on the rivers, was slow, uncertain, and often dangerous. Stagecoaches and wagons lurched over bone-shaking roads. Passengers would be routed out to lay nearby fence rails across muddy stretches, and occasionally horses would drown in muddy pits while wagons sank slowly out of sight.

Cheap and efficient carriers were imperative if raw materials were to be transported to factories and if finished products were to be delivered to consumers. On December 3, 1803, a firm in Providence, Rhode Island, sent a shipment of yarn to a point

sixty miles away, notifying the purchaser that the consignment could be expected to arrive in "the course of the winter."

A promising improvement came in the 1790s, when a private company completed the Lancaster Turnpike in Pennsylvania. It was a broad, hard-surfaced highway that thrust sixty-two miles westward from Philadelphia to Lancaster. As drivers approached the tollgate, they were confronted with a barrier of sharp pikes, which were turned aside when they paid their toll. Hence the term *turnpike*.

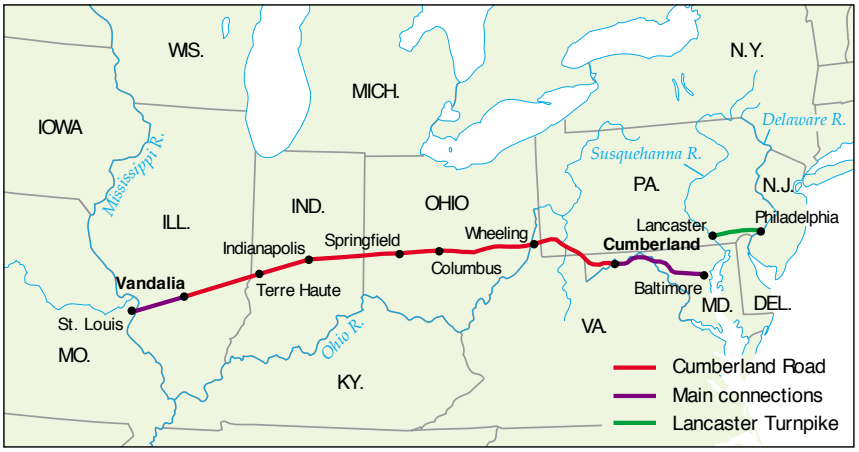
The Lancaster Turnpike proved to be a highly successful venture, returning as high as 15 percent annual dividends to its stockholders. It attracted a rich trade to Philadelphia and touched off a turnpike-building boom that lasted about twenty years. It also stimulated western development. The turnpikes beckoned to the canvas-covered Conestoga wagons, whose creakings heralded a westward advance that would know no real retreat.

Western road building, always expensive, encountered many obstacles. One pesky roadblock was the noisy states' righters, who opposed federal aid to local projects. Eastern states also protested against being bled of their populations by the westward-reaching arteries.

Westerners scored a notable triumph in 1811 when the federal government began to construct the elongated National Road, or Cumberland Road. This highway ultimately stretched from Cumberland, in western Maryland, to Vandalia, in Illinois, a distance of 591 miles. The War of 1812 interrupted construction, and states' rights shackles on internal improvements hampered federal grants. But the thoroughfare was belatedly brought to its destination in 1852 by a combination of aid from the states and the federal government.

The steamboat craze, which overlapped the turnpike craze, was touched off by an ambitious painter-engineer named Robert Fulton. He installed a powerful steam engine in a vessel that posterity came to know as the *Clermont* but that a dubious public dubbed "Fulton's Folly." On a historic day in 1807, the quaint little ship, belching sparks from its single smokestack, churned steadily from New York City up the Hudson River toward Albany. It made the run of 150 miles in 32 hours.

The success of the steamboat was sensational. People could now in large degree defy wind, wave, tide, and downstream current. Within a few years, Fulton had changed all of America's navigable streams into two-way arteries, thereby doubling their carrying capacity. Hitherto keelboats had been pushed up the Mississippi, with quivering poles and raucous profanity, at less than one mile an hour—a process that was prohibitively expensive. Now the



Cumberland (National) Road
and Main Connections
Note also the Lancaster Turnpike.

steamboats could churn rapidly against the current, ultimately attaining speeds in excess of ten miles an hour. The mighty Mississippi had met its master.

By 1820 there were some sixty steamboats on the Mississippi and its tributaries; by 1860 about one thousand, some of them luxurious river palaces. Keen rivalry among the swift and gaudy steamers led to memorable races. Excited passengers would urge the captain to pile on wood at the risk of bursting the boilers, which all too often exploded, with tragic results for the floating firetraps.

