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THE ECOLOGY OF THE WEST AND SOUTH, 1865–1900

CHAPTER OUTLINE

Native Americans settled the West long before other Americans migrated there. Neither passive nor powerless in the face of nature, Indians had been shaping their environment—for better and for worse—for centuries. Nevertheless, almost all native economic systems weakened in the late nineteenth century. Several factors explain why and how these declines happened.

Western Indian ecologies varied. Some natives inhabited permanent settlements; others lived in a series of temporary camps. Seldom completely isolated, most Indians were both participants and recipients in a flow of goods, culture, language, and disease carried by bands that migrated from one region to another. Regardless of their type of community, all Indians based their economies to differing degrees on four activities: (1) crop growing; (2) livestock raising; (3) hunting, fishing, and gathering; and (4) trading and raiding. Corn was the most common crop; sheep and horses, acquired from Spanish colonizers and from other Indians, were the livestock; and buffalo (American bison) and salmon were the primary prey of hunting and fishing. Indians raided one another for food, tools, and horses, which in turn they used in trading with other Indians and with whites. They also attacked to avenge wrongs and to oust competitors from hunting grounds. To achieve their standards of living, Indians tried to balance their economic systems. When a buffalo hunt failed, they

CHRONOLOGY

1862	Homestead Act grants free land to citizens who live on and improve the land Morrill Land Grant Act gives states public land to sell to finance agricultural and industrial colleges
1864	Chivington's militia massacres Black Kettle's Cheyennes at Sand Creek
1869	First transcontinental railroad completed
1872	Yellowstone becomes first national park
1876	Lakotas and Cheyennes ambush Custer's federal troops at Little Big Horn, Montana
1877	Nez Percé Indians under Young Joseph surrender to U.S. troops
1878	Timber and Stone Act allows citizens to buy timberland cheaply but also enables large companies to acquire huge tracts of forestland
1879	Carlisle School for Indians established in Pennsylvania
1880	Cigarette-making machine invented
1881–82	Chinese Exclusion Acts prohibit Chinese immigration to the United States
1883	National time zones established
1884	U.S. Supreme Court first defines Indians as wards under government protection
1887	Dawes Severalty Act ends communal ownership of Indian lands and grants land allotments to individual native families; "California Plan" advances irrigation
1887–88	Devastating winter on Plains destroys countless livestock and forces farmers into economic hardship
1889	Asa Candler buys and develops Coca-Cola Company
1890	Final suppression of Plains Indians by U.S. Army at Wounded Knee Census Bureau announces closing of the frontier Yosemite National Park established
1892	Muir helps found Sierra Club
1902	Newlands Reclamation Act passed

subsisted on crops. When crops failed, they could still hunt buffalo and steal food and horses in a raid or trade livestock and furs for necessities.

For Indians on the Plains, whether nomads, such as the Lakotas ("Sioux"), or village dwellers, such as the Pawnees, everyday life focused on buffalo. They cooked and preserved buffalo meat; fashioned hides into clothing, moccasins, and blankets; used sinew for thread and bowstrings; and carved tools from bones and horns. Buffalo were so valuable that Pawnees and Lakotas often fought over access to herds. Plains Indians also depended on horses, which they used for hunting and as symbols of wealth. To provide food for their herds, Plains Indians altered the environment by periodically setting fire to tallgrass prairies. The fires burned away dead plants, facilitating growth of new grass in the spring so that horses could feed all summer.

In the Southwest, Indians led varying lifestyles, depending upon the environment. For example, among the O'odham of southeastern Arizona and northwest Mexico, whose name translates into "The People" to distinguish themselves from "others," some groups grew irrigated crops in the region's few river valleys, while those who inhabited mountainous and desert territories followed more of a hunter-gatherer existence. Once foreigners arrived, The People traded for what was useful—tools, cloth, tobacco, livestock—and aided in raids against the Apache, who were enemies of O'odham. (Significantly, the Apache called themselves Nnee, which also means "The People.") The Navajo (or Dine', also meaning "The People") were herders, whose sheep, goats, and horses provided food, transportation, and status.

What buffalo were to Plains Indians and sheep were to the ecology of southwestern Indians, salmon were to Indians of the Northwest. Before the mid-nineteenth century, the Columbia River and its tributaries supported the densest population of native peoples in North America, all of whom fished for salmon in the summer and stored dried fish for the winter. To harvest fish, the Clatsops, Klamath, and S'Klallams developed technologies of stream diversion, platform construction over the water, and special baskets to catch fish from the platforms. Like natives of other regions, many of these Indians traded for horses, buffalo robes, beads, cloth, and knives.

Slaughter of Buffalo

On the Plains and in parts of the Southwest, native ecologies began to dissolve after 1850, when white migrants entered and competed with Indians for access to and control over natural resources. Perceiving buffalo and Indians as hindrances to their ambitions, whites endeavored to eliminate both. Huge herds of buffalo sometimes blocked trains from moving, so railroads made concerted efforts to remove them permanently. When the U.S. Army failed to enforce treaties that reserved hunting grounds for exclusive Indian use, railroads sponsored buffalo hunts in which eastern sportsmen shot at the bulky targets from slow-moving trains, killing thousands. Some hunters collected from $1 to $3 each for hides that were sent east for use mainly as belts to drive industrial machinery; others did not even stop to pick up their kill.

Unbeknownst to both Indians and whites, however, a complex combination of circumstances had already doomed the buffalo before the slaughter of the late 1800s. Natives contributed to the depletion of the herds by increasing their kills, especially to trade hides with whites and other Indians. Also, a period of dry years in the 1840s and 1850s had forced Indians to set up camps in river basins, where they competed with buffalo for space and water. As a result, the buffalo were pushed out of nourishing grazing territory and faced threats of starvation. When whites arrived on the Plains, they, too, sought to settle in river basins, further depriving buffalo of nutritious grasslands. At the same time, lethal animal diseases, such as anthrax and brucellosis, brought in by white-owned livestock, decimated buffalo already weakened by malnutrition and drought. Increasing numbers of horses, oxen, and sheep, owned by white newcomers as well as by some Indians, also upset buffalo grazing patterns by devouring vital grass supplies. In sum, human and ecological shocks created vulnerability among the buffalo, to which mass killing only struck the final blow. By the 1880s, only a few hundred of the 25 million buffalo estimated to have lived on the Plains in 1820 remained.

Decline of Salmon

In the Northwest, the basic wild source of Indian food supply, salmon, suffered a fate similar to that of the buffalo, but for different reasons. White commercial fishermen and canneries moved into the Columbia and Willamette river valleys during the 1860s and 1870s. When commercial fishermen harvested increasing numbers of salmon running upriver to spawn before laying their eggs, the fish supply was not replenished. By the 1880s, whites had greatly diminished salmon runs on the Columbia, and by the early 1900s, construction of dams on the river and its tributaries further impeded the ability of the salmon to reproduce. The U.S. government protected Indian fishing rights, but not the supply of fish in the river. Hatcheries helped restore some of this supply, but dams built to provide power, combined with overfishing and pollution, diminished salmon stocks.

Influence of Young White Men

Buffalo slaughter and salmon reduction undermined western Indian subsistence, but a unique mix of human demography contributed as well. For most of the nineteenth century, white populations that migrated into western lands inhabited by Indians were overwhelmingly young and male. In 1870 white men outnumbered white women by three to two in California, two to one in Colorado, and two to one in Dakota Territory. By 1900, preponderances of men remained throughout these places. Most of these males were unmarried and in their twenties and thirties, the stage of life when they were most prone to violent behavior. In other words, the whites with whom Indians were most likely to come into contact first were traders, trappers, soldiers, prospectors, and cowboys—almost all of whom owned guns and had few qualms about using them against animals and humans who got in their way.

Moreover, these men subscribed to prevailing attitudes that Indians were primitive, lazy, devious, and cruel. Such contempt made exploiting and killing natives all the easier, and whites often justified violence against Indians by claiming preemptive defense against threats to life and property. When Indians raided white settlements, they sometimes mutilated bodies, burned buildings, and kidnapped women, acts that were embellished in campfire stories, pamphlets, and popular fiction—all of which reinforced images of Indians as savages. Inside the bachelor society of saloons and cabins, white men boasted of exploits in Indian fighting and showed off trophies of scalps and other body parts taken from victims.

Indian warriors, too, were young, armed, and prone to violence. Valuing bravery and vengeance, they boasted of fighting white interlopers. But Indian communities contrasted with those of whites in that they contained excesses of women, the elderly, and children, making native bands less mobile and therefore vulnerable to attack. They also were susceptible to bad habits of bachelor white society. Indians copied white males' behavior of bingeing on cheap whiskey and indulging in prostitution. The syphilis and gonorrhea that Indian men contracted from Indian women infected by white men killed many and reduced natives' ability to reproduce, a consequence that their populations, already declining from smallpox and other diseases spread by whites, could not afford. Thus age and gender structures of the white frontier population, combined with attitudes of racial contempt, created a further threat to western Indians' existence.

Government Policy and Treaties

U.S. government policy reinforced efforts to remove Indians from the path of white ambitions, but the cultural organization of Indian groups caused confusion. North American natives were constituted not so much into tribes, as whites believed, as into countless bands and confederacies that shifted in composition. In the West, some two hundred languages and dialects separated these groups, making it difficult for Indians to unite against white invaders. Although a language group could be defined as a tribe, separate bands and clans within each group had their own leaders, and seldom did a chief hold widespread power. Moreover, bands often spent more time battling among themselves than with white settlers.

