

Faragher, Goble, Zitron, Armitage,  
 Out of Many: A History of the  
 American People. Pearson/Prenice Hall, 2007.

Milking the cows, hauling water, and running errands to neighboring farms could be done by the children, once they had reached the age of nine or so. The "one-room school," where all grades learned together, taught the basics of literacy and arithmetic that a future farmer or commercial employee would require. Older sons and daughters might move to the nearest town to earn money to contribute to the family coffer.

The harsh climate and unyielding soil nevertheless forced all but the most reclusive families to seek out friends and neighbors. Many hands were needed to clear the land for cultivation or for roadbeds, to raise houses and barns, or to bring in a harvest before a threatening storm. Neighbors might agree to work together haying, harvesting, and threshing grain. A well-to-do farmer might "rent" his threshing machine in exchange for a small cash fee and, for instance, three days' labor. His wife might barter her garden produce for her neighbor's bread and milk or for help during childbirth or disability. Women often combined work and leisure in quilting bees and sewing circles, where they made friends while sharing scraps of material and technical information. Whole communities turned out for special events, such as the seasonal husking bees and apple bees, which were organized mainly by women.

Much of this informal barter, however, resulted from lack of cash rather than from a lasting desire to cooperate. When annual harvests were bountiful, even the farm woman's practice of bartering goods with neighbors and local merchants—butter and eggs in return for yard goods or seed—diminished sharply, replaced by cash transactions. Still, wheat production proved unsteady in the last half of the nineteenth century, and few farm families could remain reliant wholly on themselves.

For many farmers, the soil simply would not yield a livelihood, and they often owed more money than they took in. Start-up costs, including the purchase of land and equipment, put many farmers deep in debt to local creditors. Some lost their land altogether. By the turn of the century, more than one-third of all farmers in the United States were tenants on someone else's land.

The Garden of Eden was not to be found on the prairies or on the plains, no matter how hard the average farm family worked. Again and again, foreclosures wiped out the small landowner through dips in commodity prices, bad decisions, natural disasters, or illness. In one especially bad year, 1881, a group of farmers in western Iowa chose to burn off, rather than harvest, their wheat because the yield promised to be so small. The swift growth of rural population soon ended. Although writers and orators alike continued to celebrate the family farm as the source of virtue and economic well-being, the hard reality of big money and political power told a far different story.

## THE WORLD'S BREADBASKET

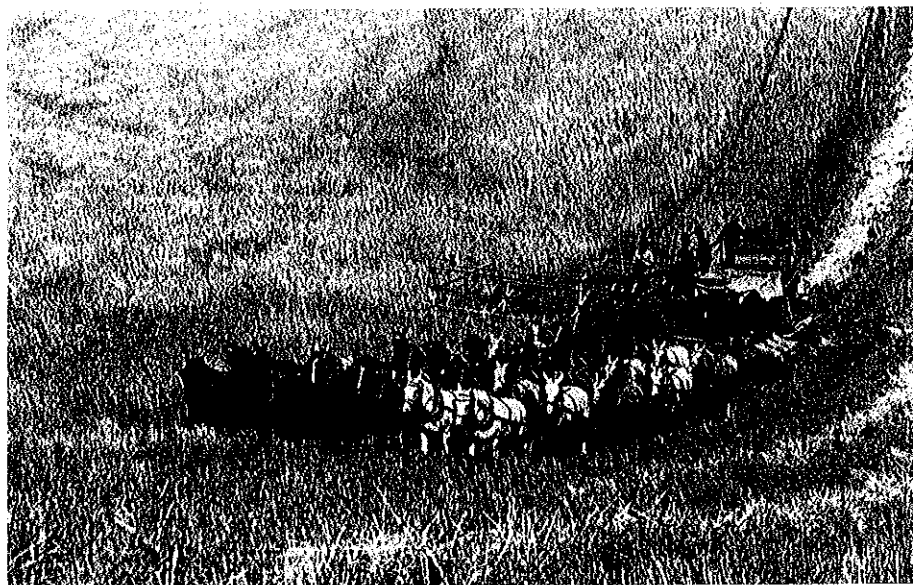
**D**uring the second half of the nineteenth century commercial farms employed the most intensive and extensive methods of agricultural production in the world. Hard-working farmers brought huge numbers of acres under cultivation, while new technologies allowed them to achieve unprecedented levels of efficiency in the planting and harvesting of crops. As a result, farming became increasingly tied to international trade, and modern capitalism soon ruled western agriculture, as it did the mining and cattle industries.

