32 The Early Industrial Revolution

> Steam is an Englishman.
>
> —*Anonymous*

1700s	Increase in trade, population, and agricultural production
1750–1850	Change in premarital relationships and family structure
1760s–1820s	First Industrial Revolution in Britain; steam power
c. 1815–*c.* 1860s	Industrialization of northwestern Europe
1830	First railroad completed in Britain
Late 1800s	Second Industrial Revolution; petroleum and electricity

THE RAPID INDUSTRIAL DEVELOPMENT that gripped Europe in the nineteenth century was a direct outgrowth of the Scientific Revolution and, like that earlier event, was not really so much a revolution as a steady accretion of new knowledge and techniques. It was made possible by another "revolution": the transformation of agriculture that took place at the same time. England led in both of these transformations, and the rest of Europe only slowly and unevenly fell into line.

And to what extent were the lifestyles of ordinary people altered during the transition from a preindustrial to an industrial society? We shall see that the change was substantial, but it was gradual in most cases and only really remarkable over a generation or more. Taken all in all, however, the lives of many Europeans changed more in the century between 1750 and 1850 than they had in all the preceding centuries together.

Prerequisites for the Industrial Revolution

Historians have identified several factors that are necessary for an economy to engage in large-scale industrial production. All of these were present in England by the late eighteenth century:

1. *Upsurge in world trade.* The expanding market for European goods and services created by the new colonies was matched by the large volume of exports from those colonies destined for European consumption. In the eighteenth century, French overseas trading grew more than tenfold, and the English were not far behind. Intra-European trade also grew spectacularly, as the colonial goods were often reexported to third parties. (See Chapters 36–38.)
2. *Rising population.* The increased demand for imports was largely a result of the rapidly rising population of most of the Continent and England. Although the precise reasons for this rise are still in dispute, it is clear that the death rate steadily fell and the birth rate steadily rose in Europe after 1750. The English population, for instance, quadrupled in a century—a phenomenon never before recorded in history from natural increase alone.
3. *Increased flow of money.* Commercial expansion required additional capital. Money was needed to finance the purchase of goods until they could be resold. Many individuals tried to profit from the rising consumption by building new factories, port facilities, and warehouses—all of which required money or credit. Capital was raised by the expanding stock markets, partnerships and speculations, and the issue of paper money backed by the bullion coming from America.
4. *Experienced managers and entrepreneurs.* By the later eighteenth century, several pockets of entrepreneurial expertise could be found, primarily in London, Antwerp, Amsterdam, and other cities of northwestern Europe. All of these places had already had two centuries of experience in colonial trade. Now they were the home of numerous individuals who had had experience in organizing and managing fairly large enterprises. These people knew how to calculate risks, how to spread them, and how to use the corporate form of organization and insurance to minimize them. They knew how to raise capital, secure credit, and share profit. They were relatively open to new ideas and new technology that promised good returns on investment.

Agrarian Improvements

If an industrial society was to be possible, Europe's farmers would have to produce sufficient food to feed the growing urban labor force. To ensure this production, the crop yields had to be increased. Everywhere in seventeenth-century Europe, croplands were tended in much the same way and with much the same results as in the Middle Age. The ratio of grain harvested to seed sown, for an important example, was still only about 3 or 4 to 1, which was far too low. However, with the world becoming ever more interconnected, high-yield New World crops like the potato helped revolutionize agricultural output.

The most important single step toward modernizing farming was the change from open fields to enclosures, which enabled progressive proprietors to cultivate their lands as they saw fit. These newly enclosed fields were capable of producing two crops yearly, while only one-third (rather than the traditional one-half) lay fallow. The enclosed-field system originated in Holland, which had the densest population in all of Europe and consequently the most precious agrarian land. The Dutch also pioneered many other new techniques that improved crop yields, including the intensive use of manure fertilizer, rotation between root crops such as potatoes and seed crops such as wheat, the use of hybrid seeds, and land drainage.

From Holland the new agrarian practices spread quickly to Britain, and as it became apparent that landowners using the new methods and crops could make profits equal to those of the industrial manufacturer but at much less risk, many larger landlords took up the new idea of market farming (that is, producing for an urban market rather than for village subsistence). This was the advent of agrarian capitalism, in which reducing unit costs and raising the volume of product were just as important as in industrial production.

Without these improvements in agriculture, the huge numbers of ex–farm laborers required by industry and commerce in the nineteenth century might not have become available. They certainly could not have been adequately fed. Not only were they fed, but many of them were fed considerably better than ever before.

The Method of Machine Industry

Industrial production is aimed above all at *lessening the unit cost of production through improved technology*. The changes that occurred in late eighteenth- and early nineteenth-century consumption took place not so much because new products were produced but because

industrialized technology allowed the production of familiar products in greater quantity and at lesser cost.

For example, one of the chief early products of industry was underclothing for men and women. There was nothing new about its design, raw material, or general method of production. What was new and revolutionary was the much lower price for a shirt or underpants when those items were woven on a machine—a power loom—from textiles that had been spun by machine from flax or cotton that had been cleaned and deseeded by machine. The factory owner could sell to wholesale outlets at much lower unit prices because perhaps five machine-made shirts could be produced for the cost of one previously hand-woven shirt. The wholesaler could then place those five shirts with a single retailer because the price was so low that the retailer could be sure of disposing of all five quickly. Men and women who had previously not worn underclothing because of its high cost were now able and willing to buy several sets.

Most early industrial products were simply variations of previously hand-worked items that had been adapted to a mode of production that used machines for all or part of the process. These products included clothing and shoes, lumber, rough furniture, bricks, coal, and pig iron. Sophisticated or new products came only gradually, when inventors and entrepreneurs had developed a clearer vision of what could be accomplished with the new machinery and had developed a trained labor force.

The Factory

Before the eighteenth century, it was unusual for a single employer to have more than a handful of workers directly on the payroll. Very often, people took in some type of raw material—such as rough bolts of cloth—and worked it up into a finished consumer product in their own homes, working on their own schedules and being paid when they had completed the task assigned. This was commonly called the **"putting-out" system** because the same entrepreneur secured the raw material, found the parties who would work it, and collected the finished product for sale elsewhere. He bore the risks and made all of the profits, while the workers received a piecework wage. Most clothing, draperies, shoes, kitchenware, harnesses, and table utensils, as examples, were made this way in early modern days. The wages earned were an important part of the income of many rural and urban families.

The shift to factory production was as important in changing lifestyles in the Western world as were the industrial products themselves. In the new **factory system**, an entrepreneur or a company gathered together perhaps hundreds of individual workers under one roof and one managerial eye. They were paid on a prefixed pay scale and worked under tight discipline on a single, repetitive part of the production process. See the Society and Economy box for more about labor practices during this era.

No longer did the individual workers function as partners of the employer and have a good deal to say about the conditions and the pay they received. No longer would workers have much to say about how their skills would be employed, the nature of what they were making, or where it would be sold or to whom. All of those decisions and many others were now made exclusively by the employer, the capitalist entrepreneur who controlled the factory (or mine, or foundry, or railroad).

England: The Initial Leader in Industrialism

Why did England take the early lead in the industrial production of goods and services? There were several reasons:

1. *Entrepreneurial experience.* Already in the early eighteenth century, the English were the Western world's most experienced traders and entrepreneurs. The English colonies were spread around the world, and the North American colonies were the biggest markets for goods outside Europe. The national Bank of England had existed as a credit and finance institution since 1603, rates of interest were lower than anywhere else, and the English stock markets were the world's largest and most flexible for raising capital.
2. *Population increase.* As mentioned earlier, the English population rose about 15 percent per decade throughout the eighteenth century, generating a huge increase in demand and an equally huge increase in the potential or actual labor supply.
3. *Energy or "Steam is an Englishman."* The key to industrialization as a mechanical process was a new source of energy: steam. The English pioneered the inventions that made steam engines the standard form of mechanical energy during the nineteenth century. All over the world, English steam engines opened the path to industrialized production of goods.
4. *Agricultural improvements.* The improvements in English agricultural production made it possible for the farmers to not only feed the rapidly growing urban sector but to do so with fewer workers in the fields. The excess rural population then migrated from the countryside, contributing to the growth of the urban sector's demand for foodstuffs.
5. *Key raw materials.* England controlled much of the two basic raw materials of early industry: coal and cotton. The English coalfields were large and easy to access. They provided the fuel for the new steam engines and used those engines extensively to produce coal more cheaply than anywhere in Europe. Cotton came from India, which was by now an English colony, and from the North American colonies. It was carried across the ocean almost entirely in English ships and woven in English factories, and the finished cloth was exported to the rest of Europe without effective competition for a century.

SOCIETY AND ECONOMY

Textile Mills' Labor

Following the victory over Napoleon, a wave of industrial unrest broke over England as the working conditions of early industrial society became intolerable both to the workers themselves and to the awakening conscience of part of the liberal middle classes. In the 1830s and 1840s, a series of parliamentary commissions were charged with investigating the working and living conditions of the factory and mine laborers. Their reports shocked the British public and were followed by some of the earliest attempts to control the "free market" endorsed by the more extreme followers of Adam Smith.

The following is an excerpt from a commission report on child labor, featuring an interview with a witness named Abraham Whitehead. His and other similar testimony led directly to the first child labor law in British history, passed in 1833:

> What is your business?—A clothier
>
> Where do you reside?—At Scholes, near Holmfirth.
>
> Is that not in the centre of very considerable woollen mills?—Yes, I live nearly in the centre of thirty to forty woollen mills. . . .
>
> Are the children and young persons of both sexes employed in these mills?—Yes.
>
> At how early an age are children employed?—The youngest age at which children are employed is never under five, but some are employed between five and six. . . .
>
> How early have you observed these young children going to their work?—In the summertime I have frequently seen them going to work between five and six in the morning, and I know the general practice is for them to go as early to all the mills. . . .
>
> How late in the evening have you seen them at work, or remarked them returning to their homes?—I have seen them at work in the summer season between nine and ten in the evening: they continue to work as long as they can see, and they can see to work in these mills as long as you could see to read. . . .
>
> Your business as a clothier has often led you into these mills?—Frequently.
>
> What has been the treatment that these children received in the mills, to keep them attentive for so many hours at such early ages?—They are generally cruelly treated, so cruelly treated that they dare not hardly for their lives be late to work in the morning. . . . I have seen them so fatigued, they appear in such a state of apathy and insensibility as really not to know whether they are doing their work or not. . . .

>> Analyze and Interpret

The committee's report was unpopular with many parents of working children, because it recommended limiting the hours and types of work they might do. What would you think of this attitude? Is it still true of some parents? Can it be justified?

Source: "The Report of the Committee on the Bill to Regulate the Labour of Children," British Seasonal Papers 15 (London: n.p., 1832), 195.