Nevertheless, the government needed some way of categorizing Indians so as to fashion a policy toward them. It did so by imputing more meaning to tribal organization than was warranted. After 1795, American officials considered Indian tribes to be separate nations with which they could make treaties that ensured peace and defined boundaries between Indian and white lands. This was a faulty assumption because chiefs who agreed to a treaty did not always speak for all members of a band and the group would not necessarily abide by an agreement. Moreover, white settlers seldom accepted treaties as guarantees of Indians' land rights. On the Plains, whites assumed that they could settle wherever they wished, and they rarely hesitated to commandeer choice farmland along river valleys. In the Northwest, whites considered treaties protecting Indians' fishing rights on the Columbia River to be nuisances and ousted Indians from the best locations so that they could use mechanical devices to harvest fish. As white migrants pressed into Indian territories, treaties made one week were violated the next.

Reservation Policy

Prior to the 1880s, the federal government tried to force western Indians onto reservations, where, it was thought, natives could be "civilized." Reservations usually consisted of those areas of a group's previous territory that were least desirable to whites. When assigning Indians to such parcels, the government promised protection from white encroachment and agreed to provide food, clothing, and other necessities.

Reservation policy helped make way for the market economy. In early years of contact in the West, trade had benefited both Indians and whites and had taken place on a nearly equal footing, much as it had between eastern Indians and whites in the preceding century. Indians acquired clothing, guns, and horses from whites in return for furs, hides, jewelry, and, sometimes, military assistance against other Indians. In the West, however, whites' needs and economic power grew disproportionately to Indians' needs and power. Indians became more dependent, and whites increasingly dictated what was to be traded and on what terms. For example, white traders persuaded Navajo weavers in the Southwest to produce heavy rugs, which the Indians rarely could use but appealed to eastern customers, and to adopt new designs and colors to boost sales. Meanwhile, by focusing on commercial production, Navajos raised fewer crops and were forced to buy food because the market economy undermined their subsistence agriculture. Soon they were selling land and labor to whites as well, and their dependency made it easier to force them onto reservations.

Reservation policy had degrading consequences. First, Indians had no say over their own affairs on reservations. Supreme Court decisions in 1884 and

1886 defined them as wards (like helpless children under government protection) and denied them the right to become U.S. citizens. Thus they were unprotected by the Fourteenth and Fifteenth Amendments, which had extended the privileges and legal protections of citizenship to African Americans. Second, pressure from white farmers, miners, and herders who continually sought Indian lands made it difficult for the government to preserve reservations intact. Third, the government ignored native history, even combining on the same reservation Indian bands that habitually had warred against each other. Rather than serving as civilizing communities, reservations weakened every aspect of Indian life, except the resolve to survive.

Native Resistance

Not all Indians succumbed to market forces and reservation restrictions. Apache bands long had raided white settlements in the Southwest and continued their insurgence even after most of their people had been forced onto reservations. Their raiding ended only after the last of their leaders, the Chiricahua chief Geronimo, was captured in 1886. Pawnees in the Midwest resisted disadvantageous deals that white traders tried to impose on them. In the Northwest, Nez Percé Indians defied being forced onto a reservation in Idaho by fleeing in 1877. They successfully eluded U.S. troops and the military's Crow and Cheyenne scouts over 1,800 miles of rugged terrain, but when they reached Montana, their leader, Young Joseph, decided that they could not escape and ended the flight. Sent to a reservation, Joseph repeatedly petitioned the government to return his people's ancestral lands, but his appeals went unheeded.

As they had done earlier in the East, whites responded to western Indian defiance with military aggression. The attitude of many resembled that of an Arizona journalist who wrote, "Extermination is our only hope, and the sooner the better." In 1860, for example, Navajos, reacting to U.S. military pressure, carried out a destructive raid on Fort Defiance in Arizona Territory. In reprisal, the army eventually attacked and starved the Navajo into submission, destroying their fields, houses, and livestock, and in 1863–1864 forced them on a "Long Walk" from their homelands to a reservation at Bosque Redondo in New Mexico. Also in 1864, in order to eliminate natives who blocked white ambitions in the Sand Creek region of Colorado, a militia commanded by Methodist minister John Chivington attacked a Cheyenne band led by Black Kettle, killing almost every Indian. In 1879, four thousand U.S. soldiers forced the surrender of Utes who already had given up most of their ancestral territory in western Colorado but were resisting further concessions.

The most publicized battle occurred in June 1876, when 2,500 Lakotas and Cheyennes led by chiefs Rain-in-the-Face, Sitting Bull, and Crazy Horse surrounded and annihilated 256 government troops led by the rash Colonel George A. Custer near Little Big Horn River in southern Montana. Although Indians consistently demonstrated military skill in such battles, shortages of supplies and relentless pursuit by U.S. soldiers, including African American units of Union army veterans called Buffalo Soldiers (so named by the Cheyennes and Comanches they fought), eventually overwhelmed armed Indian resistance. Native Americans were not so much conquered in battle as they were harassed and starved into submission.

Reform of Indian Policy

In the 1870s and 1880s, reformers and government officials sought more purposely than in the past to "civilize" and "uplift" natives through landholding and education. This meant changing native identities and outlawing customs deemed to be "savage and barbarous." In this regard, the United States copied imperialist policies of other nations, such as the French, who banned native religious ceremonies in their Pacific island colonies, and the British, who jailed African religious leaders. The American government determined to persuade Indians to abandon their traditional cultures and adopt American values of ambition, thrift, and materialism.

At the same time, other groups argued for sympathetic—and sometimes patronizing—treatment. Reform treatises, such as George Manypenny's *Our Indian Wards* (1880) and Helen Hunt Jackson's *A Century of Dishonor* (1881), plus unfavorable comparison with Canada's management of Indian affairs aroused American humanitarianism. Canada had granted native peoples the rights of British subjects and proceeded more slowly than the United States in efforts to acculturate Indians. A high rate of intermarriage between Indians and Canadian whites also promoted smoother relations.

In the United States, the most active Indian reform organizations were the Women's National Indian Association (WNIA) and Indian Rights Association (IRA). The WNIA sought to use women's domestic qualities of nurturance and compassion to help people in need and urged gradual assimilation of Indians. The IRA, which was more influential but numbered few Native Americans among its members, advocated citizenship and landholding by individual Indians. Most reformers believed Indians were culturally inferior to whites and assumed Indians could succeed economically only if they embraced middle-class values of diligence and education.

Reformers particularly deplored Indians' sexual division of labor. Native women seemed to do all the work—tending crops, raising children, cooking, making tools and clothes—while being servile to men, who hunted but were otherwise idle. Ignoring the fact that white men sometimes mistreated white women, groups such as the WNIA and IRA wanted Indian men to bear more responsibilities, treat Indian women more respectfully, and resemble male heads of white middle-class households. But when Indian men and women adopted this model of white society, in which women were supposed to be submissive and private, Indian women lost much of the economic independence and power over daily life that they once had.

Zitkala-Sa

Some exceptional Indians managed to use white-controlled education to their advantage. Zitkala-Sa (Red Bird) was a Yankton Sioux born on the Pine Ridge reservation in South Dakota in 1876. At age twelve, she was sent to a Quaker boarding school in Indiana and later attended Earlham College and the Boston Conservatory of Music. She became an accomplished orator and violinist, but her major contribution was her writing on behalf of her people's needs and the preservation of their cultures. In 1901 Zitkala-Sa published *Old Indian Legends*, in which she translated Sioux oral tradition into stories. She wrote other pieces for *Harper's* and *Atlantic Monthly*, and served in various capacities on the Standing Rock and Ute reservations. In 1902 Zitkala-Sa married a mixed-race army captain who had taken the name Ray Bonnin, and she became

VISUALIZING THE PAST

Attempts to Make Indians Look and Act Like "Americans"

Government officials believed that they could "civilize" Indian children in boarding schools by not only educating them to act like white people but also by making them look like white people. Thus the boys in the photograph below were given baseball uniforms and the girl in the photograph on the next page was made to wear a dress and carry a purse and umbrella, all of which were foreign to native people. These images convey information about how Indians were treated, but they also suggest attitudes of the photographer and the artist who made the images. What messages about "civilizing" natives did the person who photographed the baseball team and the artist who drew the picture of the girl reuniting with her people want the viewer to receive?

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In an attempt to inculcate "American" customs into its native students, the Fort Spokane Indian School in Spokane, Washington, created a baseball team for the young men who boarded there.

known as Gertrude Bonnin. Subsequently, she was elected the first full-blooded Indian secretary of the Society of American Indians and served as editor of *American Indian Magazine*, all the while advocating for Indian rights.

Dawes Severalty Act

In 1887, Congress reversed its reservation policy and passed the Dawes Severalty Act. The act, supported by reformers, authorized dissolution of community-owned Indian property

Library of Congress

In an 1884 edition, Frank Leslie's Weekly, *one of the most popular illustrated news and fiction publications of the late nineteenth and early twentieth centuries, depicted an "Americanized" Indian girl dressed as a proper young lady returning from the Carlisle boarding school to visit her home at the Pine Ridge Agency in South Dakota.*

and granted land allotments to individual Indian families. A family head received 160 acres; each child under eighteen received 40 acres. The government held that land in trust for twenty-five years, so families could not sell their allotments. The law also awarded citizenship to all who accepted allotments (an act of Congress in 1906 delayed citizenship for those Indians who had not yet taken their allotment). It also entitled the government to sell unallocated land to whites.