### NEW PRODUCTION TECHNOLOGIES

Only after the trees had been cleared and grasslands cut free of roots could the soil be prepared for planting. But as farmers on the Great Plains knew so well, the sod

WHAT WERE some of the major technological advances in mining and in agriculture that promoted the development of the Western economy?

**AP\*** Guideline 15.2



This "thirty-three horse team harvester" was photographed at the turn of the century in Walla Walla, Washington. Binding the grain into sheaves before it could hit the ground, the "harvester" cut, threshed, and sacked wheat in one single motion.

Library of Congress.

## QUICK REVIEW

### Changes in Farming

- ◆ Increased emphasis on production for exchange.
- ◆ International demand for wheat supported wheat farming in U.S.
- ◆ New technology encouraged the consolidation of land into large farms.

**Morrill Act of 1862** Act by which "land-grant" colleges acquired space for campuses in return for promising to institute agricultural programs.

**TABLE 18.1** HAND v. MACHINE LABOR ON THE FARM, ca. 1880

Crop	Time Worked		Labor Cost	
	Hand	Machine	Hand	Machine
Wheat	61 hours	3 hours	\$3.55	\$0.66
Corn	39 hours	15 hours	3.62	1.51
Oats	66 hours	7 hours	3.73	1.07
Loose Hay	21 hours	4 hours	1.75	0.42
Baled Hay	35 hours	12 hours	3.06	1.29

west of the Mississippi did not yield readily to cultivation and often broke the cast-iron plows typically used by Eastern farmers. Farther west, some farmers resorted to drills to plant seeds for crops such as wheat and oats. Even in the best locations, where loamy, fertile ground had built up over centuries into eight or more inches of decayed vegetation, the preliminary breaking, or "busting," of the sod required hard labor. One man would guide a team of five or six oxen pulling a plow through the soil, while another regulated the depth of the cut, or furrow. But, as a North Dakota settler wrote to his wife back in Michigan, after the first crop, the soil became as "soft as can be any team [of men and animals] can work it."

Agricultural productivity depended as much on new technology as on the farmers' hard labor. In 1837, John Deere had designed his famous

"singing plow" that easily turned prairie grasses under and turned up even highly compacted soils. Around the same time, Cyrus McCormick's reaper began to be used for cutting grain; by the 1850s, his factories were turning out reapers in mass quantities. The harvester, invented in the 1870s, drew the cut stalks upward to a platform where two men could bind them into sheaves; by the 1880s, an automatic knotter tied them together. Drastically reducing the number of people traditionally required for this work, the harvester increased the pace many times over. The introduction of mechanized corn planters and mowing or raking machines for hay all but completed the technological arsenal (see Table 18.1).

In the 1890s, the U.S. commissioner of labor measured the impact of technology on farm productivity. Before the introduction of the wire binder in 1875, he reported, a farmer could not plant more than 8 acres of wheat if he were to harvest it successfully without help; by 1890, the same farmer could rely on his new machine to handle 135 acres with relative ease and without risk of spoilage. The improvements in the last half of the century allowed an average farmer to produce up to ten times more than was possible with the old implements.