You can read another account, by J. L. Hammond, of labor during the Industrial Revolution, including child labor, online.

6. *Transportation.* England had the most favorable internal transport system. The geography and topography of England made the country ideal for moving goods to market. Not only were there few natural obstacles to travel and transport, but the river system, connected by canals in the eighteenth century, made transportation cheaper and safer than elsewhere.

As a result of these advantages, it was natural for England to take the lead in industry (see Map 32.1). In the generation between 1740 and 1780, England produced a variety of mechanical inventions, including John Kay's spinning machine, called the *spinning jenny*, and Samuel Crompton's spinning *mule*, which made yarn or thread. By 1800, these machines had been joined by others, including the cotton gin invented by American Eli Whitney, Richard Arkwright's water frame, and Edmund Cartwright's power loom. Together, these inventions revolutionized the production of cotton cloth. Machines that still used water or animal power were now quickly replaced by the perfected steam engines designed by James Watt and Matthew Boulton. Cheap and reliable steam power became the standard energy source of the Western world's machines for the next one hundred years.

Engineers of all sorts, bridge builders, railroad and tramway developers, and mining superintendents—in short, all types of the nineteenth century's burgeoning technical aristocracy—were first and foremost England's contribution to the industrial world. (See the box on Science and Technology as an example.)

SCIENCE AND TECHNOLOGY

Isambard Kingdom Brunel (1806–1859)

Considering that he was the son of French immigrants, there was nothing surprising about his name; yet it is likely that Isambard Kingdom Brunel (IH-sam-bard Kingdom Broo-NEHL) was the most remarkable engineer of Britain's Early Industrial Revolution. Brunel cut his professional teeth while assisting his father, Marc, in the first attempt to tunnel under the Thames River in an effort to create a subway for Londoners. Although it failed, the young engineer demonstrated a well-rounded ability as an engineer and an uncanny instinct for innovation in almost all his subsequent projects.

While still a young man, Brunel saw the bright future for railroads in Britain, so he invested in several lines. His greatest success was the Great Western Railway, a system that he designed to run on an unusual wide-gauge track (7.25 feet). In the end, the wider track proved superior to existing lines because it enabled Brunel to build larger, wider cars to transport heavier freight loads and to give passengers a more comfortable ride. Moreover, it was Brunel himself who designed the track bed and the track itself, the cars, bridges, and tunnels for the line—and, according to one source, even the lampposts for London's Paddington Station, the point of embarkation for the Great Western. However, because of its unorthodox design, later system managers refitted the system with standard-gauge four-foot tracks. (It should be added that Brunel designed many bridges for his railway projects and that most still exist. One in particular, the Clifton Suspension Bridge, is striking both for its sturdy design and substantial beauty.)

From a purely engineering point of view, Brunel's most original work was in ship design. Even before the Great Western Railway had opened, the engineer proposed to extend it by ship to connect Bristol with New York City. For that, he organized the Great Western Steamship Company. Many people had their doubts because of the mistaken belief that steam-powered ships could not carry enough coal to make so long a voyage and still have space for cargo. Brunel believed that a larger vessel would use proportionally less fuel than a smaller ship. To prove it, he built the first iron ship, the *Great Britain*, and the first steamship, the *Great Western*, that not only reached New York but also did it in record time. Brunel incorporated another design innovation that gave his ships exceptional speed: the screw propeller.

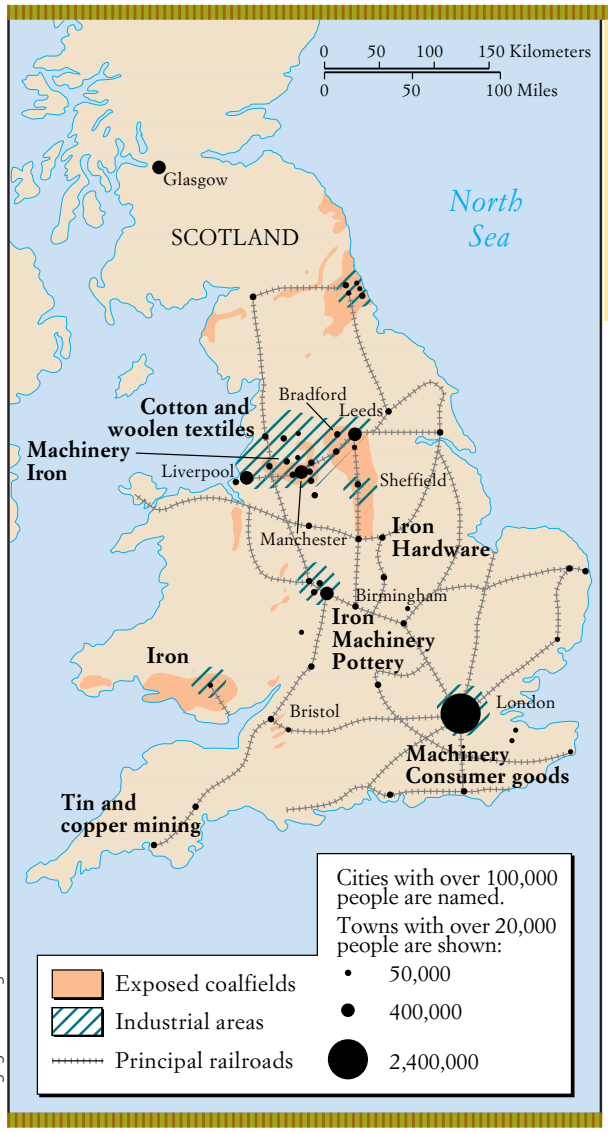
For his contributions to the Industrial Revolution, several dozen statues of Isambard Kingdom Brunel are found around Britain, and he is considered to have been one of his country's greatest engineers.

Howlett, Robert (1831–58)/Private Collection/The Stapleton Collection/The Bridgeman Art Library

ISAMBARD KINGDOM BRUNEL. Shown standing in front of the launching chains of the *Great Eastern*, 1857.

>> Analyze and Interpret

What factors in his life might have contributed to Brunel's success? In your opinion, is it likely that just one individual can make such big contributions in several areas today? Do you know of anyone who has?



MAP 32.1 Britain's Industrial Revolution

The fastest pace in industrial development was in the north of England, where coal and textile production combined to create a strong attraction for laboring immigrants.

>> MAP QUESTIONS

Why was coal important? Besides the nearness of the coalfields, what other features of geography might explain the choice of western England for early textile mills? (Hint: Early mills did not run on steam, but relied on moving water to power machinery.)

Spread of the Industrial Revolution

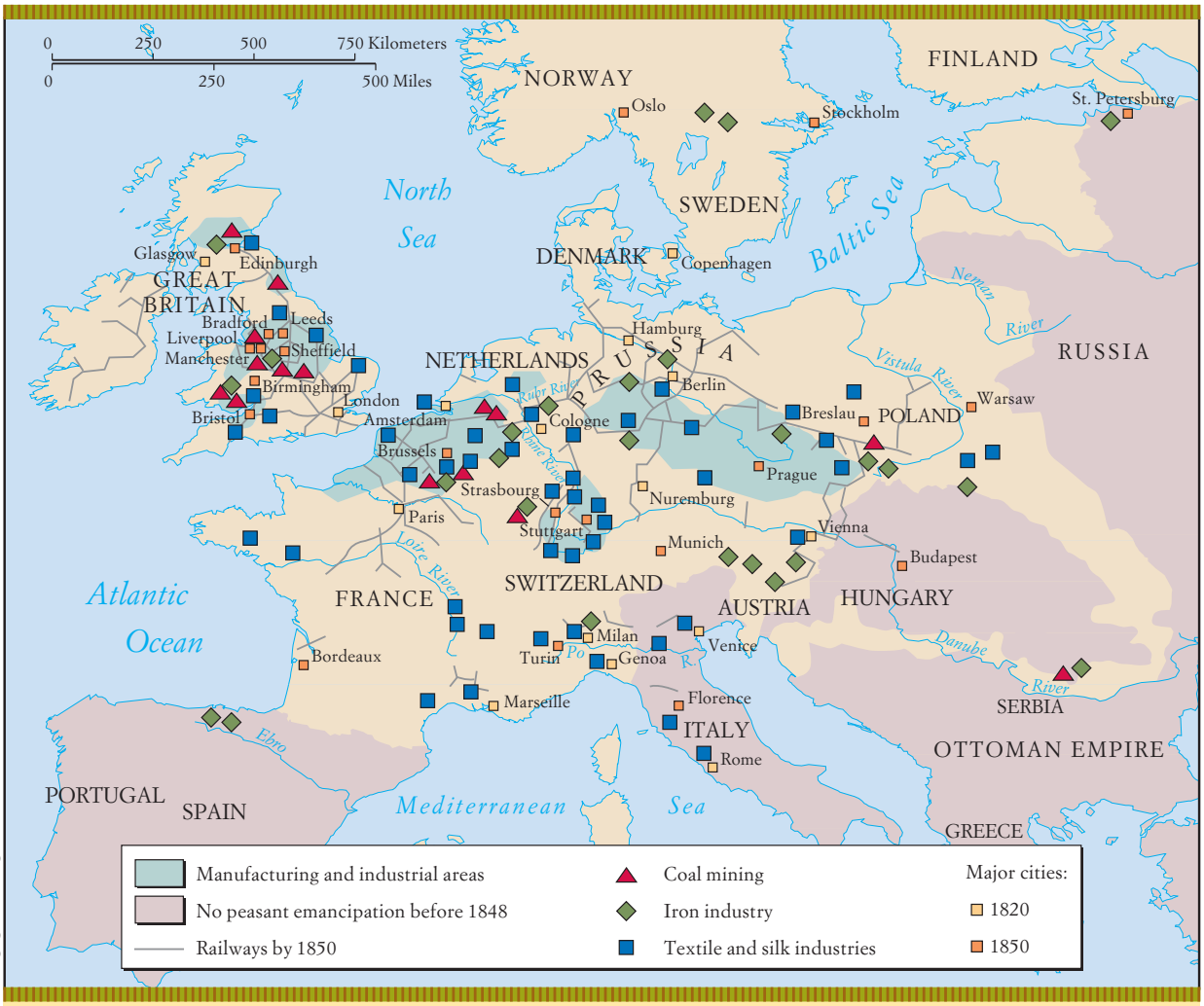
From England, the new processes spread slowly during the eighteenth and early nineteenth centuries. No other country had England's peculiar combination of advantages, but there were other reasons for this tardiness. A major factor was England's attempt to treat industrial techniques as state secrets. These restrictions could not be effectively enforced, and the theoretical knowledge of machine design and technology spread into northern Europe and the United States after about 1820.

Another factor retarding industrialization was the long Napoleonic wars, which disrupted the normal communications and commerce between the Continent and England for the quarter century between 1793 and 1815. It would take another generation before even the more advanced areas of western Europe could rival Britain in industrial techniques.