Chugging steamboats played a vital role in the opening of the West and South, both of which were richly endowed with navigable rivers. Like bunches of grapes on a vine, population clustered along the banks of the broad-flowing streams. Cotton growers and other farmers made haste to take up and turn over the now-profitable virgin soil. Not only could they float their produce out to market, but, hardly less important, they could ship in at low cost their shoes, hardware, and other manufactured necessities.

"Clinton's Big Ditch" in New York

A canal-cutting craze paralleled the boom in turnpikes and steamboats. A few canals had been built around falls and elsewhere in colonial days, but ambitious projects lay in the future. Resourceful New Yorkers, cut off from federal aid by states' righters, themselves dug the Erie Canal, linking the Great Lakes with the Hudson River. They were blessed with the driving leadership of Governor DeWitt Clinton, whose grandiose project was scoffingly called "Clinton's Big Ditch" or "the Governor's Gutter."

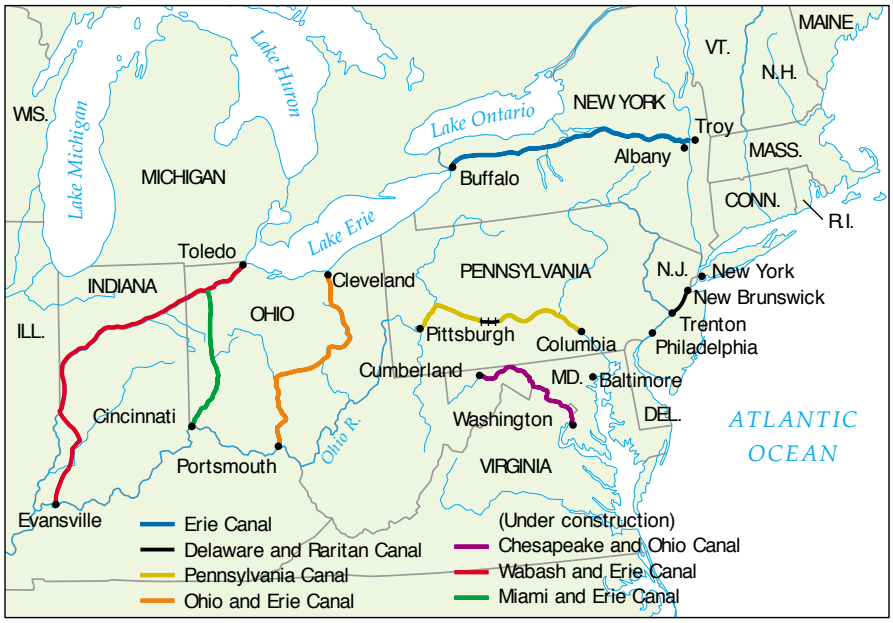
Begun in 1817, the canal eventually ribboned 363 miles. On its completion in 1825, a garlanded canal boat glided from Buffalo, on Lake Erie, to the Hudson River and on to New York harbor. There, with colorful ceremony, Governor Clinton emptied a cask of water from the lake to symbolize "the marriage of the waters."

The water from Clinton's keg baptized the Empire State. Mule-drawn passengers and bulky freight could now be handled with thrift and dispatch, at the dizzy speed of five miles an hour. The cost of shipping a ton of grain from Buffalo to New York City fell from $100 to $5, and the time of transit from about twenty days to six.

Ever-widening economic ripples followed the completion of the Erie Canal. The value of land along the route skyrocketed, and new cities—such as Rochester and Syracuse—blossomed. Industry in the state boomed. The new profitability of farming in the Old Northwest—notably in Ohio, Michigan, Indiana, and Illinois—attracted thousands of European immigrants to the unaxed and untaxed lands now available. Flotillas of steamships soon plied the Great Lakes, connecting with canal barges at Buffalo. Interior waterside villages like Cleveland, Detroit, and Chicago exploded into mighty cities.

Other profound economic and political changes followed the canal's completion. The price of potatoes in New York City was cut in half, and many dispirited New England farmers, no longer able to face the ruinous competition, abandoned their rocky holdings and went elsewhere. Some became mill hands, thus speeding the industrialization of America. Others, finding it easy to go west over the Erie Canal, took up new farmland south of the Great Lakes, where they were joined by thousands of New Yorkers and other northerners. Still others shifted to fruit, vegetable, and dairy farming. The transformations in the Northeast—canal consequences—showed how long-established local market structures could be swamped by the emerging behemoth of a continental economy.