Scientific study of soil, grain, and climatic conditions was another factor in the record output. Beginning in the mid-nineteenth century, federal and state governments added inducements to the growing body of expertise, scientific information, and hands-on advice. Through the **Morrill Act of 1862**, "land-grant" colleges acquired space for campuses in return for promising to institute agricultural programs. The Department of Agriculture, which attained cabinet-level status in 1889, and the Weather

Bureau (transferred from the War Department in 1891) also made considerable contributions to farmers' knowledge. The federal Hatch Act of 1887, which created a series of state experimental stations, provided for basic agricultural research, especially in the areas of soil minerals and plant growth. Many states added their own agricultural stations, usually connected with state colleges and universities.

Nature nevertheless often reigned over technological innovation and seemed in places to take revenge against these early

successes. West of the 98th meridian—a north-south line extending through western Oklahoma, central Kansas and Nebraska, and eastern Dakota—perennial dryness due to an annual rainfall of less than 20 inches constantly threatened to turn soil into dust and to break plows on the hardened ground. Summer heat burned out crops and ignited grass fires. Mountains of winter snows turned rivers into spring torrents that flooded fields; heavy fall rains washed crops away. Even good weather invited worms and flying insects to infest the crops. During the 1870s, grasshoppers in clouds a mile long ate everything organic, including tree bark and clothes.

### PRODUCING FOR THE GLOBAL MARKET

Farming changed in important ways during the last third of the nineteenth century. Although the family remained the primary source of labor, farmers tended to put more emphasis on production for exchange rather than for home use. They continued to plant vegetable gardens and often kept fowl or livestock for the family's consumption, but farmers raised crops mainly for a market that stretched across the world.

Wheat farmers in particular prospered. With the world population increasing at a rapid rate, the international demand for wheat was enormous, and American farmers made huge profits from the sale of this crop. Wheat production ultimately served as a barometer of the agricultural economy in the West. Farmers in all corners of the region, from Nebraska to California, expanded or contracted their holdings and planned their crops according to the price of wheat.

The new machines and expanding market did not necessarily guarantee success. Land, draft animals, and equipment remained very expensive, and start-up costs could keep a family in debt for decades. A year of good returns often preceded a year of financial disaster. Weather conditions, international markets, and railroad and steamship shipping prices all proved equally unpredictable and heartless.

The new technology and scientific expertise favored the large, well-capitalized farmer over the small one. Such is the story of the large-scale wheat operations in the great Red River Valley of North Dakota. Here, a shrewd worker such as Oliver Dalrymple could take advantage of a spectacular bonanza. When Dalrymple started out in 1875, he managed a farm owned by two officials of the Northern Pacific Railroad. He cleared their land, planted wheat, and yielded a sizable harvest the first year. He did much better the second year and began to invest in his own farm. A decade later, his operations included 32,000 acres in wheat and 2,000 in oats. Dalrymple now had the financial resources to use the latest technology to harvest these crops and to employ up to 1,000 seasonal laborers at a time. The majority of farmers with fewer resources expanded at more modest rates. Between 1880 and 1900, average farm size in the seven leading grain-growing states increased from 64.4 acres to more than 100 acres.

### CALIFORNIA AGRIBUSINESS

The trend toward bonanza farming reached an apex in California, where farming as a business surpassed farming as a way of life. Bankers, railroad magnates, and other Anglos made rich by the Gold Rush took possession of the best farming land in the state. They introduced the latest technologies, built dams and canals, and invested huge amounts of capital, setting the pattern for the state's prosperous agribusiness. Farms of nearly 500 acres dominated the California landscape in 1870; by the turn of the century, two-thirds of the state's arable land was in 1,000-acre farms. As land reformer and social commentator Henry George noted, California was "not a country of farms but a country of plantations and estates."





This painting by the British-born artist Thomas Hill (1829-1908) depicts workers tending strawberry fields in the great agricultural valley of Northern California. Chinese field hands, such as the two men shown here, supplied not only cheap labor but invaluable knowledge of specialized fruit and vegetable crops.