By about 1830, the areas on the Continent closest to England had begun to industrialize part of their productive capacity. Belgium and northern France began to use steam power first in coal and textile production, the same industries that had initiated the use of steam in England. By the 1860s, industrial techniques had spread to the Rhine Valley—especially the Ruhr coal and iron fields—as well as to parts of northern Italy and the northern United States (see Map 32.2).

Nevertheless, even as late as the 1860s, eastern Europe, Russia, and Iberia (Spain and Portugal), as well as most of Italy, were almost untouched by the industrial lifestyle

OPENING OF ROYAL ALBERT BRIDGE. Named in honor of Queen Victoria's husband, this span was a design by I. K. Brunel and is one of the triumphs of the transport revolution spawned by industrialization.



MAP 32.2 The Spread of Industry by 1850

The sharp differences between the countries with industrial resources and those without are shown on this map. There is also a notable correlation between industry and the peasantry's freedom from landlord control.

>> MAP QUESTIONS

Besides their role in industrialization, what possible social and political impacts might railroads have had on nineteenth-century Europe?

View an interactive version of this or a related map online.

and industrial production. These regions all lacked one or more of the important factors that had to come together for industrialization to proceed. They became the permanent, involuntary clients of the industrialized regions. Some areas, such as eastern Europe and the Balkans, were still untouched well into the middle of the twentieth century. Industrialization was not automatic or inevitable, and large parts of the non-Western world are still only superficially and partially industrialized in their essential production techniques.

Railroads

One of the most spectacular results of steam power was the railroad. Again, Britain led the way, but in this instance, the new invention spread rapidly. The first commercial use of steam railroading was in 1830, when a line connected Liverpool and Manchester, two of the newly important British industrial towns. By the 1840s, lines were under way in most countries of the Old and New worlds, including Russia and the United States.

Private companies built most early rail lines, but railroads were costly, and the large debts the owners incurred were often more than the lines could sustain during the frequent downturns in the economic cycle. As a result, many railroads went bankrupt and were taken over by the government. By the 1860s, most railroad lines were in government hands everywhere but in the United States.

The steam locomotive was the heart of a railroad. Yet the locomotive's mechanics were so simple that only a few years after the first one was mounted on its track, it had reached a state of perfection that hardly changed over the next century. Bigger and slightly more efficient locomotives were built, but they were essentially the same machine as the famous Rocket of the 1830 Liverpool–Manchester line.

The railroad dramatically reduced the costs of shipping and personal travel. It also greatly increased the security of moving goods and people over long distances. By as early as 1850, trains were steaming along in excess of fifty miles per hour—a speed that seemed almost diabolical to many onlookers. By that year, it was possible to travel from London to Edinburgh overnight in safety and comfort. Twenty years earlier, the same journey had taken four or five jolting, banging days in a stagecoach, and the train cost less as well. The railroad had an impact on the first half of the nineteenth century similar to that of the automobile on the first half of the twentieth—another "revolution"!

Phases of the Industrial Revolution

Industrial work and lifestyles did not develop rapidly as a onetime occurrence at the end of the eighteenth century. The changes that began then have continued to the present day, but they can be divided into certain discernible stages.

The **First Industrial Revolution**, which lasted in Europe from about 1760 to 1820, was marked by the predominance of Britain, the central importance of a new supply of energy from steam, and the production of textiles and iron in the factory setting.

The **Second Industrial Revolution** began in the later part of the nineteenth century in various parts of western Europe and produced modern applied science or technology. The chemical and petroleum industries especially came to the fore in this phase, and a new source of energy was developed: electricity. National leadership shifted gradually from Great Britain to Germany (after its formation in 1871) and the post–Civil War United States.

In our own time, industrial production has spread rapidly into many countries that were previously untouched, or almost so, by these revolutions. At the same time, the older industrial countries in the West have moved on to a postindustrial society, in which the production of goods in factories and their transport by railroad has given way in importance to the provision of services and information relying on electronic transmissions. We are, in fact, living through a Third Industrial Revolution symbolized and powered by the computer.

Traditional Social Structures and Impacts of Early Industry

During the later eighteenth century in Britain and France (where the records are best preserved), a massive, widespread change in social habits and relationships became apparent. The causes of this change are not well understood, but they seem to be linked with the arrival of Enlightenment science as a primary source of ethical guidance competing with religion. The beginnings of the Industrial Age

Royal Holloway and Bedford New College, Surrey, UK/Bridgeman Art Library

RAIL STATION. This magnificent 1862 illustration by British painter W. Powell Frith captures the bustling activity of a Victorian-era station and the crowds glad to board the "iron horse."

Bibliotheque des Arts Decoratifs, Paris, France/ Archives Charmet/The Bridgeman Art Library, London

THE ROCKET, 1829. This engraving shows George Stephenson's locomotive as it traveled across the English countryside in 1829. Essentially a steam boiler laid on its side with pistons and wheels, the Rocket quickly outdistanced its stagecoach competitors between Liverpool and Manchester.

accelerated changes that had already begun. One striking example is the structure of the family and the household.

The Structure of the Family and Household

For most people, the family they are born into is the most important social institution in their lives. We tend to think of the family as unchanging: a man, a woman, and their children. But is this so? Historians once assumed that, for many centuries before industrialization, the European family had a standard structure that varied little. An extended kin group living under one roof, high rates of illegitimate children, and early universal marriage, so it was thought, characterized this family. Now, however, researchers have established that this stereotype of the preindustrial family is false. The characteristics that were assumed to be commonplace were in fact uncommon during the preindustrial centuries.

Instead, it is now clear that major changes in the family structure took place beginning in the middle of the eighteenth century *before* industry became common.

Three changes were particularly noticeable:

1. A lowering of the average age of marriage from the previous 27 for both men and women to about 22 for women and 23.5 for men by 1850.
2. A sharp increase in the number of children born outside of wedlock, beginning in the towns but soon becoming common also in the rural areas, where the majority of the population lived.
3. A steady increase in the previously low number of aged persons (over sixty) who had to be cared for by younger generations.

The Place of Children

Until the eighteenth century, only the wealthy or the nobility could afford to give much loving attention to infants or very young children. The reason was simple: The mortality rate for infants and children was so high that it discouraged people from putting much financial or emotional investment into them. In many places, three of five children of ordinary people would normally die before age ten, and another would die before age twenty.

Diseases of every type hit children (and the aged) harder than others. In times of famine, young children were often the first victims. Household and farm accidents of a lethal nature were an everyday affair among children (we frequently hear of children of that era drowning in the farm pond or the well, being kicked by a horse, getting cut by sharp tools, or being burned to death). In those days, when medical care for rural people was nonexistent and hospitals were feared, even minor burns or slight infections would become aggravated and often result in death, weeks or months later.

Therefore, the usual attitude toward the infant was a mix of indifference and a good deal of realistic caution about his or her prospects. Most peasants and workers viewed children below age seven or so as debit factors: They demanded time-consuming care and feeding without being able to contribute anything to the family resources. Only after they had become strong and rational enough to do adult work were they looked on as assets.

The urban classes and the wealthy could afford to take a more relaxed attitude toward children's work, but their emotional relations with the young child were about as distant as the peasant's. Urban children died as readily and as unpredictably as rural children. It only made "biological sense" to restrict maternal love and paternal pride to those children who were old enough to have a good chance of a long life. And for most people, the point of having children was to provide a primitive form of social security. Children were expected to see to it that their parents did not suffer the ultimate indignity of a beggarly old age or have to throw themselves on the charity of others when ill or disabled.

At some point between 1750 and 1850, a change became evident, as parents began to show what we now consider normal parental love and tenderness toward newborn and young children. This change occurred first in the better-off segment of society and then seeped downward into the lives of the majority. Why did it happen?

Several factors can be identified: the declining child mortality rate, which gradually increased the chances that a child would survive; the rising numbers of middle-class people who did not need the labor but valued children for their own sake; and the influence of educational reformers such as Jean-Jacques Rousseau, Johann Heinrich Pestalozzi, and Friedrich Herbert. These reformers insisted that children should be given more humane education and treated

as unformed, responsive individuals rather than contrary creatures whose naturally mischievous ways must be corrected by constant, strict discipline.

Another influence on the attitudes of adults toward young children was the introduction of general public instruction in state-supervised and funded schools, which began in Prussia and Austria, among other places, in the mid-1700s. Clearly, children worthy of being educated at parental tax expense were valuable for more than just serving as attendants in their parents' old age (for which the children needed no education).

Relations Between Men and Women

Marriage among the rural folk and most urbanites was still a contract between two families rather than the result of individual erotic attraction. But this, too, changed during the eighteenth century in Europe. Not only did people marry at an earlier age as the century progressed, but social relations among the young also became considerably freer. In the later eighteenth century, premarital sex without marriage plans seems to have occurred with increasing frequency. Both sexes, in countryside and town, were able to "get away" with behavior that the full weight of social opinion would previously have prevented. Why this happened is a subject of some debate among historians. Some say that a psychological sea-change occurred after 1750 that allowed new freedoms in the sexual sphere. Others—the majority—say that the young people simply seized the increasing opportunities that a more mobile society gave them to get together outside the watchful oversight of pastors, parents, and elders.

For most women, marriage was still the main career option, but demographic changes made it impossible for some women to marry. Although the number of males and females is about equal at birth, unmarried females begin to outnumber males after about age twenty-five. This discrepancy was larger in the past than now because males were affected disproportionately by accidents and violence. Consequently, there were fewer eligible males than females in the age cohort most likely to marry. Many women were never able to marry. These "spinsters" were common in all social strata except the very highest. Their married relatives often took shameless advantage of them, forcing them to work as child watchers, laborers, maids, and seamstresses in return for minimal room and board.

Occupations and Mobility

Although most people continued to work directly with and on the land (farming, tending orchards, fishing, timbering, shepherding), the number engaged in urban occupations and nonmanual work was gradually increasing by the 1750s. As methods of agriculture improved, large estates could reduce the number of farm laborers they employed. These displaced persons could normally escape poverty only by moving away to a new life as wage earners in the towns.

Some small minority of these ex-farmers had the intelligence, drive, and luck to take up a skilled trade or nonmanual work, perhaps as bookkeepers, sales clerks, or schoolteachers (for which the only real qualification was semiliteracy). Any who could make their way into these occupations would move upward in the social scale and find the opportunity to better themselves by imitating the manners and ideas of the socially superior classes.

The rapidly increasing overseas commerce of the eighteenth and early nineteenth centuries extended the horizons of ambitious youths, a good many of whom had left their ancestral villages because they saw only too clearly what a miserable future awaited them there. Some of them ended up in one or another of the colonies, but the majority stayed at home, unable to bring themselves to take the leap into the dark that emigration entailed.

