

The Industrial Revolution (1750-1900)

Changes in the Way People Work and Make Goods

We have studied the historical relationships between government and people. For example, during the French Revolution, many French people felt unfairly treated by their government. In response they rose up and overthrew their government. In 19th century Latin America, people fought to gain their independence from a foreign government that had gained control over them. In 19th century German Confederation, different states unified into a single larger country. Up to this point, the history you have studied has focused on *political* relationships.

In this unit, we will look at people and the *way they work*. When we think of where and how goods such as clothes or heavy machines are made, we imagine very large factories filled with big, noisy machines. Perhaps we think about cars being made on assembly lines, and each worker doing a single task on a car as it passes by. However, this is not the way that goods have always been made.

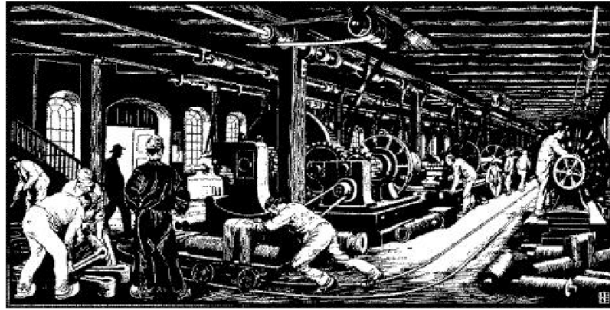
For thousands of years, there were no factories or fuel-powered machines. The men and women who made goods such as cloth or tools mainly used their hands. They may have used a spinning wheel to spin thread, but they powered the spinning wheel with their hands or feet—with their bodies. Craftsmen and other workers worked in small shops or even in their homes. However, during the *Industrial Revolution*, the way people produced goods changed, for the most part.

In the Industrial Revolution, people applied science and **technology** to their lives. They began to invent and build machines that did much of the work people once did. Rather than being *handmade*, many goods were now *machine-made*. Machine-made goods could be produced faster and at lower costs. Machines were also able to make some new goods which could not be made by hand. For example, machines made powerful weapons never seen before.



spinning wheel

The Industrial Revolution improved life for people who could *afford* the goods produced in the factories. These wealthier people usually did not work in the factories. Goods that made their daily lives easier were often readily available—there were few shortages. Countries also shipped their goods to foreign markets and so increased their wealth.



Factories were very cold in winter and very hot in summer. The work was often dangerous, and workers had no insurance and no rights.

The lives of those who worked in factories, however, often were not improved. The creation of the *factory system* drastically changed the way people worked. Men, women, and children worked long hours (up to 15 hours per day) in horrible working conditions. The factories usually had poor **ventilation**. Factories were very cold in winter and very hot in summer. Men, women, and children were paid very little for the work they did. The work was often dangerous, and workers had no insurance and no rights. Workers could be fired for little or no reason.

Two Groups, Two Interests

There were now two groups of people who had different interests. The **industrialists**—those people who owned or had an interest in factories—often did not want to pay workers a higher **wage** or improve working conditions. The *working class*—those who worked in the factories—wanted to be paid a higher *wage* and work in factories that did not damage their health. Governments often had to deal with the conflicting interests of these two groups.



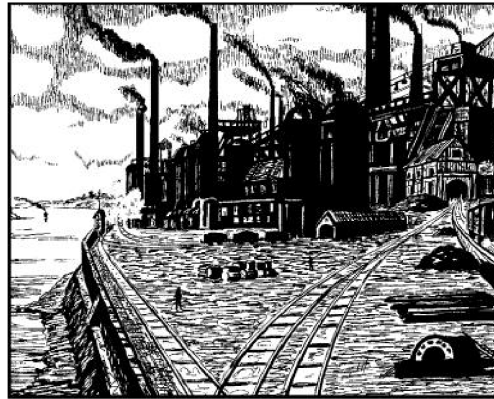
industrialist

Factory workers throughout the 19th century grew more and more disgusted with the way in which they were treated. Even though the revolutions of 1848 were mostly failures, working-class people had sent a *message* to their governments. They were not going to put up with the poor treatment they were receiving. Workers began organizing themselves to put pressure on the *industrialists* and governments to improve their lives.