Thomas Hill, *Irrigating at Strawberry Farm, Santa Clara, 1888*.  
Courtesy of The Bancroft Library, University of California, Berkeley

This scale of production made California the national leader in wheat production by the mid-1880s. But it also succeeded dramatically with fruit and vegetables. Large- and medium-sized growers, shrewdly combined in cooperative marketing associations during the 1870s and 1880s, used the new refrigerator cars to ship their produce in large quantities to the East and on to Europe. By 1890, cherries, apricots, and oranges, packed with mountains of ice, made their way into homes across the United States.

California growers learned quickly that they could satisfy consumer appetites and even create new ones. Orange producers packed their products individually in tissue paper, a technique designed to convince Eastern consumers that they were about to eat a luxury fruit. By the turn of the century, advertisers for the California Citrus Growers' Association described oranges as a neces-

sity for good health, inventing the trademark "Sunkist" to be stamped on each orange. Meanwhile California's grape growing grew into a big business. Long considered inferior to French wines, California wines found a ready market at lower prices. Other grape growers made their fortunes in raisins. One company trademarked its raisins as "Sun Maid" and packaged them for schoolchildren in the famous "nickel" box.

By 1900, California had become the model for American agribusiness, not the home of self-sufficient homesteaders but the showcase of heavily capitalized farm factories that employed a huge tenant and migrant workforce, including many Chinese. After the mines gave out and work on the transcontinental railroad ended, thousands of Chinese helped to bring new lands under cultivation. Renting their land, Chinese tenant farmers specialized in labor-intensive crops such as vegetables and fruits, and peddled their crops door-to-door or sold them in roadside stands. Others worked in packing and preserving in all the major agricultural regions of the state. However, the Chinese, like the majority of field hands, rarely rose to the ranks of agricultural entrepreneurs. By the turn of the century, amid intense legislative battles over land and irrigation rights, it was clear that the rich and powerful dominated California agribusiness.

### THE TOLL ON THE LAND

Viewing the land as a resource to command, the new inhabitants often looked past the existing flora and fauna toward a landscape remade strictly for commercial purposes. The changes they produced in some areas were nearly as cataclysmic as those that occurred during the Ice Age.

Banishing many existing species, farmers "improved" the land by introducing exotic plants and animals—that is, biological colonies indigenous to other regions and continents. Farmers also unintentionally introduced new varieties of weeds, insect pests, and rats. Surviving portions of older grasslands and meadows eventually could be found only alongside railroad tracks, in graveyards, or inside national parks.

Numerous species disappeared altogether or suffered drastic reduction. The grizzly bear, for example, an animal exclusive to the West, could once be found in large numbers from the Great Plains to California and throughout much of Alaska. By the early decades of the twentieth century, one nature writer estimated that only

800 survived, mostly in Yellowstone National Park. At the same time, the number of wolves declined from perhaps as many as 2 million to just 200,000. By the mid-1880s, no more than 5,000 buffalo survived in the entire United States, and little remained of the once vast herds but great heaps of bones sold for \$7.50 per ton.

The slaughter of the buffalo had a dramatic impact, not only on the fate of the species, but also on the grasslands of the Great Plains. Overall, the biological diversity of the region had been drastically reduced. Having killed off the giant herds, ranchers and farmers quickly shifted to cattle and sheep production. Unlike the roaming buffalo, these livestock did not range widely and soon devoured the native grasses down to their roots. With the ground cover destroyed, the soil eroded and became barren. By the end of the century, huge dust storms swept across the plains.

In 1873, the U.S. Congress passed the **Timber Culture Act**, which allotted homesteaders an additional 160 acres of land in return for planting and cultivating forty acres of trees. Because residence was not required, and because tree planting could not be assessed for at least thirteen years, speculators filed for several claims at once, then turned around and sold the land without having planted a single tree. Although some forests were restored, neither the weather nor the soil improved.