Because there were absolutely no government provisions to aid the needy, the threat of unemployment and of literal starvation was often very real. Many young men spent years teetering on the edge of the abyss before they had sufficiently mastered a trade, established themselves in business, or inherited some land to farm so that they could set themselves up as the head of a family household.

Female Occupations

Prior to the nineteenth century, women worked in a wide variety of occupations, but usually as trades apprentices in their own homes. However, the arrival of the Industrial Revolution narrowed their choices. There were essentially only two options: They could stay at home, hoping for a successful marriage to a local youth of their own class, or they could go into service—that is, join the millions of teenaged daughters of peasants and laborers who left home to become live-in servants. Practically every household, even relatively poor ones, had one or more servants. It was not at all unusual for a poor farmer's house to harbor one or two servant girls as well as a male laborer or two. No middle- or upper-class house in the nineteenth century was without its servant staff, mainly females from rural families who came to town to seek work. Sometimes the servants were related by blood or marriage to the household; sometimes not.

Many of these young women left their employers after shorter or longer periods of service, having found a suitable marriage partner with whom to "set up," but many others stayed for life. They remained unmarried, contributing part of their meager wage to support the old folks in the village. Some of these women practically became members of the family and were cared for in their old age, but many were turned out like so many used-up horses when they became too old to work.

By the early nineteenth century, when factory work had become fairly common in Britain, young women also had the option of taking a job tending a machine. Entire families often staffed the earliest factories, but increasingly, young women and children replaced the male adults and family units in the unskilled jobs such as cotton spinning and mechanical weaving. The owners of the textile and shoe mills found that young women would work for lower wages than young men commanded and were more reliable. Many country girls preferred factory jobs—where they could be with their peers and have some freedom in their off hours—to going into domestic service with its many restrictions.

The Migration to the Cities: Urbanized Society

Throughout the Western world, a massive flight to the cities began in the eighteenth century and continued almost unchecked through the twentieth century. Most of the migrants from the countryside were young people in the prime of life. The precise reasons for this **urban migration** varied considerably from place to place and era to era, but three motives underlay it everywhere:

1. *Human curiosity and the desire for change.* The young in every culture are more open to change and more eager to embrace it than their elders. When it became relatively easy to move about and experience new things, new places, and new people, young people took advantage of the changed conditions.
2. *The desire to improve economic and social status.* The variety of occupations that the towns offered, the opportunity to gain at least a minimal education, and the belief that talent and ambition had a freer field in the town than in the ancestral village inspired many persons to move.
3. *The desire to find better marital partners.* Young women in particular—whose prospects of finding desirable husbands in their villages were tightly restricted by their families' demands and social standing and who could not easily rebel—took the opportunity to search elsewhere.

Beyond these subjective motivations, we should note the objective economic fact that, by the nineteenth century, the shift of an entire society from a rural to an urban majority was, for the first time in history, viable and sustainable. The gradual spread of commerce and long-distance communications and financial credit arrangements allowed towns to grow regardless of the local food-producing capacity. Bristol in England, Lyon in France, Brussels in Belgium, and Oslo in Norway, to cite some examples at random, no longer depended on the ability of the agricultural region close by to supply their daily bread and meat. They could—and did—get their supplies from Canada, Denmark, or wherever it was most convenient.

Urban Growth

In the eighteenth century, this urbanization of society was advancing rapidly: Among the metropolises, London's population rose from 700,000 in 1700 to about one million in 1800. Berlin tripled in size to about 175,000. Paris rose from about 300,000 to 500,000 in the same period. In every Western country, the number of towns with populations between 10,000 and 25,000 grew considerably. These towns served as important administrative, cultural, and economic centers for the provinces.

The bulk of the new industry and manufacturing was concentrated in these smaller towns as the Industrial Revolution gradually got under way. Land was cheaper there than in the great metropolises, and the smaller towns were usually closer to the sources of raw materials. Manchester, the English textile center, for example, had a population of about 7,000 in the 1740s. By 1790, the population had risen to about 25,000, and it gained at least 50 percent every decade for the next half century.

The census of 1851 showed that, for the first time, a majority of the people in England lived in an urban setting (that is, in places with more than 5,000 inhabitants). About 25 percent of the population of France and Germany lived in urban areas. But the percentage was lower in southern and eastern Europe, where industry was not yet established.

Urban Classes and Lifestyles

In the eighteenth-century towns, especially in Europe, social classes were quite distinct. At the top, dominating politics and setting the cultural tone, was the nobility. In western Europe and Scandinavia, aristocrats increasingly intermarried with wealthy commoners—bankers,

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TEXTILE MILL WORKERS. This early photo shows the noisy and dangerous conditions of work in a mid-nineteenth-century mill. The many exposed machinery parts were constantly jamming, often at the expense of a worker's daily wages.

merchants, officials of the self-governing cities—and together they formed the governing group.

Beneath them was the urban upper-middle class, or classes, who included less-wealthy merchants, landlords, tradesmen, and professionals. These well-educated, upwardly mobile men and women constituted what the French called the *bourgeoisie*. Many of them opposed the pretensions of the nobles and their wealthy allies and were on a collision course with the aristocratic governors—a collision that finally exploded in the French Revolution at the end of the century.

Below the bourgeoisie were the lower-middle classes, also primarily urban, composed of clerks, artisans, skilled workers, and independent shopkeepers. They were desperately afraid of falling back into the class from which they had emerged: the workers who labored in semiskilled or unskilled jobs for an employer. The lower-middle classes mimicked their social betters among the bourgeoisie, a class to which they might ascend with luck, time, and good marriages.

This lower-middle class, more than the still relatively small and fragmented working classes, generated most of the social discontents that marked the late eighteenth and early nineteenth centuries. Only in the later nineteenth century, when the industrial working classes had become much larger and more important in the social structure, did they successfully assert themselves.

Public Health

Although the lives of ordinary people were improving in several respects, in many areas conditions were hardly better at all. For example, although diet was generally improving, medical and surgical conditions showed little change over the century. Being admitted to a hospital was still almost a death warrant, and the poor would absolutely refuse to go, preferring to die at home. Doctoring was a hit-or-miss proposition, with primitive diagnosis backed up by even more primitive treatment. Surgery was a horror, with no pain deadener but whiskey until well into the nineteenth century. Amputations were the last resort in many cases, and the resultant wounds frequently became infected and killed the patient if shock had not already done so.

Doctors and pharmacists still did not receive formal training in schools of medicine. The trainees completed a haphazard apprenticeship with a doctor, who may or may not have known more than his apprentice. All sorts of quacks were active, bilking the public with their "Electrical Magnetic Beds" and "Elixirs of Paradise." Both the educated and the uneducated had a low opinion of doctors.

Medical facts now taken for granted were unknown then. The functions of many of the internal organs, germ theory, the dangers of infection, and fever treatment were still guesswork or not known at all. The mentally ill were just beginning to be given some treatment besides the traditional approach, under which violent patients were locked up under awful conditions and others were kept at the family home. All in all, the treatment of the human mind and body when they fell ill was hardly improved over what the Romans had done 2,000 years earlier. Some would say it was worse.

Housing and Sanitation

The most urgent problem facing the industrial towns in the early part of the nineteenth century was sanitation. In the dreary rows of cheap rental housing (hastily built largely by the mill and factory owners as an additional source of income), overcrowding to an incredible degree was commonplace. Even the most basic sanitary facilities were largely missing. Ventilation of interior rooms was nonexistent, and all types of infectious disease ran rampant. Tuberculosis (TB, or consumption) rapidly became the number-one cause of death in nineteenth-century Britain. It bred in the damp, unventilated back rooms and spread easily through the workers' slums, where several people—often unrelated—crowded into every miserable abode. Privacy was impossible for the working class to obtain. Illegitimacy and incest were constant menaces to family cohesion and security. In report after report to the British Parliament in the 1830s and 1840s, shocked middle-class investigators noted that sleeping five and six

Bibliothèque des Art Décoratifs Paris, France/Archive Charmet/The Bridgeman Art Library

SEVEN DIALS. This 1872 engraving by Gustave Doré captures the irrepressible vitality of the worst slum in London. Seven Dials was known far and wide as a thieves' haven and a pickpocket's bazaar. Some of the stolen wares were brazenly put on display for sale immediately, perhaps to the former owners.

to a bed was common, that boys and girls in their teens were frequently forced to sleep together for lack of space, and that greedy landlords regularly extracted the maximal rent by having several poverty-stricken families share tiny apartments.

Similar conditions were soon found on the Continent as industry spread. For many years, civic authorities were either unable or unwilling to tackle the huge tasks of ensuring decent living conditions for the poorer classes. (Recall that the poor did not yet have the vote anywhere.) Despite the relative youth of the new urban populations, towns and cities normally had a higher death rate than birthrate. Only the huge influx of new blood from the villages kept the towns expanding.

Living Standards

As the Industrial Age began, the gap between the living conditions of the European rich and poor became wider than ever before in history. The aristocracy and the handful of wealthy commoners lived a luxurious and self-indulgent life. The higher nobility and court officials were expected to have squadrons of servants, meals with fourteen courses and ten wines, palaces in the towns and manors in the countryside, and personal jewelry whose value was equal to the yearly cash incomes of a whole province of peasants. Great wealth, although almost always hereditary, was thought to be a reward for merit that should be displayed as an intrinsic duty as well as honor.

The lifestyle of the urban middle classes was much more modest, although some of the richest, such as bankers, might have six times the income of the poorer aristocrats. Secure in their solid townhouses, surrounded by domestic servants, the members of the middle classes entertained modestly if at all and concentrated on their counting houses, investments, shops, businesses, and legal firms. They devoted much attention to their extensive families. The wife was expected to be a thrifty, farsighted manager of the household, and the husband was the source of authority for the children and the bearer of the most precious possession of all, the family honor.

For most people in urban areas, material life was gradually improving, but the lower fringes of the working classes and the many beggars, casual laborers, and wandering peddlers and craftspeople were hard put to keep bread on the table and their children in clothes. Poverty was perhaps never so grim in European cities as in the early nineteenth century, when it became more visible because of the much-increased numbers of abjectly poor, and it had not yet called forth the social welfare measures that would become common by the twentieth century. As industrial work began to become common in the towns, the uprooted ex-peasants who supplied most of the labor often experienced a decline in living standards for a while, until they or their families found ways to cope with the demands of the factory and the town lifestyle. This decline could last for an entire first generation of migrants, and only their children benefited from the often-painful transition.

Reforms and Improvements

To the credit of the British aristocrats who still controlled Parliament, as early as the 1820s, after the war emergency had passed, several reform proposals to aid the working classes were introduced. By the 1830s, some of the worst abuses in the workplace were attacked. The **Factory Acts** of 1819 and 1833 limited the employment of young children and provided that they should be given at least a little education at their place of work. (Still, it remained entirely legal for a nine-year-old to do heavy labor for eight-hour workdays and for a thirteen-year-old to work twelve hours a day, six days a week!)