Indian policy, as implemented by the Interior Department, now assumed two main features, both of which aimed at assimilating Indians into white American culture. First and foremost, as required by the Dawes Act, the government distributed reservation land to families in the belief that property ownership would create productive citizens and integrate Indians into the larger society. As one official stated, the goal was to "weaken and destroy [Indians'] tribal relations and individualize them by giving each a separate home and having them subsist by industry." Second, officials believed that Indians would abandon their "barbaric" habits more quickly if their children were educated in boarding schools away from the reservations.

The Dawes Act represented a Euro-American and Christian worldview, an earnest but narrow belief that a society of landholding families headed by men was the most desired model. Government agents and reformers were joined by educators who viewed schools as tools to create a patriotic, industrious citizenry. Using the model of Hampton Institute, founded in Virginia in 1869 to educate newly freed slaves, educators helped establish the Carlisle School in Pennsylvania in 1879, which served as the flagship of the government's Indian school system. In keeping with Euro-American custom, the boarding schools imposed white-defined sex roles: boys were taught farming and carpentry, and girls learned sewing, cleaning, and cooking.

Ghost Dance

In 1890, the government made one final show of force. With active Indian resistance having been suppressed, some Lakotas and other groups turned to the Ghost Dance religious movement as a spiritual means of preserving native culture. This messianic vision was expressed in a ritual involving several days of dancing and meditation. Inspired by a Paiute prophet named Wovoka, the Ghost Dance consisted of movement in a circle until dancers reached a trancelike state and envisioned dead ancestors who, dancers believed, heralded a day when buffalo would return and all elements of white civilization, including guns and whiskey, would be buried.

Ghost Dancers forswore violence but appeared threatening when they donned sacred shirts that they believed would repel the white man's bullets. As the religion spread, government agents became alarmed about the possibility of renewed Indian uprisings. Charging that the cult was anti-Christian, the army began arresting Ghost Dancers. Late in 1890, the government sent the Seventh Cavalry, Custer's old regiment, to detain Lakotas moving toward Pine Ridge, South Dakota. Although the Indians were starving and seeking shelter, the army assumed they were armed for revolt. Overtaking the band at a creek called Wounded Knee, the troops massacred an estimated three hundred men, women, and children in the snow.

The Losing of the West

Indian wars and the Dawes Act effectively accomplished what whites wanted and Indians feared: they reduced native people's independence and dissolved their human ecology. Speculators induced Indians to sell newly acquired property, in spite of federal safeguards against such practices. Between 1887 and the 1930s, native landholdings dwindled from 138 million acres to 52 million. Land-grabbing whites were particularly cruel to Ojibwas in the northern plains. In 1906, Minnesota senator Moses E. Clapp attached to an Indian appropriations bill a rider declaring that mixed-blood adults on the White Earth reservation were "competent" (meaning educated in white ways) enough to sell their land without having to observe the twenty-five-year waiting period stipulated in the Dawes Act. When the bill became law, speculators duped many Ojibwas into signing away their property in return for counterfeit money and worthless merchandise. The Ojibwas lost more than half their original holdings, and economic ruin overtook them.

Government policy had other injurious effects on Indians' ways of life. The boarding-school program enrolled thousands of children and tried to teach them that their inherited customs were inferior, but most schoolchildren returned to reservations demoralized rather than ready to assimilate into white society. Polingaysi Qoyawayma, a Hopi woman forced to take the Christian name Elizabeth Q. White, recalled after four years spent at the Sherman Institute in Riverside, California, "As a Hopi, I was misunderstood by the white man; as a convert of the missionaries, I was looked upon with suspicion by the Hopi people."

Ultimately, political and ecological crises overwhelmed western Indian groups. White violence and military superiority alone did not defeat them. Their economic systems had started to break down before military campaigns occurred. Buffalo extinction, enemy raids, and disease combined to hobble subsistence culture to the point where Native Americans had no alternative but to yield their lands to market-oriented whites. Believing their culture to be superior, whites determined to transform Indians into successful farmers by teaching them the value of private property, educating them in American ideals, and eradicating their "backward" languages, lifestyles, and religions. Although Indians tried to retain their culture and adapt to the demands they faced, by the end of the century they had lost control of the land and were under increasing pressure to shed their group identity. The West was won at their expense, and to this day they remain casualties of an aggressive age.

The Extraction of Natural Resources

In contrast to Indians, who used natural resources to meet subsistence and small-scale trading needs, most whites who migrated to the West and Great Plains in the late nineteenth century were driven by the desire for material success. To their eyes, the vast stretches of territory promised untapped sources of wealth that could bring about a better life (see Map 15.1). Extraction of these resources advanced settlement and created new markets at home and abroad; it also fueled revolutions in transportation, agriculture, and industry that swept across the United States. This ecological relationship between nature and humans also gave rise to wasteful practices and fed habits of racial and sexual oppression.

Mining

In the mid-1800s, prospectors began to comb western terrain for gold, silver, copper, and other minerals. The mining frontier advanced rapidly, drawing thousands of people to Nevada, Idaho, Montana,

MAP 15.1 The Development and Natural Resources of the West

Utah, and Colorado. California, where a gold rush helped populate a thriving state by 1850, furnished many of the miners, who traveled to nearby states in search of riches. Others seeking mineral riches followed traditional routes, moving from the East and Midwest to western mining regions.

Prospectors tended to be restless optimists, willing to climb mountains and trek across deserts in search of a telltale glint of gold, silver, or copper. They lived outdoors, shot animals for food, and financed their explorations by convincing merchants to advance credit for equipment in return for a share of the as-yet-undiscovered lode. Unlucky prospectors whose credit ran out took jobs and saved up for another search.

Digging up and transporting minerals was extremely expensive, so prospectors who did discover veins of metal seldom mined them. Instead, they sold their claims to large mining syndicates, such as the Anaconda Copper Company. Financed by eastern capital, these companies brought in engineers, heavy machinery, railroad lines, and work crews. Workers and businesses to serve the mining operations also settled cities and helped boost populations in places such as El Paso and Tucson. In doing so, they made western mining corporate, just like eastern manufacturing. Though discoveries of gold and silver sparked national publicity, mining companies usually exploited less romantic but usually more lucrative bonanzas of lead, zinc, tin, quartz, and copper.

Lumbering and Oil Drilling

Unlike mining, cutting trees to supply demands for construction and heating materials required vast tracts of forestland to be profitable. Because tree supplies in the upper Midwest and South had been depleted by earlier logging, lumber corporations moved into forests of the Northwest, where they felled trees, used horses and oxen to drag the timber to a nearby river, then floated the logs downstream to sawmills to be cut into boards. Large lumber companies often grabbed millions of western acres under the Timber and Stone Act, passed by Congress in 1878 to stimulate settlement in California, Nevada, Oregon, and Washington. The law allowed private citizens to buy, at a low price, 160-acre plots "unfit for cultivation" and "valuable chiefly for timber." Lumber companies hired seamen from waterfront boardinghouses to register claims to timberland and then transfer those claims to the company owners. By 1900, private citizens had bought over 3.5 million acres, but most of that land belonged to corporations.

While mining corporations were excavating western mineral deposits and lumber corporations were cutting down Northwest timberlands, oil companies were beginning to drill wells in the Southwest. In 1900 most of the nation's petroleum still came from the Appalachians and Midwest, but rich oil reserves had been discovered in southern California and eastern Texas, creating not only new wealth but also boosting boom cities, such as Los Angeles and Houston. Although oil and kerosene were still used mostly for lubrication and lighting, oil discovered in the Southwest soon became a vital source of fuel for autos and other machines.

Water and Irrigation

Glittering gold, tall trees, and gushing oil shaped popular images of the West, but water gave it life. If western lands promised wealth from mining, cutting, and drilling, their agricultural potential promised more—but only if settlers could find a way to bring water to the arid soil. Western economic development is the story of how public and private interests used technology and organization to utilize the region's sometimes scarce water resources to make the land agriculturally productive. Just as control of land was central to western ecology, so, too, was control of water.

For centuries, Indians irrigated southwestern fields to sustain their subsistence farming. When the Spanish arrived, they began tapping the Rio Grande River to irrigate farms in southwest Texas and New Mexico. Later they channeled water to California mission communities of San Diego and Los Angeles. The first Americans of European ancestry to practice extensive irrigation were the Mormons. After arriving in Utah in 1847, they diverted streams and rivers into networks of canals, whose water enabled them to farm the hard-baked soil. By 1890 Utah boasted over 263,000 irrigated acres supporting more than two hundred thousand people.

Rights to Water Efforts at land reclamation through irrigation in Colorado and California sparked conflict over rights to precious streams that flowed through the West. Americans inherited the English common-law principle of riparian rights, which held that only those who owned land along a river's banks could appropriate from the water's flow. The stream itself, according to riparianism, belonged to God; those who lived near it could take water for normal needs but were not to diminish the river. This principle, intended to protect nature, discouraged economic development because it prohibited property owners from damming or diverting water at the expense of others who lived downstream.

Americans who settled the West rejected riparianism in favor of prior appropriation, which awarded a river's water to the first person who claimed it. Westerners, taking cues in part from eastern Americans who had diverted waterways to power mills and factories, asserted that water, like timber, minerals, and other natural resources, existed to serve human needs and advance profits. They argued that anyone intending a "reasonable" or "beneficial" (economically productive) use of river water should have the right to appropriation, and the courts generally agreed.