Erie Canal and Main Branches
The Erie Canal system, and others like it, tapped the fabulous agricultural potential of the Midwest, while canal construction and maintenance provided employment for displaced eastern farmers squeezed off the land by competition from their more productive midwestern cousins. The transportation revolution thus simultaneously expanded the nation's acreage under cultivation and speeded the shift of the work force from agricultural to manufacturing and "service" occupations. In 1820 more than three-quarters of American workers labored on farms; by 1850 only a little more than half of them were so employed. (Also see the map on the top of page 313.)



Principal Canals in 1840
Note that the canals mainly facilitated east-west traffic, especially along the great Lake Erie artery. No comparable network of canals existed in the South—a disparity that helps to explain northern superiority in the Civil War that came two decades later.

The Iron Horse

The most significant contribution to the development of such an economy proved to be the railroad. It was fast, reliable, cheaper than canals to construct, and not frozen over in winter. Able to go almost anywhere, even through the Allegheny barrier, it defied terrain and weather. The first railroad appeared in the United States in 1828. By 1860, only thirty-two years later, the United States boasted thirty thousand miles of railroad track, three-fourths of it in the rapidly industrializing North.

At first the railroad faced strong opposition from vested interests, especially canal backers. Anxious to protect its investment in the Erie Canal, the New York legislature in 1833 prohibited the railroads from carrying freight—at least temporarily. Early railroads were also considered a dangerous public menace, for flying sparks could set fire to nearby haystacks and houses, and appalling railway accidents could turn the wooden "miniature hells" into flaming funeral pyres for their riders.

Railroad pioneers had to overcome other obstacles as well. Brakes were so feeble that the engineer might miss the station twice, both arriving and backing up. Arrivals and departures were conjectural, and numerous differences in gauge (the distance between the rails) meant frequent changes of

The Railroad Revolution
Note the explosion of new railroad construction in the 1850s and its heavy concentration in the North.

trains for passengers. In 1840 there were seven transfers between Philadelphia and Charleston. But gauges gradually became standardized, better brakes did brake, safety devices were adopted, and the Pullman "sleeping palace" was introduced in 1859. America at long last was being bound together with braces of iron, later to be made of steel.

Cables, Clippers, and Pony Riders

Other forms of transportation and communication were binding together the United States and the world. A crucial development came in 1858 when Cyrus Field, called "the greatest wire puller in history," finally stretched a cable under the deep North Atlantic waters from Newfoundland to Ireland. Although this initial cable went dead after three weeks of public rejoicing, a heavier cable laid in 1866 permanently linked the American and European continents.

The United States merchant marine encountered rough sailing during much of the early nineteenth century. American vessels had been repeatedly laid up by the embargo, the War of 1812, and the panics of 1819 and 1837. American naval designers made few contributions to maritime progress. A pioneer American steamer, the *Savannah,* had crept across the Atlantic in 1819, but it used sail most of the time and was pursued for a day by a British captain who thought it afire.

In the 1840s and 1850s, a golden age dawned for American shipping. Yankee naval yards, notably Donald McKay's at Boston, began to send down the ways sleek new craft called clipper ships. Long, nar-

row, and majestic, they glided across the sea under towering masts and clouds of canvas. In a fair breeze, they could outrun any steamer.

The stately clippers sacrificed cargo space for speed, and their captains made killings by hauling high-value cargoes in record times. They wrested much of the tea-carrying trade between the Far East and Britain from their slower-sailing British competitors, and they sped thousands of impatient adventurers to the goldfields of California and Australia.