Large-scale commercial agriculture also took a heavy toll on inland waters. Before white settlement, rainfall had drained naturally into lakes and underground aquifers, and watering spots were abundant throughout the Great Plains. Farmers mechanically rerouted and dammed water to irrigate their crops, causing many bodies of water to disappear and the water table to drop significantly. In the 1870s, successful ranchers in California pressed for ever greater supplies of water and contracted Chinese work gangs to build the largest irrigation canal in the West. In 1887, the state of California formed irrigation districts, securing bond issues for the construction of canals, and other Western states followed. But by the 1890s, irrigation had seemed to reach its limit without federal support. The Newlands or **National Reclamation Act** of 1902 added 1 million acres of irrigated land, and state irrigation districts added more than 10 million acres. Expensive to taxpayers, and ultimately benefiting corporate farmers rather than small landowners, these projects further diverted water and totally transformed the landscape.

Although Western state politicians and federal officials debated water rights for decades, they rarely considered the impact of water policies on the environment. Lake Tulare in California's Central Valley, for example, had occupied up to 760 square miles. After farmers began to irrigate their land by tapping the rivers that fed Tulare, the lake shrank dramatically, covering a mere 36 square miles by the early twentieth century. Finally the lake, which had supported rich aquatic and avian life for thousands of years, disappeared entirely. The land left behind, now wholly dependent on irrigation, grew so alkaline in spots that it could no longer be used for agricultural purposes.

The need to maintain the water supply indirectly led to the creation of national forests and the Forest Service. Western farmers supported the **General Land Revision Act of 1891**, which gave the president the power to establish forest reserves to protect watersheds against the threats posed by lumbering, overgrazing, and forest fires. In the years that followed, President Benjamin Harrison established fifteen forest reserves exceeding 16 million acres, and President Grover Cleveland added more than 21 million acres. But only in 1897 did the secretary of the interior finally gain the authority to regulate the use of these reserves.

The **Forest Management Act** of 1897 and the National Reclamation Act of 1902 set the federal government on the path of large-scale regulatory activities. The Forest Service was established in 1905, and in 1907, forest reserves were transferred from the Department of the Interior to the Department of Agriculture. The federal

**Timber Culture Act** 1873 act which allotted homesteaders an additional 160 acres of land in return for planting and cultivating 40 acres of trees.

**National Reclamation Act** 1902 act which added 1 million acres of irrigated land to the United States.

**General Land Revision Act of 1891** Act which gave the president the power to establish forest reserves to protect watersheds against the threats posed by lumbering, overgrazing, and forest fires.

**Forest Management Act** 1897 act which, along with the National Reclamation Act, set the federal government on the path of large-scale regulatory activities.

government would now play an even larger role in economic development of the West, dealing mainly with corporate farmers and ranchers eager for improvements

WHAT PLACE did the West hold in the national imagination?