Government Supervision of Water Rights Under appropriation, someone who dammed and diverted water often reduced the flow of water downstream. People disadvantaged by such action could protect their interests either by suing those who deprived them of water or by establishing a public authority to regulate water usage. Thus, in 1879, Colorado created several regional water divisions throughout the state, each with a commissioner to regulate water rights. In 1890, Wyoming enlarged the concept of government control with a constitutional provision declaring that the state's rivers were public property subject to supervision.

Destined to become the most productive agricultural state, California devised a dramatic response to the problem of water rights, sometimes called the California

Solution. In the 1860s, a few individuals controlled huge tracts of land in the fertile Sacramento and San Joaquin River valleys, which they used for speculating in real estate, raising cattle, and growing wheat. But around the edges of the wheat fields lay unoccupied lands that could profitably support vegetable and fruit farming if irrigated properly.

Unlike western states that had favored appropriation rights over riparian rights, California maintained a mixed legal system that upheld riparianism while allowing for some appropriation. This system disadvantaged irrigators and prompted them to seek to change state law. In 1887, the legislature passed a bill permitting farmers to organize into districts that would construct and operate irrigation projects. An irrigation district could use its authority to purchase water rights, seize private property to build irrigation canals, and finance projects through taxation or by issuing bonds. As a result of this legislation, California became the nation's leader in irrigated acreage, with more than 1 million irrigated acres by 1890, making the state's fruit and vegetable agriculture the most profitable in the country.

Newlands Reclamation Act

Although state-supervised irrigation stimulated farming, the federal government still owned most western land in the 1890s, ranging from 64 percent of California to 96 percent of Nevada. Prodded by land-hungry developers, state governments wanted the federal government to transfer to them at least part of public domain lands. States claimed that they could make these lands profitable through reclamation—providing them with irrigated water. Congress generally refused such transfers because of the controversies they raised. If one state sponsored irrigation to develop its own land, who would regulate waterways that flowed through more than one state? If, for example, California assumed control of the Truckee River, which flowed westward out of Lake Tahoe on the California–Nevada border, how would Nevadans be assured that California would allow them sufficient water? Only the federal government, it seemed, had the power to regulate interstate water development.

In 1902, after years of debate, Congress passed the Newlands Reclamation Act. Named for Nevada's Democratic congressman Francis Newlands, the law allowed the federal government to sell western public lands to individuals in parcels not to exceed 160 acres and to use proceeds from such sales to finance irrigation projects. The Newlands Act provided for control of water but did not address conservation, even though three-fourths of the water used in open-ditch irrigation, the most common form, was lost to evaporation. Thus the Newlands Reclamation Act fell squarely within the tradition of development of nature for human profit. It represented a decision by the federal government to aid the agricultural and general economic expansion of the West.

Complex Communities

As the West developed, it became a rich multiracial society, including not only Native Americans and white migrants but also Mexicans, African Americans, and Asians, all involved in community building. A crescent of territory, a borderland stretching from western Texas through New Mexico and Arizona to northern California, but also including Mexico, supported ranchers and sheepherders, descendants of the Spanish who had originally claimed the land. In New Mexico, Spaniards intermarried with Indians to form a *mestizo* population of small farmers and ranchers. All along the Southwest frontier, Mexican immigrants moved into American territory to find work. Some returned to Mexico seasonally; others stayed. Although the Treaty of Guadalupe Hidalgo (1848) had guaranteed property rights to Hispanics, "Anglo" (the Mexican name for a white American) miners, speculators, and railroads used fraud and other means to obtain much of Hispanic landholdings. As a result, many Mexicanos moved to cities such as San Antonio and Tucson and became wage laborers.

Before the Chinese Exclusion Act of 1882 prohibited the immigration of Chinese laborers, some two hundred thousand Chinese—mostly young, single males—entered the United States and built communities in California, Oregon, and Washington. Many came with five-year contracts to work on railroad construction, then return home, presumably with resources for a better life. They also labored in the fields. By the 1870s, Chinese composed half of California's agricultural workforce. The state's farms and citrus groves demanded a huge migrant workforce to harvest the crops, and Chinese laborers moved from one ripening crop to another, working as pickers and packers. In cities such as San Francisco, they labored in textile and cigar factories and lived in large, densely packed boardinghouses. Few married because Chinese women were scarce.

Like Chinese and Mexicans, Japanese and European immigrants, especially Irish, moved from place to place as they worked on railroads and in mining and agricultural communities. The region consequently developed its own migrant economy, with workers traveling across a large geographical area as they took short-term jobs in mining, farming, and railroad construction.

African Americans tended to be more settled, many of them "exodusters," former slaves who had fled the South and built all-black towns, mostly in Kansas. Nicodemus, Kansas, for example, was founded in 1877 by black migrants from Lexington, Kentucky, and grew to six hundred residents within two years. Early experiences were challenging, but eventually the town boasted newspapers, shops, churches, a hotel, and a bank. When attempts to obtain railroad connections failed, however, the town declined, and many of its businesses moved across the Solomon River to the town of Bogue, where a Union Pacific Railroad camp was located. Other black migrants, encouraged by editors and land speculators, went to Oklahoma Territory. In the 1890s and early 1900s, African American settlers founded thirty-two all-black communities in Oklahoma, and the territory boasted several successful black farmers.

Western Women Although unmarried men numerically dominated the western natural resource frontier, many communities contained populations of white women who had come for the same reason as men: to make their fortune. But in the West as elsewhere, women's independence was limited; they usually accompanied a husband or father and seldom prospected themselves. Even so, many women used their labor as a resource and earned money by cooking and laundering, and in some cases providing sexual services for miners in houses of prostitution. In the Northwest, they worked in canneries, cleaning and salting the fish that their husbands caught. Mexicano women took jobs in cities as laundresses and seamstresses.

A number of white women helped to bolster family and community life as members of the home mission movement. Protestant missions had long sponsored benevolent activities abroad, such as in China, and had aided the settlement of Oregon in the 1830s and 1840s. But in the mid-nineteenth century, some women broke away from male-dominated missionary organizations. Using the slogan "Woman's work for women," they exerted moral authority in the West by establishing their own missionary societies and aiding women—unmarried mothers, Mormons, Indians, and Chinese—whom they believed had fallen prey to men or who had not yet accepted principles of Christian virtue.

Significance of Race

To control labor and social relations within this human ecological complex, white settlers made race an important distinguishing characteristic. They usually classified people into five races: Caucasians (themselves), Indians, Mexicans (both Mexican Americans, who had originally inhabited western lands, and Mexican immigrants), "Mongolians" (a term applied to Chinese), and "Negroes." In applying these categories, whites imposed racial distinctions on people who, with the possible exception of African Americans, had never before considered themselves to be a "race." Whites using these categories ascribed demeaning characteristics to all others, judging them to be permanently inferior. In 1878, for example, a federal judge in California ruled that Chinese could not become U.S. citizens because they were not "white persons."

Racial and ethnic minorities in western communities occupied the bottom segment of a two-tiered labor system. Whites dominated the top tier of managerial and skilled labor positions, while Irish, Chinese, Mexican, and African American workers held unskilled positions. All non-Anglo groups, in addition to the Irish, encountered prejudice, especially as dominant whites tried to reserve for themselves whatever riches the West might yield. Anti-Chinese violence erupted during hard times. For example, when the Union Pacific Railroad tried to replace white workers with lower-waged Chinese in Rock Springs, Wyoming, in 1885, unemployed whites invaded and burned down the Chinese part of town, killing twenty-eight. Mexicans, many of whom had been the original owners of the land in California and elsewhere, saw their property claims ignored or stolen by white miners and farmers.

The multiracial quality of western communities, however, also included a cross-racial dimension. Because so many white male migrants were single, intermarriage, or at least cohabitation, with Mexican and Indian women was common. Such unions were acceptable for white men, but not for white women, especially where Asian immigrants were involved. Most miscegenation laws passed by western legislatures were intended to prevent Chinese and Japanese men from marrying white women.

Conservation Movement

As whites were wresting ownership of the land from Indian and Mexican inhabitants, questions arose over who should control the nation's animal, mineral, and timber resources.

Much of the undeveloped territory west of the Mississippi was in the public domain, and some people believed that the federal government, as its owner, should limit its exploitation. Others, however, believed that their own and the nation's prosperity depended on unlimited utilization of the land and its contents.

Questions about natural resources caught Americans between a desire for progress and a fear of spoiling nature. After the Civil War, people eager to protect the natural landscape began to organize a conservation movement. Sports hunters, concerned about depletion of wildlife, opposed mass commercial hunting and lobbied state legislatures to pass hunting regulations. Artists and tourists in 1864 persuaded Congress to preserve the beautiful Yosemite Valley by granting it to the state of California, which reserved it for public use. Then, in 1872, Congress designated the Yellowstone River region in Wyoming as the first national park. And in 1891 conservationists, led by naturalist John Muir, pressured Congress to authorize President Benjamin Harrison to create forest reserves—public lands protected from private timber cutters.

Such policies met with strong objections from lumber companies and railroads. Despite Muir's activism and efforts by the Sierra Club (which Muir helped found in 1892) and by such corporations as the Southern Pacific Railroad, which supported rational resource development, opposition was loudest in the West, where people remained eager to take advantage of nature's bounty. Ironically, however, by prohibiting trespass in areas such as Yosemite and Yellowstone, conservation policy deprived Indians and white settlers of the wildlife, water, and firewood that they had previously taken from federal lands.