Women and boys under the age of ten were not permitted to work in the mines after 1842. Until then, women and young children did much of the deep underground work, which was highly dangerous and exhausting to anyone. In most textile manufacturing, physical strength was not as important as quickness and endurance. Women and children were paid much less than men demanded, and their smaller size allowed them to move about in the crowded machine halls with more agility than men. Boys as young as seven years of age were employed regularly in twelve- or thirteen-hour shifts until the passage of the 1833 act. The families of young working children often opposed and circumvented the reforms, which threatened to diminish the potential family income. No more substantial reform legislation was passed until the early twentieth century.

Little was done to improve basic sanitation in worker housing until the 1860s. In 1842, a pioneering report by Edwin Chadwick on the horrible conditions in the slums and how they might be corrected through modern sewage and water purification systems began to draw attention. But not until the great cholera scare of 1858, when London was threatened by a major outbreak of this lethal waterborne disease, was action taken. Then the upper and middle classes realized that although epidemic diseases such as cholera might originate in the slums, they could and would soon spread to other residential areas. At about the same time, the restructuring of its primitive sewer system allowed Paris for the first time to manage its waste disposal problem. Led by the English and French capitals, provincial city authorities soon began to plan and install equivalent systems. By the end of the nineteenth century, European city life was again reasonably healthy for all but the poorest slum dwellers.

SUMMARY

INDUSTRIAL METHODS OF PRODUCING GOODS via machinery entered European life gradually in the mid-eighteenth century, with England as the leader. The English had several natural advantages and social characteristics that enabled them to expand their lead over the rest of the world until well into the nineteenth century. This First Industrial Revolution was largely dependent on two related changes: the increase in agrarian production and the rapid rise in population and attendant demand for consumer goods. Without these, the factory system of concentrated labor under single management and discipline would not have been feasible.

The industrial system spread slowly at first because of the wars and the difficulty of replicating the English advantages. By the mid-nineteenth century, however, industrialization had spread into much of northern and western Europe and the United States. Coal mining and textiles were two of the initial industries to be affected, and the steam engine became the major energy source for all types of industry. The railroad, introduced in the 1830s, soon effected massive change in the transport of goods and people and contributed to the success of the industrial system in substantial ways. A Second Industrial Revolution commenced in the late nineteenth century, fueled by petroleum and electricity, and a third is currently under way in the provision of services rather than goods.

The social change introduced by mechanized industry took many forms, affecting family relations, occupational mobility, urbanization, and diet. The family was changed by a decreasing age of marriage and a sharp rise in illegitimacy. Children came to be valued as creatures worthy of love in their own right. Several new occupations were opened to both men and women in factories and mills as industry spread, while the traditional servant jobs multiplied in the expanding cities and towns.

Living standards varied from an unprecedented opulence among the rich to an actual decline in the conditions for recent urban migrants. Slums appeared in the new industrial quarters, which were horribly lacking in basic sanitation and privacy. Nevertheless, to the working classes, the attractions of the towns were manifold and irresistible, particularly for those who sought a better life than the traditional social and economic restrictions that the villages offered. A richer and more varied diet even for the poor gradually made itself felt in better health. By the end of the nineteenth century, sanitation and workers' living and labor conditions had visibly improved.

Identification Terms

Test your knowledge of this chapter's key concepts by defining the following terms. If you can't recall the meaning of certain terms, refresh your memory by looking up the boldfaced terms in the chapter, turning to the Glossary at the end of the book, accessing the terms online: www.cengagebrain.com.

Factory Acts
factory system
First Industrial Revolution
"putting-out" system
Second Industrial Revolution
urban migration

For Further Reflection

1. Why do we refer to the changes that came with industrialization as amounting to a "revolution"?
2. In what ways did the demand for finished goods like textiles and household wares result in *lower* prices for them? How did this (seemingly) contradict the law of supply and demand?
3. What is capital? What part did capital play in making the Industrial Revolution? Scholars have suggested that there was a relationship between European slavery and its Industrial Revolution. Is this true?
4. What relationship was there between Britain's empire and its Industrial Revolution?

Test Your Knowledge

Test your knowledge of this chapter by answering the following questions. Complete answers appear at the end of the book. You may find even more quiz questions on the book's website accessible through www.cengagebrain.com.

1. The basic aim of industrial production techniques is to
   a. provide more employment opportunities for the labor force.
   b. allow a greater variety of jobs.
   c. lower the unit cost of production.
   d. discipline and organize the labor force more efficiently.
   e. move farm workers into cities to work in factories.
2. James Watt was the inventor of
   a. an entirely new form of mechanical energy.
   b. the power loom for weaving.
   c. a new machine called the "spinning jenny."
   d. an improved and more flexible form of steam-driven machine.
   e. a device for raising water from flooded mines.
3. The chief driving force for the Industrial Revolution in eighteenth-century England was
   a. the threat of being overshadowed by France in the world economy.
   b. the invention of an improved source of energy.
   c. the creation of the British overseas colonial empire.
   d. the encouragement of the British government.
   e. the development of the business corporation.
4. The first major industry to feel the effect of industrial production was
   a. lumbering.
   b. railroads.
   c. grain farming.
   d. paper making.
   e. textiles.
5. Development of competitive industry on the Continent was delayed by
   a. the Napoleonic wars and their attendant disruption of trade.
   b. lack of interest.
   c. the upper classes' contempt for profit making.
   d. lack of suitable and basic natural resources.
   e. the need for strong agrarian societies.
6. Around the mid-eighteenth century, the European population
   a. began to rise as a result of declining mortality and rising birthrates.
   b. started to stabilize after a century of steady increase.
   c. tapered off from the sharp decline that had marked the sixteenth and seventeenth centuries.
   d. began to rise as a result of medical breakthroughs against epidemics.
   e. suffered a severe drop because of emigration.
7. Marriage in preindustrial European society could best be described as
   a. a relationship based on love between two people.
   b. a contractual relation formed mostly by economic and social aspirations.
   c. a contractual relation that conformed closely to biological drives.
   d. an economic relationship between two individuals.
   e. a strategy to "cover" the sexual activities engaged in by the young anyway.
8. An important function of children in preindustrial society was
   a. to serve in the landlord's military forces.
   b. to elevate themselves socially and thus honor their parents.
   c. to bring grandsons into the world and so carry on the family name.
   d. to pray for the departed souls of their deceased parents.
   e. to serve as security for their parents in their old age.
9. In the early industrial period, the most common employment for a female
   a. involved prostitution at least part-time.
   b. was as a domestic household servant.
   c. was in one or another white-collar jobs.
   d. was to substitute for a man temporarily as needed.
   e. was as a field worker.
10. The governing class in the cities in the eighteenth century was composed of
    a. the aristocracy and the wealthiest commoners, who had intermarried.
    b. the military commanders responsible to the royal government.
    c. the masses of urban commoners who had obtained the vote.
    d. the hereditary aristocracy.
    e. the few young people who were finanially able to attend universities.

33 Advanced Industrial Society

> Hence all society would appear to arrange itself into four different classes: (1) those that will work, (2) those that cannot work, (3) those that will not work, and (4) those that need not work.
>
> —*Henry Mayhew*

1848	*Communist Manifesto*
c. 1850–*c.* 1910	Massive emigration from Europe
c. 1870s	Second Industrial Revolution begins
1870s–1914	Urbanization increases; labor unions and mass democratic politics emerge; Marxist socialism strengthens

THROUGHOUT THE NINETEENTH CENTURY, the West (that is, western Europe and the United States) was clearly the dominant factor in world political and military developments. And this colonial subordination of much of the rest of the globe to Europe was a reflection above all of the West's large and increasing lead in technology and economic organization. In the half century between 1860 and World War I, Europe and the United States themselves went through a peaceful change of massive dimensions. As in the eighteenth century, a dual revolution was propelled by a shift in the sources of energy, which was then reflected in social organization and national politics. As the First Industrial Revolution was driven by steam, the Second Industrial Revolution was driven by petroleum and electricity. These two energy sources transformed urban life and made the city clearly the dominant social organism. Urban areas produced new businesses, new organizations of workers, new professions, and new lifestyles.

In these decades, socialism became for the first time a major force in several countries. As enunciated by Marx, it posed a severe threat from below to the combined aristocratic/bourgeois rule that had become the norm in European politics and economies. Also, while the non-Western world was being incorporated into the new financial and commercial system, Europeans were emigrating in massive numbers to selected areas of the globe, primarily for economic reasons. The Americas, and particularly the United States, were the favored destinations.

The Second Industrial Revolution

As in the late eighteenth century, population growth and rising demand for consumer goods necessitated new energy sources. Europe's overall population, exclusive of Russia, rose from 265 million to 401 million in the second half of the nineteenth century (see Map 33.1). Despite the stabilization of the average western European family at 2.5 children at the end of the century—the eastern Europeans were substantially more fertile—the previous huge population increase, combined with a sharp rise in real income, created a large market for consumer goods and services of all types.

A definite rise in material standards of living was visible throughout Europe west of Russia. With fewer children's hands now necessary for labor, those who were born at this time profited from better public health and nutrition to live longer, healthier lives. They could and did consume more. Goods that were almost unknown in European workers' houses in the early 1800s now became common: machine-produced footwear and clothes, nursing bottles for babies, gas or electric lighting, and books and newspapers.

Adding to this internal market was the rapidly expanding overseas market, both in the European colonies and in some of the independent nations of America and Asia. The surge of imperial ventures that began in the 1850s brought major increases in the availability of raw materials as well as the number of potential consumers in the Asian and African marketplaces. The volume of world trade shot upward in the later nineteenth century, and the West controlled that trade entirely. Britain, Germany, and the United States were the main beneficiaries.

New Energy Sources

The big lead in industrial production that Great Britain had established in the early nineteenth century gradually narrowed after 1850. Belgium and northern France were the centers of the Continent's initial industries, followed by parts of Germany and Italy. After the unification of those two countries, their industrial growth accelerated sharply. As an important example, Germany's steel and iron production exceeded Britain's by 1893 and was almost double British production by 1914.

Whole new industries sprang up, seemingly overnight. Chemicals, oil refining, steamship building, turbines and electrical machinery, and, toward the end of the 1890s, the automobile industry, are outstanding examples. But perhaps the most important of all the new developments was the taming and application of electricity to both industrial and domestic uses.

Electricity had been recognized as a potentially useful natural phenomenon since the eighteenth century (the days of Ben Franklin), but no practical use could be made of it then. In the 1870s, this situation changed dramatically as a result of the work of German, American, and French researchers. The development of generators and transformers allowed direct current to be sent wherever desired, cheaply and efficiently, and then transformed into easily used, safe, alternating current. The first big urban power plant was constructed in 1881, and electric power was soon being used to light streets, power trams, and bring artificial light into hundreds of thousands of city homes and factories. Soon after, electrical machinery was being used in thousands of industrial applications. Electric railways and subway systems were introduced in every major European city by the 1890s. Probably no other series of inventions has ever contributed so much to easing the physical labor and improving the material life of ordinary people.