The Industrial Revolution Begins in Great Britain

The Industrial Revolution began in the mid-1700s in Great Britain. During the Industrial Revolution there was an increased output of goods made possible by machines and new inventions. Until the steam engine was invented, large machines were driven by water power. The need for fast-moving water to power machines meant that factories needed to be built near rivers or streams.

An early form of the steam engine was developed in 1705. In its earliest form, however, the steam engine could only pump water. This limited the engine's use. Coal miners used the steam-powered pump to remove water from mine shafts. In 1769 a Scottish engineer and inventor named James Watt made many improvements to the steam engine. Watt's steam engine could drive *manufacturing* machines such as spinning and weaving machines.



The need for fast-moving water to power machines meant that factories needed to be built near rivers.



James Watt

Watt's inventions changed the course of history. Machines driven by steam power began replacing machines run on waterpower. Before the steam engine, every factory that used waterpower had to be near rushing water. Now industrialists began building factories powered by steam engines all over Great Britain. The Industrial Revolution had begun. Factories could now produce goods quickly and cheaply. They soon replaced the small shop and home as the center of manufacturing.

The Technological Revolution In Great Britain			
Inventor	Year	Invention	Description
John Kay	1733	flying shuttle	Carried threads of yarn back and forth when the weaver pulled on a cord. Increased the productivity of weavers. Wider fabrics could be woven at a faster pace.
James Hargreaves	1764	spinning jenny	Increased the output of spinners; one spinner could work eight threads at one time.
Richard Arkwright	1769	water frame	Used waterpower to drive spinning wheels of a huge spinning machine.
James Watt	1769	improved steam engine	Used coal rather than waterpower to power machines in cotton mills.
Samuel Crompton	1779	spinning mule	Combined features of the spinning jenny and water frame, which made thread that was stronger, finer, and more consistent than earlier threads. This thread could be woven into muslin cloth.
Edmund Cartwright	1787	power loom	Run by waterpower, the power loom sped up weaving.
George Stephenson	1814	steam-powered locomotive	Traveled four miles per hour hauling coal; world's first railroad line—1821.
Sir Henry Bessemer	1856	Bessemer process	Improved process of making steel inexpensively from iron.

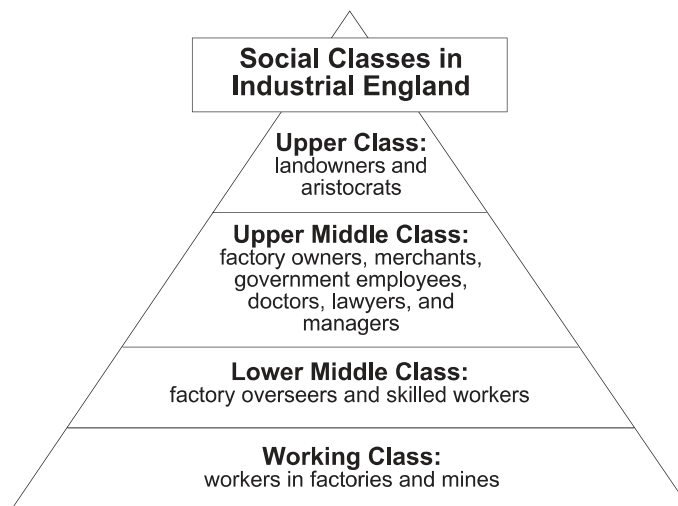
Other factors beside new inventions and power-driven machines were important in creating the Industrial Revolution. As you will see below, Great Britain was a country that had all the ingredients for an Industrial Revolution.

- Great Britain had many natural resources, especially coal. Coal is needed to produce power, which in turn powers machines.
- Great Britain had a large labor force, or many workers, to work in the factories.
- Great Britain had people with the money and knowledge to build and run factories.

- Great Britain, with its overseas empire, had ready markets in which to sell factory-made goods.
- The British government realized the profit that could be made from manufacturing goods; therefore, it passed laws to help and protect industry.

Social and Economic Changes

Until the Industrial Revolution, most members of society were peasants who worked on farms. Landowners and **aristocrats** had the most wealth and power. They occupied the top positions in society. The Industrial Revolution changed the entire structure of society.