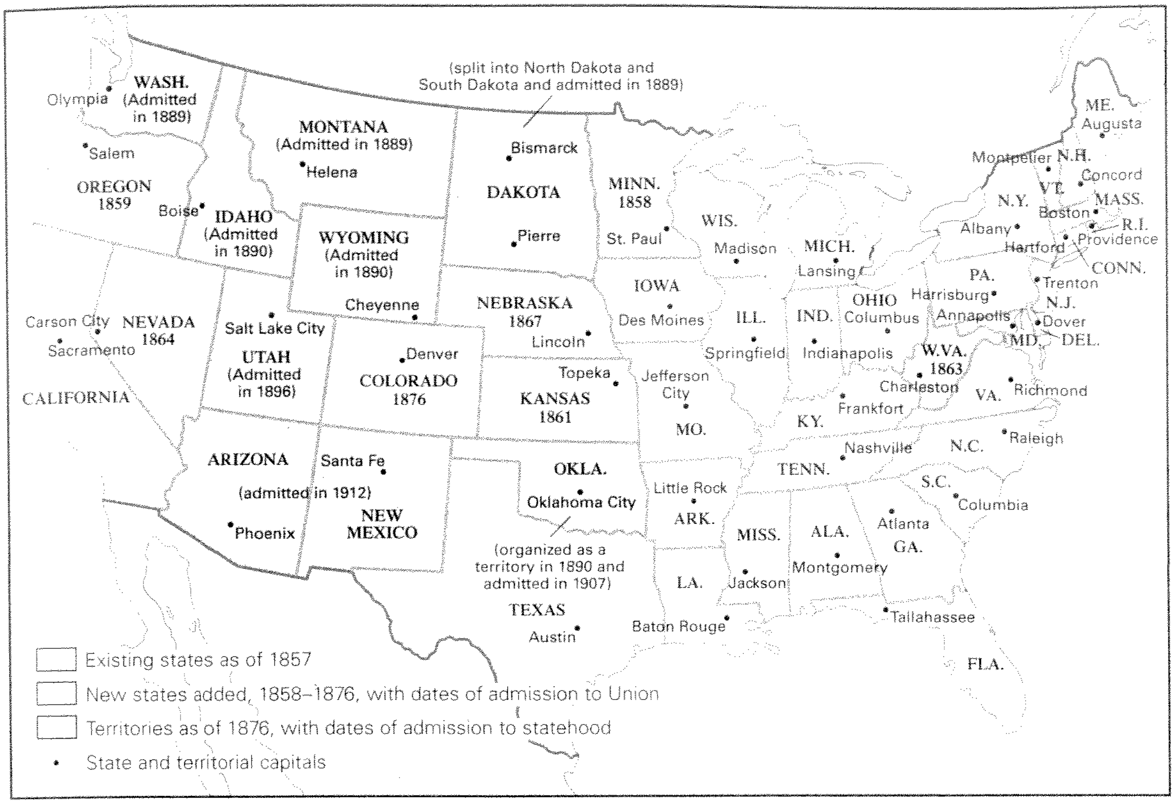
Admission of New States

Development of mining and forest regions, as well as of farms and cities, brought western territories to the economic and population threshold of statehood (see Map 15.2). In 1889, Republicans seeking to solidify control of Congress passed an omnibus bill granting statehood to North Dakota, South Dakota, Washington, and Montana, where Republican politicians dominated. Wyoming and Idaho, both of which allowed women to vote, were admitted the following year. Congress denied statehood to Utah until 1896, wanting assurances from the Mormons, who constituted a majority of the territory's population and controlled its government, that they would prohibit polygamy.

Western states' varied communities spiced American folk culture and fostered a "go-getter" optimism that distinguished the American spirit. The lawlessness and hedonism of places such as Deadwood, in Dakota Territory, and Tombstone, in Arizona Territory, gave their regions notoriety and romance. Legends, only partly true, arose about characters whose lives both typified and magnified western experience, and promoters such as Buffalo Bill enhanced the appeal of western folklore.

Western Folk Heroes

Arizona's mining towns, with their free-flowing cash and loose law enforcement, attracted gamblers, thieves, and opportunists whose names came to stand for the Wild



MAP 15.2 The United States, 1876–1912

A wave of admissions between 1889 and 1912 brought remaining territories to statehood and marked the final creation of new states until Alaska and Hawai'i were admitted in the 1950s.

West. Near Tombstone, the infamous Clanton family and their partner John Ringgold (Johnny Ringo) engaged in smuggling and cattle rustling. Inside the town, the Earp brothers—Wyatt, Jim, Morgan, Virgil, and Warren—and their friends William ("Bat") Masterson and John Henry ("Doc") Holliday operated on both sides of the law as gunmen, gamblers, and politicians. A feud between the Clantons and Earps climaxed on October 26, 1881, in a shootout at the OK Corral, where three Clantons were killed and Holliday and Morgan Earp were wounded. These characters and their exploits provided material for future novels, movies, and television programs.

Writers Mark Twain, Bret Harte, and others captured the flavor of western life, and characters such as Buffalo Bill, Annie Oakley, and Wild Bill Hickok became western folk heroes. But violence and eccentricity were not widely common. Most miners and lumbermen worked long hours, often for corporations rather than as rugged individuals, and had little time, energy, or money for gambling, carousing, or gunfights. Women worked as long or longer as teachers, laundresses, storekeepers, and housewives. Only a few were sharpshooters or dance-hall queens. For most, western life was a matter of adapting and surviving.

The Age of Railroad Expansion

Between 1865 and 1890, railroad construction boomed, as total track grew from 35,000 to 200,000 miles, mostly from construction west of the Mississippi River (see Map 15.1). By 1900, the United States contained one-third of all railroad track in the world. A diverse mix of workers made up construction crews. The Central Pacific, built eastward from San Francisco, employed thousands of Chinese; the Union Pacific, extending westward from Omaha, Nebraska, used mainly Irish labor. Workers lived in shacks and tents that they dismantled, loaded on flatcars, and relocated each day.

Railroad expansion had powerful economic effects. After 1880, when steel rails replaced iron rails, railroads helped to boost the nation's steel industry to international leadership. Railroads also spawned related industries, including coal production (for fuel), passenger and freight car manufacture, and depot construction. Influential and essential, railroads gave important impetus to western urbanization. With their ability to transport large loads of people and freight, lines such as the Union Pacific and the Southern Pacific accelerated the growth of western hubs, such as Chicago, Omaha, Kansas City, Cheyenne, Los Angeles, Portland, and Seattle.

Railroad Subsidies

Railroads accomplished these feats with help from some of the largest government subsidies in American history. Promoters argued that because railroads were a public benefit, the government should aid them by giving them land from the public domain, which they could then sell to finance construction. During the Civil War, Congress, dominated by business-minded Republicans and in the absence of representatives from the seceded southern states, was sympathetic, as it had been when it aided steamboat companies earlier in the century. As a result, the federal government granted railroad corporations over 180 million acres, mostly for interstate routes. These grants usually consisted of a right of way, plus alternate sections of land in a strip 20 to 80 miles wide along the right of way. Railroads funded construction by using these lands as security for bonds—loans from investors—or by selling parcels for cash. States and localities heaped on further subsidies. State legislators, many of whom had financial interests in a railroad's success, granted some 50 million acres. Cities and towns also assisted, usually by offering loans or by purchasing railroad bonds or stocks.

Government subsidies had mixed effects. Although capitalists often opposed government involvement in the economic affairs of private businesses, railroads nevertheless readily accepted public aid and pressured governments into meeting their needs. The Southern Pacific, for example, threatened to bypass Los Angeles unless the city paid a bonus and built a depot. Localities that could not or would not pay suffered. Without government help, few railroads could have prospered sufficiently to attract private investment, yet such aid was not always salutary. During the 1880s, the policy of generosity haunted communities whose zeal had prompted them to commit too much to railroads that were never built or that defaulted on loans. Some laborers and farmers fought subsidies, arguing that companies such as the Southern Pacific would become too powerful. Many communities boomed, however, because they had linked their fortunes to the iron horse. Moreover, railroads helped attract investment into the West and drew farmers into the market economy.

Standard Gauge, Standard Time

Railroad construction brought about important technological and organizational reforms. By the late 1880s, almost all lines had adopted standard-gauge rails so that their tracks built by different companies could connect with one another. Air brakes, automatic car couplers, and other devices made rail transportation safer and more efficient. The need for gradings, tunnels, and bridges spurred the growth of the American engineering profession. Organizational advances included systems for coordinating passenger and freight schedules, and the adoption of uniform freight classification systems. Railroads also, however, reinforced racial segregation by separating black from white passengers on railroad cars and in stations.

Rail transportation altered conceptions of time and space. First, as they surmounted physical barriers by bridging rivers and tunneling through mountains, railroads transformed space into time. Instead of expressing distance between places in miles, people began to refer to the amount of time it took to travel from one place to another. Second, railroad scheduling required nationwide standardization of time so that shippers could be certain about when a train would arrive. Before railroads, local clocks struck noon when the sun was directly overhead, and people set clocks and watches accordingly. But because the sun was not overhead at exactly the same moment everywhere, time varied from place to place. Boston's clocks, for instance, differed from those in New York by almost twelve minutes. To impose regularity, railroads created their own time zones. In 1883, without authority from Congress, the nation's railroads agreed to establish four standard time zones for the country. Most communities adjusted accordingly, and railroad time became national time.