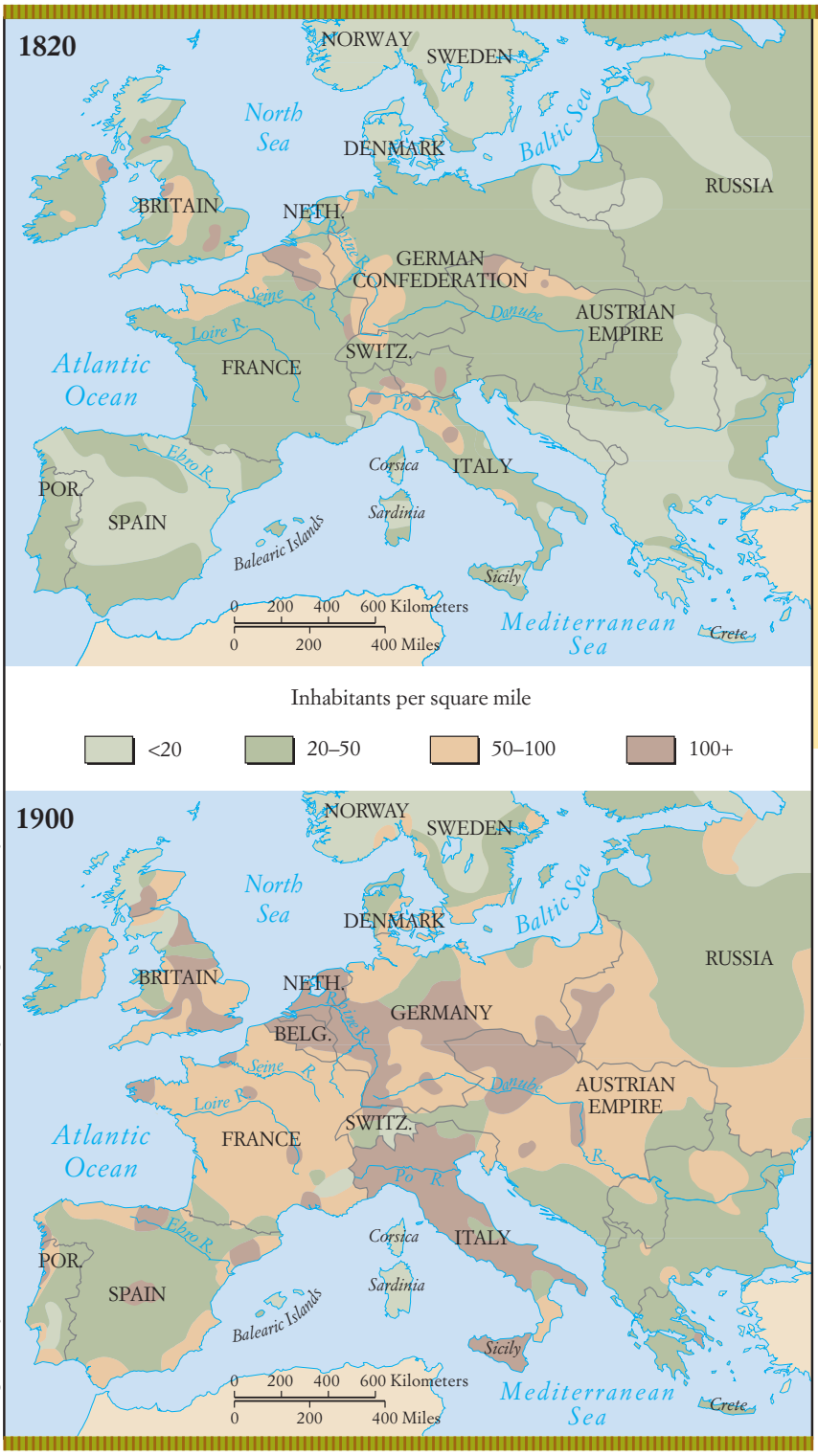
Petroleum was the second new energy source. The internal combustion engine, which drew its power from the controlled explosion of gasoline injected into cylinders, was invented in 1876. Although it was clearly an impressive means of producing energy, its full potential was not apparent until the German engineers Daimler and Benz put the engine on a carriage and connected the cylinder pistons to the wheels. Benz's work in the late 1880s is generally credited with the emergence of the gasoline-powered automobile as a practical, reliable mode of transport, although literally dozens of other German, French, American, and British experimenters also contributed in major fashion to its development.

Petroleum and its by-product, natural gas, were to have many other uses, including lighting, heating, and driving stationary engines and pumps. From petroleum also came a whole range of important new chemicals. Then as now, Europe west of Russia had very little oil and depended on imports from other places. American capital (Rockefeller's Standard Oil) and American exploration and drilling techniques soon led the world in the race for oil production.

The Second Industrial Revolution depended largely on scientific research. The Germans with their well-equipped university and industrial laboratories quickly took over the lead in this area and held it without serious competition for many years. Their carefully organized and well-funded research enabled the Germans to dominate new European industry after 1870. The British, the former leaders, were slow to realize that the rules of industrial competition had changed. They put little money into research, from either government or private hands. By 1890, Britain's technological expertise and innovation were falling steadily behind Germany's, and this growing gap had much to do with the rising competition between the two countries in political and diplomatic affairs.

New Forms of Business Organization

New forms of business organization accompanied the new energy applications. In the first century of the



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MAP 33.1 European Population Growth in the Nineteenth Century

The Italian Peninsula and parts of central and eastern Europe saw the most dramatic increases in population density during the eighty-year period from 1820 to 1900. In some rural areas in these lands, the lack of industry and the poor soil productivity had created an overpopulation crisis that was only ameliorated by emigration. Government was caught up in conflict with itself; emigration was discouraged and made difficult by national policy (particularly in Russia), while local authorities promoted it. In the latter third of the century, most of the younger male residents of whole villages and counties emigrated to the New World. Some intended to return—and did so—but the majority stayed in their new homelands.

>> MAP QUESTIONS

How do you account for the dramatic growth in Europe's population in this 80-year span of time?

Industrial Age (1760–1860), the standard form of industry had been the private partnership or proprietorship. It was limited deliberately to a small handful of owner-managers, some of whom might work alongside their employees in the office or even on the shop floor. When more capital was needed for expansion, it was borrowed on a short-term basis for specific needs. The public was not invited in, and the banks and investment companies were not partners but only facilitators in arranging funds.

In the **Second Industrial Revolution** (*c.* 1860–1920), the **corporation** rather than the partnership became the standard, and banks, which thus became part owners of the company, often permanently financed the corporation. *Joint stock companies*, whose shares were traded on public stock exchanges in every European capital, were formed to raise huge amounts of capital from the investing public. The shareholders were technically the owners of the company, but, in fact, they had little or nothing to say about management policy, which was the purview of a board of directors with whom the investor normally had no contacts. This separation of ownership and management was one of the most striking changes in business and commerce of all sorts in the later nineteenth century, and it continues to the present.

Social Results of the Second Industrial Revolution

The Second Industrial Revolution accelerated several trends that had begun during the first. Four were particularly important:

1. *Urbanization*. The outstanding feature in Western demography throughout the nineteenth century was the rapid growth of urban areas. Britain was the first European country to urbanize. In 1851, the census revealed that more than half of the English people lived in towns and cities. (At this time, by comparison, only 22 percent of Americans were urban dwellers.) By 1900, Britain alone had more cities with populations of more than 100,000 than there had been on all of the Continent in 1800. Industrial jobs were a major reason for migration to the cities, but they were by no means the only reason. Better education, leisure activities, and marital prospects were also strong incentives.
2. *Organization of labor*. After the failure of revolutions, the workers on the Continent rarely attempted to gain better conditions by street riots or mass demonstrations. Instead, they took to organizing labor unions, which would fight for improvements in a legal way and attempt to gain government support against abusive employers. In so doing, the Continental workers were following the lead of the British, who had attempted to win reforms in their conditions of life and labor through the **Chartist movement** of the 1840s. Although conservative resistance and police repression frustrated their short-term goals, the Chartists initiated long-term change both in and outside Parliament toward greater democracy and fairer distribution of the country's wealth.

   In the 1870s, Great Britain became the first major country to fully legalize labor unions, giving them the right to strike, picket, and boycott. In the 1880s, France took the same course, and in 1890, Germany did also. By the turn of the twentieth century, all western European nations except Spain and Portugal had conceded the rights of labor to use all nonviolent means available in the struggle for a better life.
3. *Social reforms*. The unions did give the laboring classes a new and fairly effective way to express their grievances and sometimes win redress for them. By 1914, few workers had to endure the sort of systematically inhumane working conditions that were common during the First Industrial Age. Child labor laws and industrial safety regulations were now common and enforced by both national and local authorities. A few countries had some provisions for worker employment security and pensions. (Bismarck's Germany led in these respects.) The government, if not the employer, frequently even provided worker health and accident insurance.

   The early unions were sometimes socialist in orientation, sometimes not. By the 1890s, however, the Marxist revolutionary socialists were close to taking over the labor movement in several key countries. (The United States was a notable exception; Marxism was never popular there.) This action frightened many employers and their partners in government, and they attempted to suppress or intimidate the socialist leaders. The last decade before World War I saw many bitter disputes between management and labor all over Europe and in the United States. Labor violence was common.
4. *Mass democratic politics*. An important effect of industrial life was the coming of mass politics and parties. In the last third of the century, almost all European governments as well as the United States allowed all of their male citizens to vote, regardless of property qualifications: Germany in 1871, France in 1875, Britain in 1884, and Spain in 1890.

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SUFFRAGETTES. One of the many early twentieth-century demonstrations for women's voting rights, this one in the United States. In most cases, Western countries did not grant female suffrage until after World War I.

Only Russia, Hungary, and Italy stood firm against universal male suffrage as late as 1905. By the outbreak of World War I in 1914, all of Europe had male universal suffrage. This advance strongly stimulated the formation of large, tightly organized political parties. Before that time, the people who had the vote were property holders, relatively well educated, and generally aware of the issues of national politics. They did not need an organization to get out the vote, because they knew very well what was at stake in elections and made voting a major part of their public lives.

Now, the much-enlarged number of voters had to be informed about the issues and organized into groups that would identify their interests—and act on them. The vehicle for doing this was a mass political party, equipped with newspapers, local organizations and offices, speakers, and propaganda material. Most of the new voters were men of the working classes, and the new parties concentrated their efforts on them.