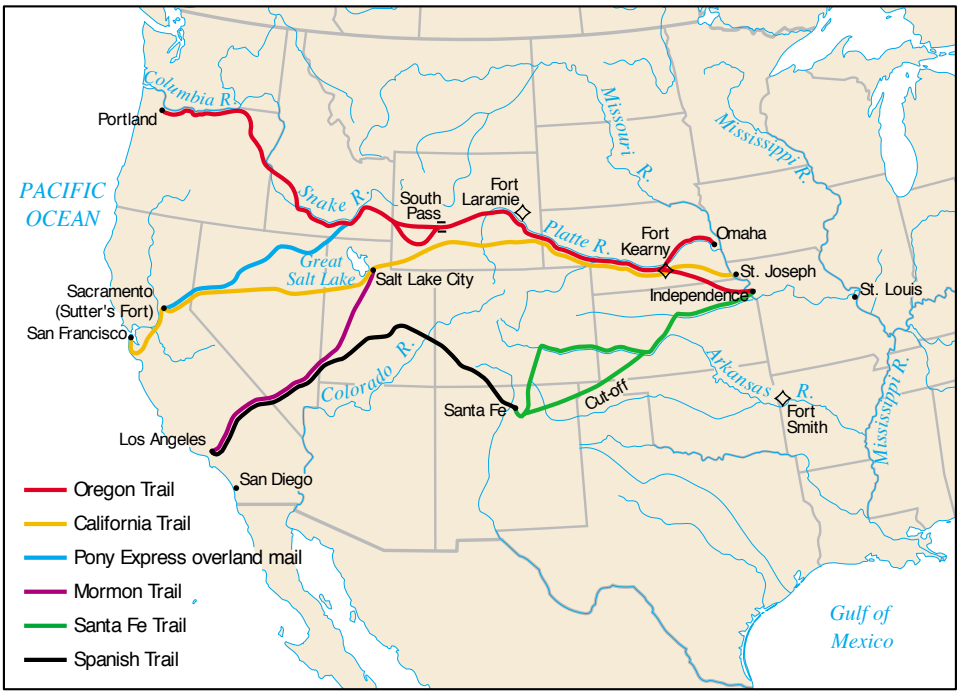
But the hour of glory for the clipper was relatively brief. On the eve of the Civil War, the British had clearly won the world race for maritime ascendancy with their iron tramp steamers ("teakettles"). Although slower and less romantic than the clipper, these vessels were steadier, roomier, more reliable, and hence more profitable.

No story of rapid American communication would be complete without including the Far West. By 1858 horse-drawn overland stagecoaches, immortalized by Mark Twain's *Roughing It,* were a familiar sight. Their dusty tracks stretched from the bank of the muddy Missouri River clear to California.

Even more dramatic was the Pony Express, established in 1860 to carry mail speedily the two thousand lonely miles from St. Joseph, Missouri, to Sacramento, California. Daring, lightweight riders, leaping onto wiry ponies saddled at stations

As late as 1877, stagecoach passengers were advised in print,

"Never shoot on the road as the noise might frighten the horses. . . . Don't point out where murders have been committed, especially if there are women passengers. . . . Expect annoyances, discomfort, and some hardships."



Main Routes West Before the Civil War Mark Twain described his stagecoach trip to California in the 1860s: "We began to get into country, now, threaded here and there with little streams. These had high, steep banks on each side, and every time we flew down one bank and scrambled up the other, our party inside got mixed somewhat. First we would all be down in a pile at the forward end of the stage, . . . and in a second we would shoot to the other end, and stand on our heads. And . . . as the dust rose from the tumult, we would all sneeze in chorus, and the majority of us would grumble, and probably say some hasty thing, like: 'Take your elbow out of my ribs!—can't you quit crowding?'"

approximately ten miles apart, could make the trip in an amazing ten days. These unarmed horsemen galloped on, summer or winter, day or night, through dust or snow, past Indians and bandits. The speeding postmen missed only one trip, though the whole enterprise lost money heavily and folded after only eighteen legend-leaving months.

Just as the clippers had succumbed to steam, so were the express riders unhorsed by Samuel Morse's clacking keys, which began tapping messages to California in 1861. The swift ships and the fleet ponies ushered out a dying technology of wind and muscle. In the future, machines would be in the saddle.

The Transport Web Binds the Union

More than anything else, the desire of the East to tap the West stimulated the "transportation revolution." Until about 1830 the produce of the western region drained southward to the cotton belt or to the heaped-up wharves of New Orleans. The steamboat vastly aided the reverse flow of finished goods up the watery western arteries and helped bind West and South together. But the truly revolutionary changes in commerce and communication came in the three decades before the Civil War, as canals and railroad tracks radiated out from the East, across the Alleghenies and into the blossoming heartland. The ditch-diggers and tie-layers were attempting nothing less than a conquest of nature itself. They would offset the "natural" flow of trade on the interior rivers by laying down an impressive grid of "internal improvements."