Farming the Plains

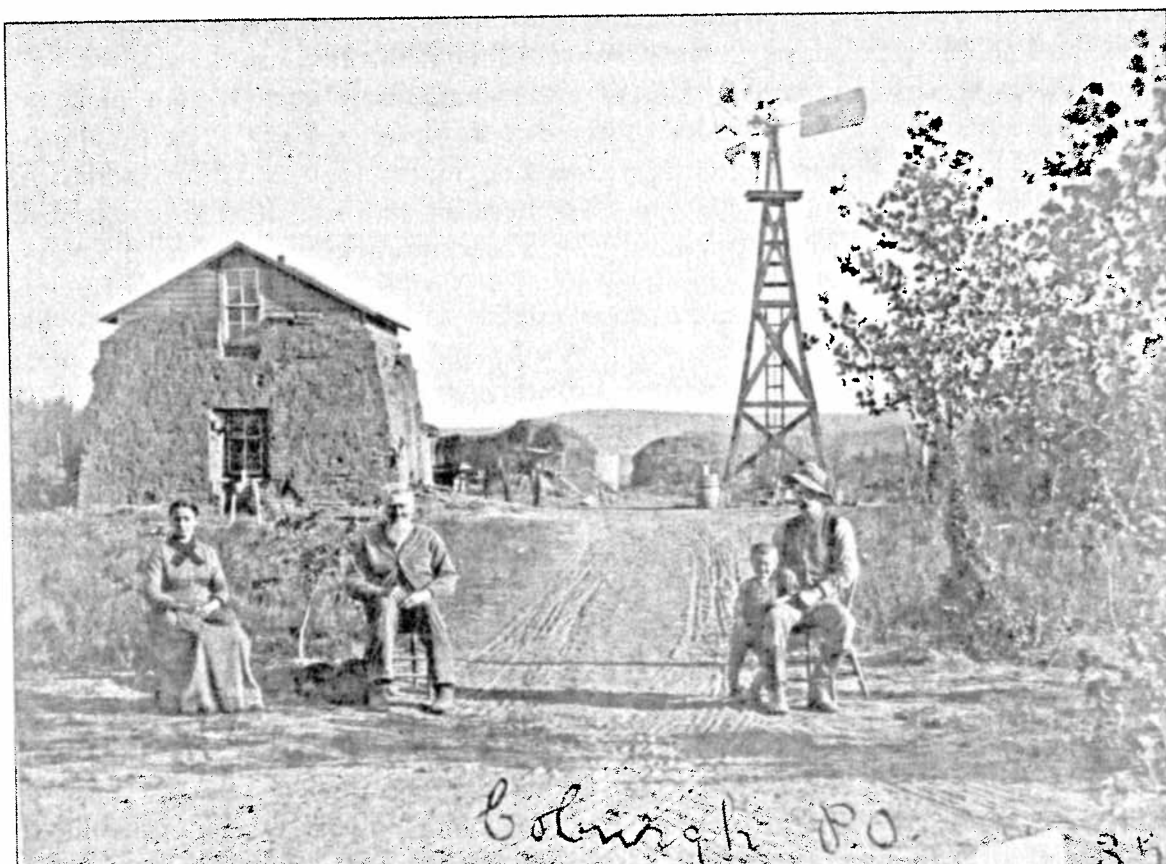
While California emerged as the nation's highest-yielding agricultural state, extraordinary ecological development occurred in the Great Plains. There, farming in the late 1800s exemplified two important achievements: the transformation by people of arid, windswept prairies into arable land that would feed the nation, and the transformation of agriculture into big business by means of mechanization, long-distance transportation, and scientific cultivation. These feats did not come easily. The region's climate and terrain presented formidable challenges, and overcoming them did not guarantee success. Irrigation and mechanized agriculture enabled farmers to feed the nation's burgeoning population and turned the United States into the world's breadbasket, but the experience also scarred the lives of countless people who made that accomplishment possible.

Settlement of the Plains

During the 1870s and 1880s, more acres were put under cultivation in states such as Kansas, Nebraska, and Texas than in the entire nation during the previous 250 years.

The number of farms tripled between 1860 and 1910, as hundreds of thousands of hopeful migrants streamed into the Plains region. The Homestead Act of 1862 and other measures to encourage western settlement offered cheap or free plots to people who would reside on and improve their property. Railroads that had received land subsidies were especially active in recruiting settlers, advertising cheap land, arranging credit, offering reduced fares, and promising instant success. Railroad agents—often former immigrants—traveled to Denmark, Sweden, Germany, and other European nations to encourage immigration and greeted newcomers at eastern ports.

Most families who occupied western farmlands migrated because opportunities there seemed to promise a second chance, a better existence than their previous one. Railroad expansion gave farmers in remote regions a way to ship crops to market, and construction of grain elevators eased problems of storage. As a result of worldwide as well as national population growth, demand for farm products burgeoned, and the prospects for commercial agriculture—growing crops for profit and shipment to distant, including international, markets—became more favorable than ever.



Three adults and a child are posing alongside a road and in front of a sod house with their horse team in the background. Much of the farm frontier was virtually treeless, dry, and dusty. This family at least had enough resources to afford a relatively "high-toned" house and a windmill to bring up scarce water.

Library of Congress

Hardship on the Plains Farm life, however, was much harder than advertisements and railroad agents insinuated. Migrants often encountered scarcities of essentials that they had once taken for granted, and they had to adapt to the environment. Barren prairies contained insufficient lumber for housing and fuel, so pioneer families had to build houses of sod and burn buffalo dung for heat. Water for cooking and cleaning was sometimes scarce also. Machinery for drilling wells was expensive, as were windmills for drawing water to the surface.

Weather was even more formidable than the terrain. The climate between the Missouri River and the Rocky Mountains divides along a line running from Minnesota southwest through Oklahoma, then south, bisecting Texas. West of this line, annual rainfall averages less than twenty-eight inches, not enough for most crops (see Map 15.3), and even that scant life-giving rain was never certain. Heartened by adequate water one year, farmers gagged on dust and broke plows on hardened limestone soil the next.

Weather seldom followed predictable cycles. Weeks of summer heat and parching winds suddenly gave way to violent storms that washed away crops and property. Frigid winter blizzards piled up mountainous snowdrifts that halted outdoor

MAP 15.3 Agricultural Regions of the United States, 1890

In the Pacific Northwest and east of the twenty-eight-inch-rainfall line, farmers could grow a greater variety of crops. Territory west of the line was either too mountainous or too arid to support agriculture without irrigation. The grasslands that once fed buffalo herds could now feed beef cattle.

movement and froze livestock. During the winter of 1886–1887, it snowed almost constantly on the Plains, prompting one farmer to observe that it "seemed as if all the world's ice from time's beginning had come on a wind that howled and screamed with the fury of demons." In springtime, melting snow swelled streams and floods threatened millions of acres. In fall, a week without rain turned dry grasslands into tinder, and the slightest spark could ignite a raging prairie fire. Severe drought in Texas between 1884 and 1886 drove many farmers off the land, and a more widespread drought in 1886 struck areas as diverse as Dakota, Wyoming, and California.

Nature could be cruel even under good conditions. Weather that was favorable for crops was also beneficial for breeding insects. Worms and flying pests ravaged fields. In the 1870s and 1880s, grasshopper swarms virtually ate up entire farms. Heralded only by the din of buzzing wings, a mile-long cloud of insects would smother the land and devour everything: plants, tree bark, and clothing. As one farmer lamented, the "hoppers left behind nothing but the mortgage."

Social Isolation Settlers also had to cope with social isolation. In New England and Europe, farmers lived together in villages and traveled daily to and from nearby fields. This pattern of community life was rare in the expanses of the Plains—and in the Far West and South as well—where peculiarities of land division compelled rural dwellers to live apart from each other. Because most farm plots were rectangular—usually encompassing 160 acres—at most four families could live near one another, but only if they built homes around their shared four-corner intersection. In practice, households usually lived back from their boundary lines, and at least a half-mile separated farmhouses. Women were especially isolated, confined by domestic chores to the household. Like Nannie Jackson, they visited and exchanged food and services with neighbor women when they could and occasionally went to town, but, as one writer observed, a farm woman's life was "a weary, monotonous round of cooking and washing and mending."

Letters that Ed Donnell, a young Nebraska homesteader, wrote to his family in Missouri reveal how time and circumstances could dull optimism. In the fall of 1885, Donnell rejoiced to his mother, "I like Nebr first rate.... I have saw a pretty tuff time a part of the time since I have been out here, but I started out to get a home and I was determined to win or die in the attempt.... Have got a good crop of corn, a floor in my house and got it ceiled overhead." Already, though, Donnell was lonely. He went on, "There is lots of other bachelors here but I am the only one I know who doesn't have kinfolks living handy.... You wanted to know when I was going to get married. Just as quick as I can get money ahead to get a cow."

A year and a half later, Donnell's dreams were dissolving and, still a bachelor, he was beginning to look for a second chance elsewhere. He wrote to his brother, "The rats eat my sod stable down.... I may sell out this summer, ... If I sell I am going west and grow up with the country." By fall, conditions had worsened. Donnell lamented, "We have been having wet weather for 3 weeks.... My health has been so poor this summer and the wind and the sun hurts my head so. I think if I can sell I will ... move to town for I can get $40 a month working in a grist mill and I would not be exposed to the weather." Donnell's doubts and hardships, shared by thousands of people, fed the cityward migration of farm folk that fueled late-nineteenth-century urban growth (see Chapter 16).