Socialism After 1848: Marxism

The failure of the 1848 revolts inspired much analysis. National antagonisms and the passivity of the country folk were important, but the chief reason, all contemporary observers agreed, was the split between the liberal leaders—professionals and intellectuals—and the urban working classes. This split allowed the conservatives to gain a breathing space after their initial panic and then mount a political and military counterattack that was successful almost everywhere (see Chapter 34).

Why did the split between the middle-class liberals and the workers occur? The liberals generally did not want social reforms. They only wanted to substitute themselves for the conservatives in the seats of political power. The workers, on the other hand, were economically desperate and wished to gain for themselves the type of thoroughgoing change in the alignments of power that the French peasants had won in the wake of the 1789 revolution. When it became clear to the liberals that the workers wanted to go much further down the revolutionary road, they withdrew to the sidelines or actually joined with the conservatives, as happened in Vienna, Paris, and Berlin. In the end, the protection of property meant more than political or social ideals.

Marxist Theory

One close observer of this development was **Karl Marx** (1818–1883). A German Jew whose family had been assimilated into Prussian Protestantism, Marx grew up in the Rhineland town of Trier. Soon after his graduation from the University of Berlin in 1842, he became deeply involved in radical politics. Pursued by the Prussian police, he had to leave his native city and flee to France as a political refugee. There, he came to know his lifelong colleague, Friedrich Engels, the wealthy, radical son of a German industrialist. The two men formed a close working relationship that was ideal for Marx, who devoted his entire adult life to research and writing and organizing revolutionary socialist parties (see Patterns of Belief).

In 1848, Marx and Engels published perhaps the most famous pamphlet in all of European history: the ***Communist Manifesto***. Marx predicted the coming of a new social order, which he called *communism*, as an inevitable reaction against the abuses of bourgeois capitalism. When this order would come, he did not predict, but he clearly expected to see communist society arise within his lifetime. It was equally clear that Marx and Engels expected that communism would be born in a violent revolution by the industrial workers, the proletariat who had been reduced to abject misery and had little or no hope of escaping it as long as capital ruled (see the Law and Government box).

The proletarian revolution was inevitable, according to Marx, and the only questions were the precise timing and how those who wished to be on the side of progress and justice might help it along. Marx issued an invitation to all righteous persons to join with the ignorant and miserable proletariat in hastening the day of triumph. Once the revolution of the downtrodden was successful in gaining political power, a "dictatorship of the proletariat" (not further defined) was to be created, which would preside over the gradual transformation to a just society.

What was the ultimate goal of Marxist revolution? According to Marx, it was a communist society, in which

PATTERNS OF BELIEF

Karl Marx (1818–1883)

"The critical thing is not to understand the world, but to change it!"

With this maxim as his polestar, philosopher Karl Marx became the most notorious, most quoted, and most influential social reformer of the nineteenth and twentieth centuries. The recent demise of that distortion of his ideas called Soviet communism has put his name and reputation under a heavy cloud from which they may never recover. But for 150 years, Marx and Marxism provided much of the world's dissatisfied citizenry with what they perceived to be their best hope of better times.

Marx was born into a well-to-do Jewish family in Trier, Germany, which at that time was part of the kingdom of Prussia. He studied at the universities of Bonn and Berlin, where his major interest was philosophy, but his interests soon expanded to include economics and sociology, two sciences that were still in their infancies. By the mid-1840s, he was slowly shaping his radical critique of contemporary European society by drawing on all three disciplines: German philosophy, English economics, and French social thought.

Prevented by his Jewish background from realizing his original plan of teaching in a university, Marx returned to Trier after graduating from the University of Berlin. In 1842, he opened a small newspaper, the *Rhenish Gazette*, which was dedicated to promoting social and political reform. He soon got into trouble with the conservative authorities and had to flee to escape arrest. He lived briefly in Paris, where he came to know his lifelong supporter, Friedrich Engels, son of a wealthy German manufacturer. Engels and Marx collaborated on the *Communist Manifesto*, which was published just weeks before the 1848 revolutions.

Soon, Marx aroused the suspicions of the French authorities and had to move on. An attempt to enter German politics as a revolutionary leader failed, and again Marx had to flee his native country, this time to London, where Engels was ready to help. Marx spent the rest of his life in English exile, living in genteel poverty with his German wife and several children.

The world around Marx was in the throes of the first wave of industrialism, and it was not an attractive place for most working people. Air and water pollution were common in the factory towns and in the working-class sections of the cities. Public health was neglected, medical help was restricted to the well-to-do, and welfare facilities of any type were almost nonexistent.

Women and children worked at exhausting jobs for very low pay, and workers were frequently fired without warning to make room for someone else who agreed to work for less. Neither law nor custom protected the workers' rights against their employers, and among the employers, cut-throat competition was the rule. Government intervention to ensure a "level playing field" in the marketplace was unknown. When governmental power was occasionally utilized, it was always in favor of the status quo, which meant against the workers.

Marx observed this scene closely and was convinced that the situation must soon erupt in proletarian revolution. The explosion would come first in the most advanced industrial countries, which meant at this time Britain, parts of Germany and France, and possibly the United States. While Engels provided financial assistance, Marx dedicated many years to working out a theory of history and social development that would make sense of the chaos and allow a rational hope of a better world in the future. Eventually, he produced *Das Kapital* (or *Capital*), the bible of scientific socialism, which was published in the original German in 1867 and translated into most European languages by the latter nineteenth century. Almost all of the work was done in the Reading Room of the British Museum, which Marx visited with clocklike regularity for decades.

Topfoto/The Image Works

MARX AND ENGELS. This rare picture shows Karl Marx with his daughters and lifelong collaborator, Friedrich Engels.

In 1864, Marx organized the International Workingmen's Association. This so-called First International lasted only a few years before it collapsed in internal arguments about how the revolution of the proletariat should best be accomplished. Marx was always a headstrong character and was most unwilling to allow others to have their say. Like many prophets, he came to think that any who disagreed with him were ignorant or malicious. Engels was one of the few intimates who remained faithful to the master to the end.

In 1883, Marx died in the same poverty in which he had lived in the London suburb of Hampstead for most of his life. At his death, the proletarian revolution seemed further away than ever, but the movement was slowly growing. It would make giant strides in several countries in the 1890s; and in far-off Russia, a country that Marx held in contempt for its backwardness, a certain Vladimir Ilich Ulyanov, better known as Lenin, was studying *Capital* with an eye toward the Russian future.

>> Analyze and Interpret

What theory or philosophy do you think has taken the place of Marxist socialism as a hope for the world's exploited and oppressed workers? Or do you think that Marxism has not been defeated, but only temporarily rejected as a social philosophy?

private control/ownership of the means of production would be abolished and men and women would essentially be equal and free to develop their full human potential. For the first time in history, said Marx, the old boast of the Greeks that "Man is the measure of all things" would be fulfilled. A society would be created in which "the free development of each is the condition for the free development of all." At the time, no government took notice of the *Communist Manifesto*. During the 1850s and 1860s, Marx and Engels gradually emerged as two of the leading socialist thinkers and speakers. From his London base (England had the most liberal political association and censorship laws in Europe), Marx worked on his great analysis of mid-nineteenth-century industrial society, *Capital* (1867–1873). This work was the basis of Marx's boast that his socialism was scientific, unlike the utopian (that is, impractical) socialism of earlier days.

Marx was a child of his times. The 1840s were the "dismal decade," years of the crudest exploitation of the workers by greedy or frightened employers. They were frightened because many were being driven to the wall by the relentless competition of the free market. As these small business owners desperately looked for ways to lower production costs, they usually resorted to reducing wages. Because what Marx called a "reserve army" of starving unemployed workers was always ready to work at almost any wage, the most elementary job security was totally absent. The result was often an extremely low pay scale for the semiskilled and unskilled workers who made up most of the early industrial labor force. Marx was not alone in believing that this condition would persist until it was changed by militant force from below.

Marxist Organizations

When the Paris Commune arose in the wake of the lost war with Prussia in 1871, Marx mistakenly thought that the dawn of social revolution had come and enthusiastically greeted the radical oratory of the *Communards*. The Commune was speedily crushed, but socialist parties came into being everywhere after 1871 and grew steadily over the next decades. By the end of the century, the socialists were the primary voice of the industrial working class in most countries. Their common denominator was a demand for radical rearrangement of the existing socio economic order. Some of these parties were anti-Marxist in doctrine, either preferring some form of anarchism (see the next section) or wishing to operate mainly through labor unions (a tendency that Marx anathematized as mere reformism), but most were Marxist and subscribed to the principles laid out in *Capital* by the master.

The most important socialist parties were in Germany, Austria, Belgium, and France. In southern Europe, they were outnumbered by anarchists and syndicalists (see the next section). In Britain and the United States, no socialist party had a wide following, and in Russia, the Marxists were still a tiny exile group at the end of the century.

Rivals to Marxism

In Mediterranean Europe and Russia, the theory of politics called **anarchism** captured many minds. Anarchism is the rejection of the state and the powers that the modern state exercises over its citizenry. Its followers believe that all government is necessarily prone to corruption. Only such authority as is necessary to avoid conflict over the property or civil rights of the citizens should be surrendered by the citizens to their government. Even then, the least possible authority should be granted, and only on a small-scale, localized basis. Anarchists simply do not trust any government. They believe that sooner or later every government will succumb to the temptation to restrict its citizens' freedoms without just cause.

As a theory, anarchism goes back to the ancient Greeks, but the modern founders of anarchism are Frenchman Pierre Proudhon, whom we shall encounter in Chapter 34, and Russian Michael Bakunin (1827–1876). Bakunin developed the *propaganda of the deed*, the idea that a dramatic, violent act was the most effective way to gather converts for anarchism. The deeds his followers performed were acts of political terror: They carried out bombings and assassinations in the hopes of shaking the structures of government from the top down. In the two decades between 1885 and 1905—the high point of anarchism—about 300 notable lives were sacrificed to this belief, including several reigning kings and queens, prime ministers, presidents (including U.S. president William McKinley in 1901), and assorted generals.

Was the propaganda of the deed successful? It succeeded nowhere. Both governments and popular opinion reacted strongly against the terrorists. Eventually, the theory of anarchism itself became discredited because of its association with political murders. After World War I, little was heard of it until the 1960s.

Syndicalism is a form of political action by the working classes. It is founded on the belief that only the laboring classes and peasants should govern, because only they contribute a substantial asset to society through their work. Instead of the false verbal sparring and make-believe of the political parties, the laborers must create a large-scale association of persons employed in the same type of work. This association, called a *syndicate*, would represent the economic and social interests of the members and confer with other syndicates to find common political means for progress in economics and justice in society. Like anarchism, and unlike communism, syndicalism did not wish to abolish private property but to limit its political power and distribute it more evenly.