After the Industrial Revolution, a new middle class emerged. This new class included some factory workers and merchants (industrialists) who became wealthier than some landowners and *aristocrats*. In order to be more like the upper class, many in the middle class used their new wealth to purchase large estates and live in high style. Social distinctions still divided these two wealthy classes of people. Landowners and aristocrats looked down on those who made their fortunes in the “vulgar business world.” It was not until the late 1800s that rich factory owners and merchants were considered the social equals of the landowning aristocrats. The landowners, or aristocrats, who had a powerful voice in running government were eventually joined by the new industrialists, or the capitalist class. These industrialists enjoyed the new lifestyle gained from the profits they made from goods **manufactured** in their factories.



A larger middle class emerged, including an upper and lower middle class.

The new wealth acquired by the upper middle class brought political influence. These new capitalists worked hard to stop government interference in business. They wanted their businesses and profits to grow. Gradually, a larger middle class emerged. It was neither rich nor poor. It included an upper and lower middle class.

The working class (factory workers) saw few improvements in their living and working conditions. They averaged 14 hours a day at their jobs, six days a week. They worked under horrible working conditions and lived in crowded city slums.

Laissez-faire and Free Enterprise

The capitalists influenced governments to pass laws making it easier for them to become wealthier. They persuaded governments to adopt a policy of **laissez-faire**. *Laissez-faire* is a French term meaning *let things alone* or *let people do as they please*. Laissez-faire is closely linked to **free enterprise**, an economic system in which people are free to conduct business with a minimum of government interference. Industrialists did not want governments to interfere with industrialism. Without government interference, industrialists would be free to use their wealth to control industry and its workers.

Laissez-faire also meant that a very simple rule would guide the economy. This rule was the *law of supply and demand*. The law of supply and demand states that the less there is of a particular good people want, the *more* money people will pay for it. Similarly, the more there is of a particular good, the *less* money people will be willing to pay for it. This law also applies to the value of workers' labor. If more workers were available for a job, the *less* the capitalist would need to pay them in wages. If fewer workers were available, the *more* wages a factory owner would have to pay for work done.

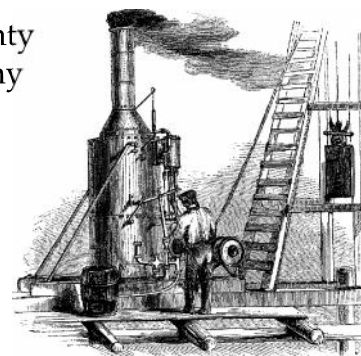
Laissez-faire was defended by Adam Smith, a Scottish economist and philosopher. In 1776, in his book *The Wealth of Nations*, Smith claimed that a free market would promote a growing economy. More goods would be produced at lower prices and would be affordable by everyone. Government, he claimed, should not interfere in the economy.

Thomas Malthus and David Ricardo, English economists, also believed in limiting government intervention in the economy. In 1798 Malthus wrote *An Essay on the Principle of Population*, in which he argued that population tended to increase more rapidly than the food supply. Therefore, without wars, famine, or disease to kill off extra people, most of the population was destined to be poor and miserable.

In 1817 David Ricardo explored the same ideas as Malthus in his book *Principles of Political Economy and Taxation*. He argued that there would always be a permanent class of poor people. In a market economy, he stated, if there were many workers and plentiful resources, then labor and resources would be cheap. If there were few workers and scarce resources, then labor and resources would be expensive. Wages for workers would be forced down as population increased. Laissez-faire thinkers were against efforts to help poor workers. Improving working conditions and making minimum wages laws would upset the free market system by lowering profits and the creation of wealth in society. In his *Iron Law of Wages*, Ricardo stated that when wages were high, families had more children. More children increased the supply of labor, which led to lower wages and higher unemployment. Malthus and Ricardo believed that the working class could not escape poverty.