AP\* Guideline 16.3

QUICK REVIEW

National Parks

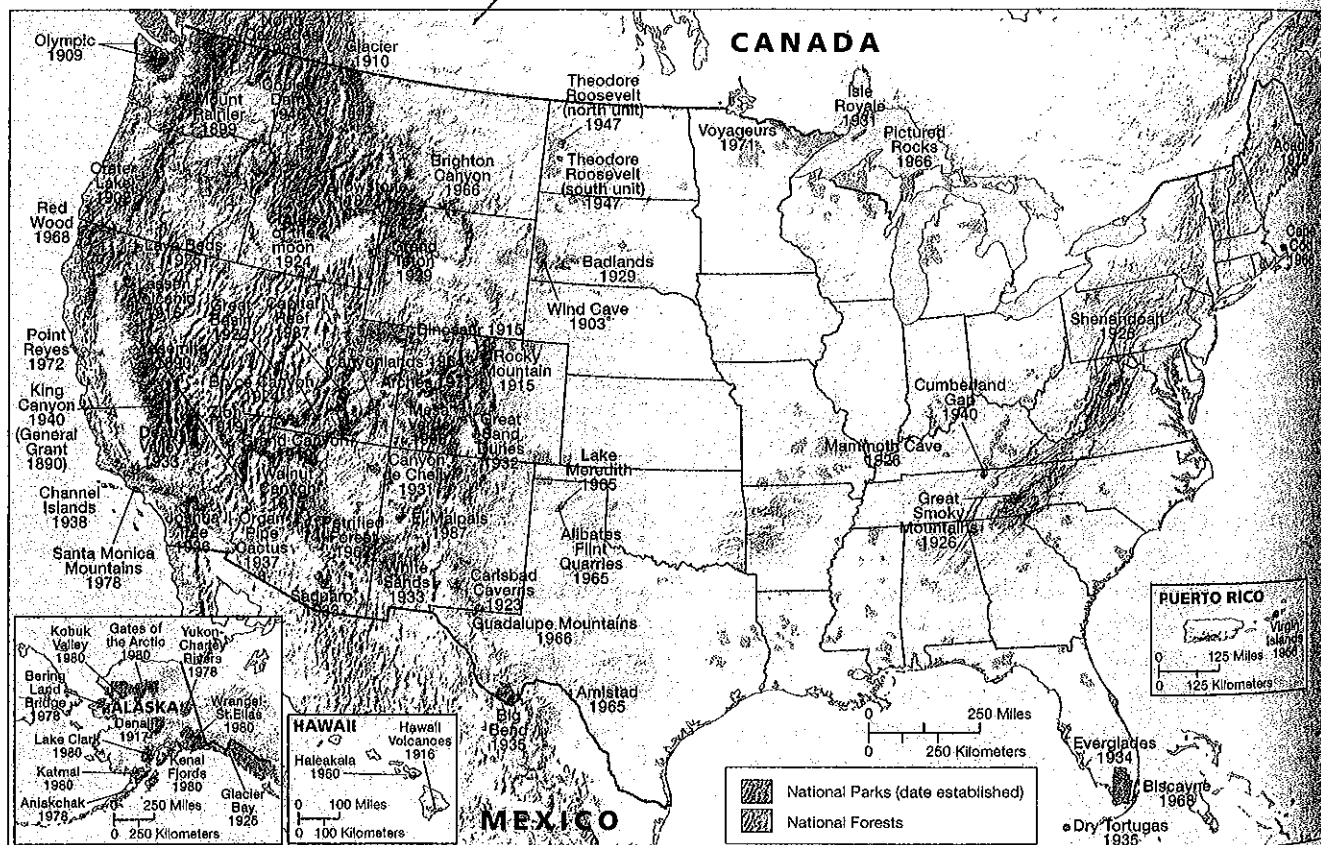
- ◆ 1864: Congress passed the Yosemite Act placing area under management of state of California.
- ◆ 1872: Yellowstone named first national park.
- ◆ Five new national parks named between 1890 and 1910.

THE WESTERN LANDSCAPE

Throughout the nineteenth century, many Americans viewed western expansion as the nation's "manifest destiny," and just as many marveled at the region's natural and cultural wonders. The public east of the Mississippi craved stories about the West and visual images of its sweeping vistas. Artists and photographers built their reputations on what they saw and imagined. Scholars, from geologists and botanists to historians and anthropologists, toured the trans-Mississippi West in pursuit of new data. The region and its peoples came to represent what was both unique and magnificent about the American landscape (see Map 18-5).

NATURE'S MAJESTY

By the end of the century, scores of writers had described spectacular, breathtaking natural sites like the Grand Tetons and High Sierras, vast meadows of waving grasses and beautiful flowers, expansive canyons and rushing white rivers, and exquisite deserts covered with sagebrush or dotted with flowering cactus, stark yet enticing. Moved by such evidence, the federal government began to set aside huge tracts of land as nature reserves. In 1864, Congress passed the Yosemite Act, which placed



**MAP 18-5**  
**The Establishment of National Parks and Forests** The setting aside of land for national parks saved large districts of the West from early commercial development and industrial degradation, setting a precedent for the later establishment of additional parks in economically marginal, but scenic territory. The West, home to the vast majority of park space, became a principal site of tourism by the end of the nineteenth century.