LAW AND GOVERNMENT

The Communist Manifesto

The most well-known of the nineteenth century's various revolutionary challenges was the manifesto produced by Karl Marx and Friedrich Engels in 1848 as a platform for the tiny Communist League they had recently founded in London. Most later Marxist doctrine appeared in the following essay in capsule form. The excerpts here mainly concern the theory of the formation of classes and the struggle between them in history:

> The history of all hitherto existing society is the history of class struggle. Freeman and slave, patrician and plebian, lord and serf, guildmaster and journeyman, in a word, oppressor and oppressed, stood in constant opposition to one another, carried on an uninterrupted, now hidden, now open fight, that each time ended either in a revolutionary reconstitution of society at large, or in the common ruin of the contending classes. . . . The modern bourgeois society. . . . has not done away with class antagonisms. It has but established new forms of struggle in place of the old ones.
>
> Our epoch, the epoch of the bourgeoisie, possesses, however, this distinctive feature: it has simplified the class antagonisms. Society as a whole is more and more splitting up into two hostile camps, into two great classes directly facing one another: Bourgeoisie and Proletariat. . . .
>
> The bourgeoisie has at last, since the establishment of modern industry and of the world market, conquered for itself, in the modern representative State, exclusive political sway. The executive of the modern State is but a committee for managing the common affairs of the whole bourgeoisie. . . .
>
> In proportion as the bourgeoisie, i.e., capital developed, in the same proportion as the proletariat, the modern working class, developed; a class of laborers, who live only so long as they find work, and who find work only so long as their labor increases capital. . . .
>
> Owing to the extensive use of machinery and to division of labor, the work of the proletarians has lost all individual character, and consequently, all charm for the workman. He becomes an appendage of the machine. . . . In proportion, therefore, as the repulsiveness of the work increases, the wage decreases.
>
> All previous historical movements were movements of minorities. The proletarian movement is the self-conscious, independent movement of the immense majority, in the interest of the immense majority. The proletariat, the lowest stratum of our present society, cannot stir, cannot raise itself without the whole superincumbent strata of official society being sprung into the air.
>
> What the bourgeoisie produces above all, are its own gravediggers. Its fall and the victory of the proletariat are equally inevitable.
>
> The Communists disdain to conceal their views and aims. They openly declare that their ends can be attained only by the forcible overthrow of all existing social conditions. Let the ruling classes tremble at a communistic revolution. The proletarians have nothing to lose but their chains. They have a world to win.
>
> Working men of all countries, Unite!

>> Analyze and Interpret

Do you agree that class struggles have largely defined history, especially in modern times? Do you think that a just society can be reached through violent revolution? Can it *only* be reached through violent revolution?

Source: Excerpted from Karl Marx and Friedrich Engels, *The Communist Manifesto* (New York: Signet Classic, 1998).

You can read more of *The Communist Manifesto* online.

Syndicalism was stronger than socialism in Spain and Portugal and was a strong rival to it among the peasantry in Italy and France. Syndicalist government offered the poorly paid and insecure working classes and small peasants a theoretical way upward without going to the socialist extreme of class warfare and the abolition of private property. It never succeeded in establishing control of a national government.

Reform and Revisionism

In Great Britain, the labor force was never much attracted to either socialism or its rivals as solutions to the dual problems of concentrated wealth and concentrated poverty. Instead, British workers in the later nineteenth century focused on gaining higher pay and better working conditions through a moderate reformism that centered on the right to strike

and organize unions. In 1906, the reformist, non-Marxist **Labour Party** was formed on a platform of more equitable distribution of wealth. The new party gradually attracted the vote of most union members and much of the lower middle class. It was able to replace the Liberal Party as the main opponent of the Conservatives after World War I.

In the 1880s, Chancellor Bismarck attempted to crush the appeal of socialism in Germany by an attack on two fronts. First, he outlawed the Marxist socialist party, which had been organized in 1875, claiming that it was a revolutionary group that intended to ultimately destroy the state. Then he tried to show that socialism was unnecessary because the powerful and progressive German state would look out adequately for the workers' welfare. During the 1880s, a series of new laws instituting unemployment insurance, accident and health protection, and worker pensions made Bismarck's Germany the most progressive state in the world in terms of social policy.

The blunt attack on the Marxists did not succeed. After a few years, there were more German socialists than ever, and in 1890, the antisocialist law was repealed as a failure. The German Social Democratic Party (SD) steadily gained votes, attracting not only workers but also the lower middle classes and civil servants. With several newspapers, a tight network of local offices, and an extensive member/financial base in the German labor unions, the German party set the pace for socialists throughout Europe.

In 1899, a leading SD theorist, Eduard Bernstein, published a book in which he claimed that the SDs would soon become strong enough to take over the state in peaceful, constitutional fashion. Socialism would then be introduced through the workings of a parliament and government controlled by the Marxists. Thus, the idea of violent revolution in the streets was outmoded. According to Bernstein, Marx (who had died sixteen years earlier) could not foresee that capitalism would be so altered by democracy that the workers would be able to counter it through the ballot rather than on the barricades. The triumph of social justice could and should be obtained without bloodshed.

This idea was heatedly denounced by many in the **Second International**, the Europe-wide association of socialists founded in 1889, but the theory attracted the party leadership in the more industrially advanced countries, especially in Germany and France. By the coming of World War I, **revisionism** (the adaptation of Marxist socialism that aimed to introduce basic reform through parliamentary acts rather than through revolution) was a strong rival to orthodox Marxism as the true path to the workers' paradise.

Emigration Overseas

The largest human migration in world history took place from Europe to overseas destinations during the second half of the nineteenth century. What caused this world-reshaping move? In general, the triggers were economic, but the emigrations began with the political upheavals of 1848, when tens of thousands of Germans and Austrians looked to America for the freedoms they feared they would never have in their homelands.

From about 2.5 million in the 1850s, total net emigration from Europe rose each decade until it peaked in the years just before World War I. By then, about 12 million people had left Europe in a ten-year period, a number about equal to the entire population of Scandinavia at that time. The war shut this stream down almost completely, and it never again reached those dimensions. In all, some 60 million Europeans emigrated during the nineteenth century and did not return. (Return to the homeland was common: About one of three emigrants to the United States eventually returned to the home country for reasons ranging from homesickness to deportation.)

Destinations

Where were all of these people headed? The river of emigrants flowed mainly to the New World, but Australia, New Zealand, and Siberia (for Russians exclusively) were also important destinations. The French colony of Algeria and the British colony of South Africa also attracted large groups of emigrants. (See Figure 33.1.)

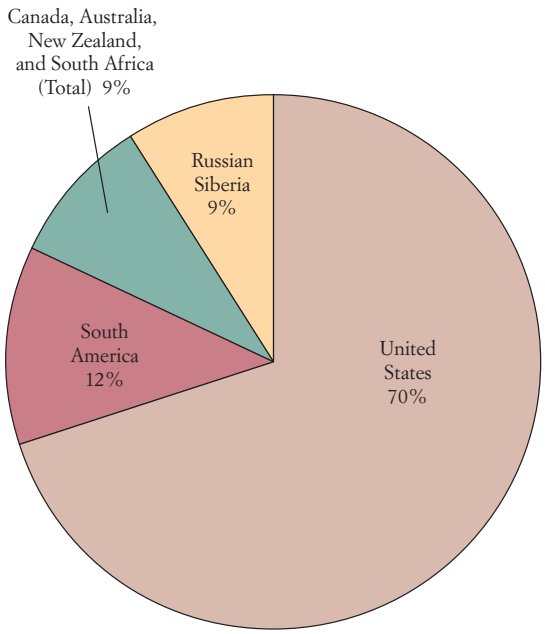

FIGURE 33.1 *European Emigrants' Destinations*, 1800–1960. The United States was easily the most preferred destination, with South America (mainly Argentina and Brazil) a distant second. What countries did the emigrants leave? Great Britain and Ireland supplied about 33 percent of the total; Italy, about 30 percent; and the rest of Europe, the remainder. The ethnic balance shifted steadily from northern and western Europe to southern and eastern as the nineteenth century matured. At the peak of European emigration in the decade just before World War I, an average of about 1.2 million emigrated annually.

Private Collection/The Bridgeman Art Library

IMMIGRANTS IN THE REGISTRATION HALL AT ELLIS ISLAND. This 1910 photo captures the human faces of some of the millions of immigrants who poured through the huge New York immigrant facility, which is now a museum. By this time, the dominant nationalities were Italian and eastern European. New York City's population was more than one-third foreign-born during this era.

American Antiquarian Society, Worcester, Massachusetts, USA/The Bridgeman Art Library

LOWER EAST SIDE OF NEW YORK. This "slice of life" shows Mulberry Street, one of the chief street markets in slum New York, in about 1869. Much of the population of such neighborhoods spent little of the day inside their cramped apartments if they could help it.

In terms of proportionate impact on a given nation, Argentina was the most dramatic example of immigration in the world. About 3 percent of the total Argentine population arrived from Europe (mostly Spain and Italy) every year in the early twentieth century—three times the rate that the United States gained from the same source. But in absolute terms, the United States was easily the most popular single destination. It received about 45 percent of the grand total of immigrants worldwide during the nineteenth century.

Why did these emigrants leave? First and foremost, they were seeking better economic conditions. The rise and fall of emigration rates corresponded closely to European business cycles. In hard times, more left for the "land of golden opportunities," but a large proportion left because they were dissatisfied with domestic political and social conditions and had little faith that the future held any more promise than the present.

Types of Emigrants

Who were the emigrants? Most were not the very poor or ignorant. Instead, they were people who had been able to save a little or had relatives who were better off and helped them get a start. Many were small farmers who had too little land to ever get much farther up the ladder and feared for their sons' future when that little would be divided by inheritance. Some were skilled craftsmen, who believed that guild-type restrictions would prevent them from becoming independent entrepreneurs. Some were educated people who saw no chance of fully using their education in a class-bound society. In the later phases of the movement, the poor and ignorant also began to leave, assisted by relatives who had emigrated earlier and had managed to establish themselves in their new lands. Unmarried young men were the largest single contingent of emigrants, followed by young girls, usually the sisters and/or fiancées of males already in the new country.

The ethnic origins of the emigrants varied by chronology of departure. Most of those who left for the New World in the mid-nineteenth century were from Britain, Ireland, and Germany. In the later decades, they tended to be from eastern and southern European countries. By World War I, the Austro-Hungarians, Russians, Poles, and, above all, the Italians supplied the great bulk of the emigrants. A disproportionate number were Jews from the Russian empire (including Poland) who were fleeing ethnic persecution.

By the later nineteenth century, in the industrial economies of northern and western Europe, the working classes could find reasonably secure factory and white-collar jobs. Hence, they were less likely to emigrate than the unemployed and underemployed peasants and laborers of eastern and southern Europe. As a rule, the more literate and better prepared went to North America, Australia, or South Africa. South America received mainly those with lesser prospects.