Supply and Demand in Action

Fortunately for the industrialists, there were plenty of people who needed work in the factories. Many peasants used the recently built railroad and steamboat system in Great Britain to travel from their villages and towns to the big cities in search of work in the factories. With this plentiful *supply* of workers, factory owners were able to pay low wages.



steam engine

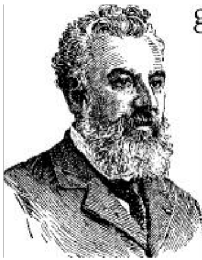
The industrialists also used the supply and demand rule to make large profits on the goods they produced. They sent most of their goods to overseas markets where goods were scarce. The scarcity of goods in these markets meant the industrialists could *demand* high prices. In addition, by sending many goods out of Great Britain, industrialists kept the *supply* of goods in the home markets scarce. Therefore, the price of most goods in Great Britain remained high.

Results of the Industrial Revolution

Soon after the Industrial Revolution began in Europe, it spread to other parts of Europe and the United States. In 1789 Samuel Slater, a **textile** (cloth) worker from Great Britain, copied from memory the idea for building a spinning machine and opened a cotton mill in the United States. The American Eli Whitney's



Eli Whitney



Alexander Graham Bell

invention of the cotton gin, in 1793, aided the growth of the textile industry by making it easier to separate seeds from raw cotton, which increased the supply of cotton fibers. In 1814 Francis Lowell built a textile factory in a town in Massachusetts which was later renamed for him. He employed young women as mill workers to operate the textile machines. This was one of the ways women began to enter into factory **production**.

By the mid-1800s, Germany, France, and the United States were rapidly becoming **industrialized**. The most important invention that helped these nations industrialize was the railroad. Throughout the 19th century, new inventions and new sources of power began to change industrialized countries into the modern nations we know today.



Samuel F. B. Morse

- Electricity became an important source of power in the 1840s.
- Samuel F. B. Morse invented the telegraph and in 1844 sent his famous message, "What hath God wrought!"
- A trans-Atlantic telegraph cable on the floor of the Atlantic Ocean connected the United States with Europe.
- Alexander Graham Bell invented the telephone in 1876.
- Thomas Edison invented the phonograph in 1877, the light bulb in 1879, and the motion picture camera in 1889.
- The internal combustion engine was invented by Gottlieb Daimler in 1883.



Thomas Edison

Most industrialized nations have experienced many changes caused by their own industrial revolutions. These changes can be grouped as economic, social, and political.

Changes Caused by the Industrial Revolution

Economic Changes

1. Machines replaced people in methods of production.
2. The *factory* replaced the *home* as the center of production.
3. The **standard of living** grew higher as more goods were produced.
4. Factory jobs tended to bore workers. Workers did the same thing every day and often *lost or never developed a sense of pride* in their work.
5. Workers grew dependent on owners. Owners could hire and fire workers for any reason.
6. Working *conditions* and *wages* were horrible.
7. Workers formed labor **unions**, an association of workers that pushed for benefits and **reform**. This was not an easy thing to do because labor *unions* were usually outlawed by the government. Many riots took place between **striking** union workers and the police.
8. Workers carried out *strikes* against owners. Workers refused to work until the owners met their *demands*. Strikes often turned into bloody battles.
9. *Trade* between countries increased.

Social Changes

1. The *standard of living* in the industrial countries grew higher and higher. Examples include Great Britain, the United States, and Germany.

2. Many farm workers moved to cities to get jobs in factories. Consequently, cities grew at a fast pace. In the United States, for example, many rural people (those who lived in the countryside) from the South moved to cities in the North. In addition, millions of **immigrants** came to the United States in search of jobs.
3. As cities grew, problems increased. Some problems included overcrowding, lack of housing, poor **sanitary** conditions, disease, and poverty. Today, these sections in urban areas are called *slums*.
4. *Women* and *children* entered the work force.

Political Changes

1. The land-owning class (*aristocrats*) was joined by the industrial class (*capitalists*) as the leaders of governments.
2. A *laissez-faire* policy took the place of **mercantilism**. Laissez-faire meant free trade without interference from the government. Mercantilism, or the government policy of controlling overseas markets, meant that nations were strengthened by government control of its economic interests.
3. The *right to vote* for both men and women was expanded.
4. The *industrialized* or *developed* countries quickly became the strongest powers of the world. Countries were either thought of as *developed* or *underdeveloped*. By the end of the 19th century, the United States replaced Great Britain as the leading industrial nation in the world. In the 20th century, the Industrial Revolution would spread to almost every part of the world.
5. New types of economic systems developed. For example, **capitalism** expanded in the United States; **socialism** in Great Britain and France; and **communism** in the Soviet Union.
6. As the Industrial Revolution expanded, industrial nations sought new markets for their goods in other parts of the world. Capitalist nations became **imperialist** nations, extending their rule over other countries or territories, causing problems which led directly to World War I.