Mail-Order Companies and Rural Free Delivery

Farm families survived by sheer resolve and by organizing churches and clubs where they could socialize a few times a month. By 1900, two developments had brought rural settlers who lived east of the rainfall line into closer contact with modern consumer society. First, mail-order companies, such as Montgomery Ward (founded 1872) and Sears, Roebuck (founded 1893), made new products attainable through catalog sales. Emphasizing personal attention to customers, Ward and Sears received letters that often reported family news and sought advice on needs from gifts to child care. A Washington man wrote to Mr. Ward, "As you advertise everything for sale that a person wants, I thought I would write you, as I am in need of a wife, and see what you could do for me." Another reported, "I suppose you wonder why we haven't ordered anything from you since the fall. The cow kicked my arm and broke it and besides my wife was sick, and there was the doctor bill. But now, thank God, that is paid, and we are all well again, and we have a fine new baby boy, and please send plush bonnet number 29d8077."

Second, in 1896, after farmers petitioned Congress for extension of the postal service, the government made Rural Free Delivery (RFD) widely available. Farmers previously had to go to town to pick up mail. Now they could receive letters, newspapers, and catalogs in a roadside mailbox nearly every day. In 1913 the postal service inaugurated parcel post, which enabled people to receive packages, such as orders from Ward and Sears, more cheaply.

Mechanization of Agriculture

As with industrial production (see Chapter 16), the late-nineteenth-century agricultural revolution was driven by expanded use of machinery. When the Civil War drew men away from farms in the upper Mississippi River valley to fight in the army, women and older men who remained behind began using mechanical implements to grow crops to satisfy demand for food and take advantage of high grain prices. After the war, high demand encouraged farmers to continue utilizing machines, and inventors developed new implements to facilitate planting and harvesting. Seeders, combines, binders, reapers, and rotary plows, carried westward by railroads, facilitated grain growing on the Plains and in California. Technology also aided dairy and poultry farming. The centrifugal cream separator, patented in 1879, sped the process of skimming cream from milk, and a mechanized incubator, invented in 1885, made chicken raising more profitable.

For centuries, the acreage of grain a farmer planted was limited by the amount that could be harvested by hand. Machines significantly increased productivity. Before mechanization, a farmer working alone could harvest about 7.5 acres of wheat. Using an automatic binder that cut and bundled the grain, a farmer could harvest 135 acres. Machines dramatically reduced the time and cost of farming other crops as well.

Legislative and Scientific Aids

Meanwhile, Congress and scientists worked to improve existing crops and develop new ones. The 1862 Morrill Land Grant Act gave each state federal lands to sell in order to finance agricultural research at educational institutions. The act prompted establishment of public universities in Wisconsin, Illinois, Minnesota, California, and other states. A second Morrill Act in 1890 aided more schools, including several all-black colleges. The Hatch Act of 1887 provided for agricultural experiment stations in every state, further encouraging the advancement of agricultural science and technology.

Science also enabled farmers to use the soil more efficiently. Researchers developed dry farming, a technique of plowing and harrowing that minimized evaporation of precious moisture. Botanists perfected varieties of "hard" wheat whose seeds could withstand northern winters, and millers invented a process for grinding the tougher wheat kernels into flour. Agriculturists adapted new varieties of wheat from Russia and rice from Asia. Horticulturist Luther Burbank developed new food plants and flowers at a garden laboratory in Sebastopol, California. George Washington Carver, a son of black slaves who became a chemist and taught at Alabama's Tuskegee Institute, created hundreds of products from peanuts, soybeans, and sweet potatoes. Other scientists devised means of combating plant and animal diseases. Just as in mining and manufacturing, science and technology provided American farming with means for expanding productivity in the market economy (see Table 15.1).

The Ranching Frontier

When commercial farming overspread the West, it ran headlong into one of the region's most romantic industries—ranching. Beginning in the sixteenth century, Spanish landholders raised cattle commercially in Mexico and what would become the American Southwest. They employed Indian and Mexican cowboys, known as *vaqueros*, who

TABLE 15.1 | SUMMARY: GOVERNMENT LAND POLICY

Railroad land grants (1850–1871)	Granted 181 million acres to railroads to encourage construction and development
Homestead Act (1862)	Gave 80 million acres to settlers to encourage settlement
Morrill Act (1862)	Granted 11 million acres to states to sell to fund public agricultural colleges
Other grants	Granted 129 million acres to states to sell for other educational and related purposes
Dawes Act (1887)	Allotted some reservation lands to individual Indians to promote private property and weaken tribal values among Indians and offered remaining reservation lands for sale to whites (by 1906, some 75 million acres had been acquired by whites)
Various laws	Permitted direct sales of 100 million acres by the Land Office

Source: Goldfield, David; Abbott, Carl E.; Anderson, Virginia Dejohn; Argersinger, Jo Ann E.; Argersinger, Peter H.; Barney, William.; Weir, Robert M., *American Journey, The*, Volume II, 3rd ed., © 2004. Printed and electronically reproduced by permission of Pearson Education, Inc., Upper Saddle River, New Jersey.

tended herds and rounded up cattle to be branded and slaughtered. Anglo ranchers moving into Texas and California in the early nineteenth century hired vaqueros, who in turn taught skills in roping, branding, and horse training to white and African American cowboys.

By the 1860s, cattle ranching became increasingly profitable, as population growth boosted demand for beef and railroads simplified transportation of food. By 1870 drovers were herding thousands of Texas cattle on long drives northward to Kansas, Missouri, and Wyoming (see Map 15.1). At the northern terminus, the cattle were sold to northern feed lots or loaded onto trains bound for Chicago and St. Louis for slaughter and distribution to national and international markets.

The long drive gave rise to images of bellowing cattle, buckskin-clad cowboys, and smoky campfires under starry skies, but the process was not very efficient. Trekking a thousand miles or more for two to three months made cattle sinewy and tough. Herds traveling through Indian Territory and farmers' fields were sometimes shot at and later prohibited from such trespass by state laws. Ranchers adjusted by raising herds nearer to railroad routes. When cattlemen discovered that crossing Texas longhorns with heavier Hereford and Angus breeds produced animals better able to survive harsh winters, cattle raising expanded northward, and proliferating herds in Kansas, Nebraska, Colorado, Wyoming, Montana, and Dakota crowded out already declining buffalo populations. Profits were considerable. A rancher could purchase a calf for $5, let it feed on grasslands for a few years, recapture it in a roundup, and sell it at a market price of $40 or $45.

Open Range

Cattle raisers needed vast pastures to graze their herds while spending as little as possible on land acquisition. Thus they often bought a few acres bordering a stream and turned their herds loose on adjacent public domain that no one wanted because it lacked water access. By this method, called open-range ranching, a cattleman could utilize thousands of acres by owning only a hundred or so. Neighboring ranchers often formed associations and allowed herds to graze together. Owners identified their cattle by burning a brand into each animal's hide. Each ranch had its own unique brand—a shorthand method for labeling movable property. But as more profit-seeking ranchers flowed into the Plains, cattle began to overrun the range, and other groups challenged ranchers over use of the land.

In California and New Mexico, sheepherders were also grazing herds on public land, sparking territorial clashes. Ranchers complained that sheep ruined grassland by eating down to the roots and that cattle refused to graze where sheep had been. Occasionally ranchers and sheepherders resorted to armed conflict rather than settle disagreements in court, where a judge might discover that both were using public land illegally.

More importantly, however, the advancing farming frontier was generating new demands for acreage. Devising a way to mark property resulted in an unheralded but significant change in land management. The problem was fencing. Lacking sufficient timber and stone for fencing, western settlers could not easily define and protect their property. Tensions flared when farmers accused cattlemen of allowing their herds to trespass on cropland and when herders in turn charged that farmers should fence their property against grazing animals. Ranchers and farmers alike lacked an economical means of enclosing herds and fields.

Barbed Wire The solution was barbed wire. Invented in 1873 by Joseph Glidden, a DeKalb, Illinois, farmer, this fencing consisted of wire strands held in place by sharp spurs. Mass-produced by the Washburn and Moen Manufacturing Company of Worcester, Massachusetts—80.5 million pounds' worth in 1880 alone—barbed wire provided a cheap and durable means of enclosure. It benefited homesteaders by enabling them to protect their property from grazing cattle. It also ended open-range ranching and made roundups unnecessary, because it enabled ranchers to enclose their herds. In addition, the development of the round silo for storing fodder without it spoiling enabled cattle raisers to feed their herds without grazing them on vast stretches of land.

Ranching as Big Business By 1890 big businesses were taking over the cattle industry and applying scientific methods of breeding and feeding. Corporations also used technology to squeeze larger returns out of meatpacking. Like buffalo, all parts of a cow had uses. Only about half of it consisted of salable meat. Larger profits came from by-products: hides for leather, bones for fertilizer, hooves for glue, fat for candles and soap, and the rest for sausages. But cattle processing also had harmful environmental impacts. What meatpackers could not sell they dumped into rivers and streams. By the late nineteenth century, the stench from the Chicago River, which flowed past the city's mammoth processing plants, made nearby residents sick.

Open-range ranching made beef a staple of the American diet and created a few fortunes, but it could not survive the rush of history. During the 1880s, overgrazing destroyed grass supplies on the Plains, and the brutal winter of 1886–1887 destroyed 90 percent of some herds and drove small ranchers out of business. By 1890, large-scale ranchers owned or leased the land they used, though some illegal fencing persisted. Cowboys formed labor organizations and participated in strikes for higher pay. The myth of the cowboy's freedom and individualism lived on, but ranching, like mining and farming, quickly became a corporate business.