The builders succeeded beyond their wildest dreams. The Mississippi was increasingly robbed of its traffic, as goods moved eastward on chugging trains, puffing lake boats, and mule-tugged canal barges. Governor Clinton had in effect picked up the mighty Father of Waters and flung it over the Alleghenies, forcing it to empty into the sea at New York City. By the 1840s the city of Buffalo handled more western produce than New Orleans. Between 1836 and 1860, grain shipments through Buffalo increased a staggering sixtyfold. New York City became the seaboard queen of the nation, a gigantic port through which a vast hinterland poured its wealth and to which it daily paid economic tribute.

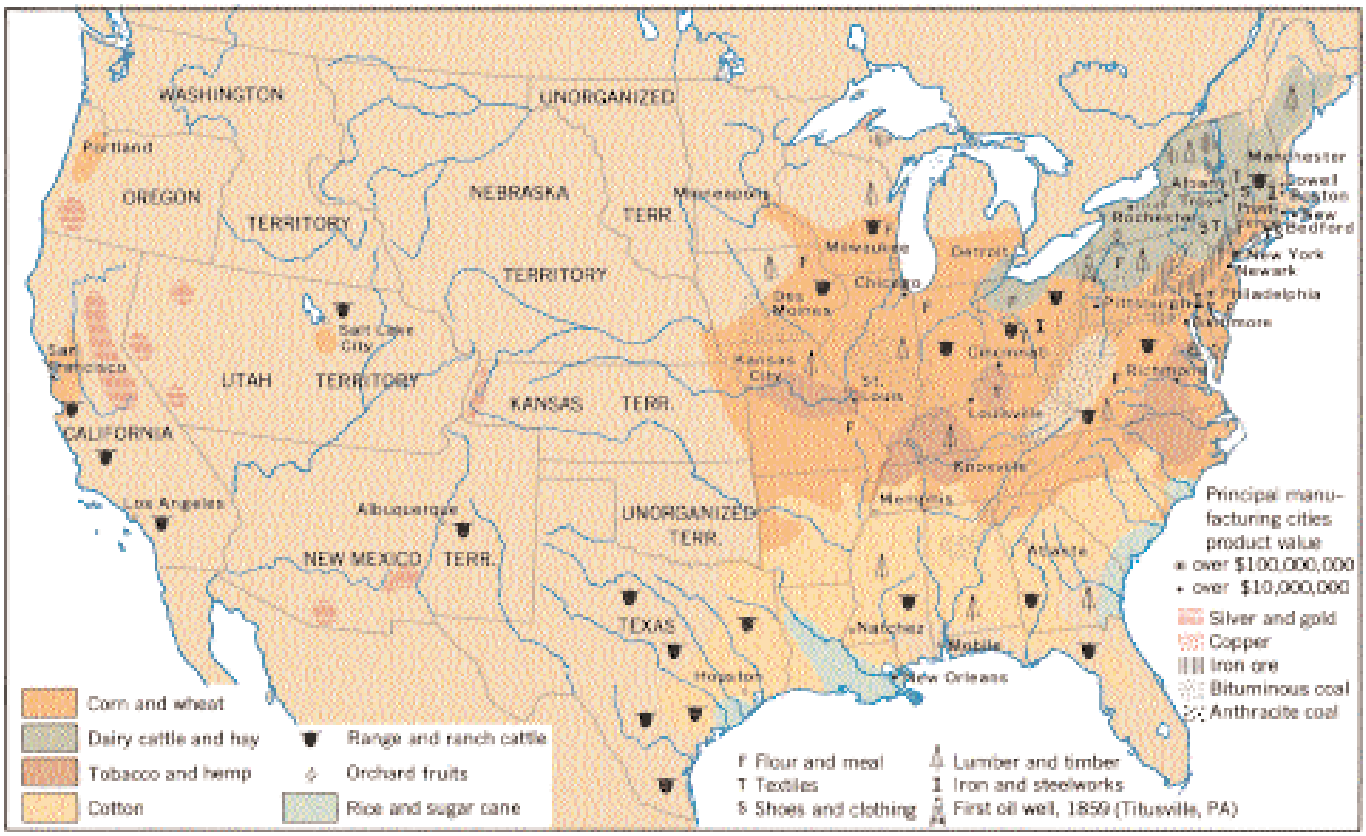
By the eve of the Civil War, a truly continental economy had emerged. The principle of division of

labor, which spelled productivity and profits in the factory, applied on a national scale as well. Each region now specialized in a particular type of economic activity. The South raised cotton for export to New England and Britain; the West grew grain and livestock to feed factory workers in the East and in Europe; the East made machines and textiles for the South and the West.