The South After Reconstruction

While the Great Plains and West were being transformed, the South developed its own human ecologies, involving resource exploitation, market economies, and land control. Ravaged by the Civil War, southern agriculture recovered slowly. Rather than diversity, farmers concentrated on growing cotton even more single-mindedly than before the war. High prices for seed and implements, declining prices for crops, taxes, and—most of all—debt trapped many white southerners in poverty. Conditions were even worse for African Americans, who endured brutal racism along with economic hardship.

During and after Reconstruction, important shifts in the nature of agriculture swept the South. Between 1860 and 1880, the total number of farms in southern states more than doubled, from 450,000 to 1.1 million. The number of landowners, however, did not increase, because a growing proportion of southern farmers rented, rather than owned, their land. Meanwhile, average farm size actually decreased, from 347 to 156 acres. One-third of farmers counted in the 1880 federal census were sharecroppers and tenants; the proportion increased to two-thirds by 1920.

Sharecropping and Tenant Farming in the South

Southern agriculture, unlike that of the Midwest, did not benefit much from mechanization. Tobacco and cotton, the principal southern crops, required constant hoeing and weeding by hand. Tobacco needed careful harvesting, because the leaves matured at different rates and the stems were too fragile for machines. Also, mechanical devices were not precise enough to pick cotton. Thus, in former plantation areas after the Civil War, southern agriculture remained labor intensive, and labor lords who had once utilized slaves were replaced by landlords, who employed sharecroppers and tenant farmers.

Sharecropping and tenant farming—meaning that farmers rented their land rather than owned it—entangled millions of black and white southerners in webs of debt and humiliation, weighed down by the crop lien. Most farmers, too poor to have ready cash, borrowed in order to buy necessities such as seed, tools, and food. They could offer as collateral only what they could grow. A farmer helpless without supplies dealt with a "furnishing merchant," who would exchange

In a cotton field looking like it is snow-covered, all members of this sharecropping African American family are engaged in picking cotton balls. The work was exacting, requiring constant stooping and lifting, and picking the cotton often left hands and fingers cut and calloused.

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provisions for a "lien," or legal claim, on the farmer's forthcoming crop. After the crop was harvested and brought to market, the merchant claimed the portion of the crop that would repay the loan. All too often, however, the debt exceeded the crop's value. The farmer could pay off only part of the loan but still needed supplies for the coming year. The only way to obtain these necessities was to sink deeper into debt by reborrowing and giving the merchant a lien on the next crop.

Merchants frequently took advantage of farmers' powerlessness by inflating prices and charging excessive interest on the advances farmers received. Suppose, for example, that a cash-poor farmer needed a 20-cent bag of seed or a 20-cent piece of cloth. The furnishing merchant would sell the item on credit but would boost the price to 28 cents. At year's end, that 28-cent loan would have accumulated interest of 50 percent, raising the farmer's debt to 42 cents—more than double the item's original cost. The farmer, having pledged more than his crop's worth against scores of such debts, fell behind in payments and never recovered. If he fell too far behind, he and his family could be evicted.

In the southern backcountry, which in antebellum times had been characterized by small, family-owned farms, few slaves, and diversified agriculture, economic changes compounded crop lien problems. New spending habits illustrate these changes. In 1884, Jephta Dickson, who farmed land in the northern Georgia hills, bought $55.90 worth of flour, potatoes, peas, meat, and corn from merchants. Before the Civil War, farmers like Dickson grew almost all the food they needed and such expenditures would have been rare. But after the war, Dickson and others like him shifted to commercial farming; in the South that meant cotton rather than diversified agriculture. This specialization came about for two reasons: constant debt forced farmers to grow crops that would bring in cash, and railroads enabled them to transport cotton to market more easily than before. As backcountry yeomen devoted more acres to cotton, they raised less of what they needed on a daily basis and found themselves more frequently at the mercy of merchants.

Closing the Southern Range

At the same time, many small black and white farmers who occupied settlements in the backcountry suffered from laws that essentially closed the southern range – lands owned by the federal government but used freely by southern herders. This change resulted from the same commercialization of agriculture that was affecting farming in the West and Midwest. Before the 1870s, southern farmers, like western open-range ranchers, had let their livestock roam freely in search of food and water. By custom, farmers who wished to protect their crops from foraging livestock were supposed to build fences around their crops. But as commercial agriculture reached the backcountry, large landowners and merchants induced county and state governments to require the fencing in of animals rather than crops. These laws hurt poor farmers who had little land, requiring them to use more of their previous acreage for pasture. Such laws undermined the cooperative customs that yeomen cherished and that people like Nannie Jackson practiced by forcing them to close themselves off from neighbors.

Poor whites in the rural South, facing economic hardship, also feared that newly enfranchised blacks would challenge whatever political and social superiority (real and imagined) they enjoyed. Wealthy white landowners and merchants fanned these fears, using racism to divide whites and blacks and to distract poor whites from protesting their economic subjugation.

Leading Industries

Southern agriculture had a close relationship with its two leading industries: cotton and tobacco. In the 1870s, textile mills began to appear in the old cotton belt. Powered by the region's abundant rivers, manned cheaply by whites eager to escape hardship on the land, and aided by low taxes and northern capital investment, such factories multiplied. By 1900, the South had four hundred mills with a total of 4 million spindles, and was on the verge of eclipsing New England in textile-manufacturing supremacy. Proximity to raw materials and cheap labor also aided the tobacco industry, and the invention in 1880 of a cigarette-making machine enhanced the marketability of tobacco.

Cigarette factories, located in cities, employed both black and white workers (though in segregated sections of the factories). Textile mills, concentrated in small towns, developed a separate labor system that employed women and children from poor white families and paid 50 cents a day for twelve or more hours of work. Such wages barely came to half of those paid to northern workers. Many companies built villages around their mills, where they controlled the housing, stores, schools, and churches. Inside these towns, companies banned criticism of the management and squelched attempts at union organization. Mill families soon found that factory jobs changed their status very little: the company store and the mill owner dominated their everyday lives.

Other industries utilizing nature were launched under the sponsorship of northern and European capital. Between 1890 and 1900, northern lumber syndicates moved into pine forests of the Gulf states, boosting lumber production by 500 percent. During the 1880s, northern investors developed southern iron deposits into steel manufacturing, much of it in the boom city of Birmingham, Alabama. What was to become the most famous southern product, Coca-Cola, was first formulated by Dr. John Pemberton, an Atlanta pharmacist, who in 1889 sold his formula to another Atlantan, Asa Candler, who made a fortune marketing the drink nationally. Coal mining and railroad construction also expanded rapidly, though, as was the case with other southern industries, New York and London financiers dominated the boards of directors.

The New South

Regardless of outside influence, the new economy prompted local boosters to herald the emergence of a New South ready to challenge the old economic order that had been dominated by the planter class and compete with economies of the West and North. Believing that the South should put the military defeat of the Civil War behind them—though never forgetting the heroism of Confederate soldiers—businessmen advocated emulating northern industrialism. Henry Grady, editor of the *Atlanta Constitution* and the most articulate voice of southern progress, proclaimed, "We have sowed towns and cities in the place of theories, and put business in place of politics. We have challenged your spinners in Massachusetts and your iron-makers in Pennsylvania.... We have fallen in love with work."

Yet in 1900 the South was as rural as it had been in 1860. Staple-crop agriculture remained central to its ecology, and white supremacy permeated its social and political relations. Furthermore, the South attracted few immigrants because of its low wages, and, except for only a few places such as the city of New Orleans, did not benefit much from the energizing influence of foreign cultures. A New South would emerge, but not until after a world war and a massive African American exodus had shaken up old habits and attitudes.

Summary

The complex interactions between people and their environments transformed the West, the South, and the nation. In the West, Indians, the original inhabitants, had used, and sometimes abused, the land to support subsistence cultures that included trade and war as well as hunting and farming. Living mostly in small groups, they depended on delicate resources, such as buffalo herds and salmon runs. When they came into contact with commerce-minded, migratory European Americans, their resistance to the market economy, diseases, and violence that whites brought into the West failed. The result was that the story of the American West became the story of the invaders, not that of the natives.

Mexicans, Chinese, African Americans, and Anglos discovered a reciprocal relationship between human activities and the nonhuman world, with results that they had not always anticipated. Miners, timber cutters, farmers, and builders extracted raw minerals to supply eastern factories, used irrigation and machines to bring forth agricultural abundance from the land, filled pastures with cattle and sheep to expand food sources, and constructed railroads to tie the nation together. In doing so, they transformed half of the nation's territory within a few decades. But the environment also exerted its own power over humans, through its climate, its insects and parasites, and its impenetrable hazards and barriers to human movement and agriculture.

The West's settlers, moreover, employed violence and greed that sustained discrimination within a multiracial society; left many farmers feeling cheated and betrayed; provoked contests over use of water and pastures; and sacrificed environmental balance for market profits. The region's raw materials and agricultural products raised living standards and hastened industrial progress, but not without human and environmental costs.

Longer settled, the South experienced its own set of changes. The end of slavery left African Americans still tied to the land as tenant farmers and sharecroppers and still subject to various forms of discrimination, while white farmers who were not tenants found themselves at increasing disadvantage in expanding markets. To achieve sectional independence, some southerners tried to promote industrialization. Their efforts partially succeeded, but by the 1900s many southern industries remained mere subsidiaries of northern firms. Moreover, southern planters, shippers, and manufacturers depended heavily on northern banks to finance their operations. Equally important, low wages and stunted opportunities discouraged potential migrants and immigrants who might have brought needed labor, skills, and capital. Thus although in some ways the South grew economically, it remained a dependent region in the national economy. People of all sorts now belonged to one nation, indivisible, but sectional differences continued to make the nation increasingly diverse.