The economic pattern thus woven had fateful political and military implications. Many southerners regarded the Mississippi as a silver chain that naturally linked together the upper valley states and the Cotton Kingdom. They were convinced, as secession approached, that some or all of these states would have to secede with them or be strangled. But they overlooked the man-made links that now bound the upper Mississippi Valley to the East in intimate commercial union. Southern rebels would have to fight not only Northern armies but the tight bonds of an interdependent continental economy. Economically, the two northerly sections were Siamese twins.

The Market Revolution

No less revolutionary than the political upheavals of the antebellum era was the "market revolution" that transformed a subsistence economy of scattered farms and tiny workshops into a national network of industry and commerce. As more and more Americans—mill workers as well as farmhands, women as well as men—linked their economic fate to the burgeoning market economy, the self-sufficient households of colonial days were transformed. Most families had once raised all their own food, spun their own wool, and bartered with their neighbors for the few necessities they could not make themselves. In growing numbers they now scattered to work for wages in the mills, or they planted just a few crops for sale at market and used the money to buy goods made by strangers in far-off factories. As store-bought fabrics, candles, and soap replaced homemade products, a quiet revolution occurred in the household division of labor and status.



Industry and Agriculture, 1860 Still a nation of farmers on the eve of the Civil War, Americans had nevertheless made an impressive start on their own Industrial Revolution, especially in the Northeast.

Traditional women's work was rendered superfluous and devalued. The home itself, once a center of economic production in which all family members cooperated, grew into a place of refuge from the world of work, a refuge that became increasingly the special and separate sphere of women.

Revolutionary advances in manufacturing and transportation brought increased prosperity to all Americans, but they also widened the gulf between the rich and the poor. Millionaires had been rare in the early days of the Republic, but by the eve of the Civil War, several specimens of colossal financial success were strutting across the national stage. Spectacular was the case of fur-trader and real estate speculator John Jacob Astor, who left an estate of $30 million on his death in 1848.

Cities bred the greatest extremes of economic inequality. Unskilled workers, then as always, fared worst. Many of them came to make up a floating mass of "drifters," buffeted from town to town by the shifting prospects for menial jobs. These wandering workers accounted at various times for up to half the population of the brawling industrial centers. Although their numbers were large, they left little behind them but the homely fruits of their transient labor. Largely unstoried and unsung, they are among the forgotten men and women of American history.

Many myths about "social mobility" grew up over the buried memories of these unfortunate day laborers. Mobility did exist in industrializing America—but not in the proportions that legend often portrays. Rags-to-riches success stories were relatively few.

Yet America, with its dynamic society and wide-open spaces, undoubtedly provided more "opportunity" than did the contemporary countries of the Old World—which is why millions of immigrants packed their bags and headed for New World shores. Moreover, a rising tide lifts all boats, and the improvement in overall standards of living was real. Wages for unskilled workers in a labor-hungry America rose about 1 percent a year from 1820 to 1860. This general prosperity helped defuse the potential class conflict that might otherwise have exploded—and that did explode in many European countries.

Chronology

c. 1750 Industrial Revolution begins in Britain

1791 Samuel Slater builds first U.S. textile factory

1793 Eli Whitney invents the cotton gin

1798 Whitney develops interchangeable parts for muskets

1807 Robert Fulton's first steamboat
Embargo spurs American manufacturing

1811 Cumberland Road construction begins

1817 Erie Canal construction begins

1825 Erie Canal completed

1828 First railroad in United States

1830s Cyrus McCormick invents mechanical mower-reaper

1834 Anti-Catholic riot in Boston

1837 John Deere develops steel plow

1840 President Van Buren establishes ten-hour day for federal employees

1842 Massachusetts declares labor unions legal in *Commonwealth* v. *Hunt*

c. 1843-1868 Era of clipper ships

1844 Samuel Morse invents telegraph
Anti-Catholic riot in Philadelphia

1845-1849 Potato famine in Ireland

1846 Elias Howe invents sewing machine

1848 First general incorporation laws in New York
Democratic revolutions collapse in Germany

1849 Order of the Star-Spangled Banner (Know-Nothing party) formed

1852 Cumberland Road completed

1858 Cyrus Field lays first transatlantic cable

1860 Pony Express established

1861 First transcontinental telegraph

1866 Permanent transatlantic cable established

For further reading, see page A10 of the Appendix. For web resources, go to **http://college.hmco.com.**