Rise of the Labor Unions

Most factory workers in Europe and the United States were poorly treated. These workers had few rights and little hope of improving their situations. If a single worker did voice a complaint, he or she would be fired. A few people believed that if workers united into *labor unions*, they would eventually gain political, social, and economic reforms. A union acted as the spokesperson for all workers in a particular trade. Workers joined together in voluntary associations in order to seek better working conditions and higher salaries. Since labor unions were usually illegal, organizing them proved very difficult. Often, a person who tried to organize a labor union was arrested. Members of unions were often the target of violent acts by industrialists. Members of labor unions who went on strike often found themselves the target of a violent and bloody response by the police.

During the second half of the 19th century and the first half of the 20th century, workers struggled to get the right to form unions. They wanted the right to engage in collective bargaining. Collective bargaining is the right to meet with employers to negotiate improvements in the workplace and higher pay. As a result of their efforts, workers gained many benefits. Minimum wages, child labor laws, health benefits, and an eight-hour workday are just a few of the changes that unions helped their workers gain. It must be understood that in earning these benefits, workers often



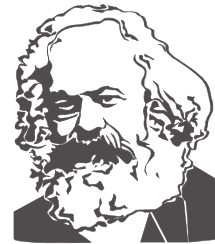
took tremendous risks. Union people were jailed, beaten, or sometimes murdered during their efforts to organize strikes. If factory owners refused union demands, members could strike, or refuse to work. When their workers went on strike and refused to work, factory owners often lost money. Consequently, strikes were the most **effective** tool that unions had when factory owners would not resolve workers' problems.

Labor unions influenced governments to pass laws improving working conditions and the overall standard of living for workers throughout the 19th and early 20th centuries. Today, unions enjoy a status never imagined by their early leaders. As a result, the average union worker enjoys clean, healthy, and safe working conditions. Workers today can also earn fair wages for their work.

Socialism

In 1848 a social philosopher and revolutionary thinker in Germany named Karl Marx wrote a book called *The Communist Manifesto*. In *The Communist Manifesto*, Marx described the problems created by the Industrial Revolution. Marx called his philosophy *scientific socialism*. He believed that history, like the world of nature, operated according to scientific laws. He saw human history as a struggle between the middle class (or *haves*) called the **bourgeoisie** and the workers (the *have nots*) called the **proletariat**. He believed that the Industrial Revolution created wealth for a few (the *haves*) but poverty for the many (the *have nots*). The few wealthy were the capitalists, or those who owned factories, land, and resources. The many who lived in poverty were the urban working class, or *proletariat*, who earned low wages for hard and sometimes dangerous work.

Marx believed that, in time, a very few industrialists or capitalists would own and control all the means of producing goods. The working class, or proletariat, performed the backbreaking labor of producing these goods under terrible conditions. Marx predicted that eventually the proletariat would rise up and seize control of the factories and mills from the capitalists and produce what society needed.



Karl Marx

“The proletarians have nothing to lose but their chains. They have a world to win. Workingmen of all countries, unite.” Karl Marx

The proletariat would create a society in which everyone worked for the good of all. Eventually there would be no classes in society. Everyone would work and earn equally, and people would live in true freedom in the new *Communist state*. All the means of production—land, mines, factories, and businesses would be owned by the people. Private property would no longer exist. This radical type of socialism was called **Marxism**.

Marx and many other Socialists believed that government policy should benefit the masses of workers. Socialists believed that the capitalists, or those Marx called the *factory-owning bourgeoisie*, controlled the means of production and used the government to increase their wealth.

Between 1848 and 1849 revolts shook Europe. These revolts were not successful. European leaders eventually put down these revolutions. However, these revolutions inspired Marx, and, at the turn of the century, Marxism influenced many revolutions. During the 1900s, Communist revolutions were successful in Russia, China, Vietnam, and Cuba.

Socialism and Politics

Towards the end of 19th century, more and more workers in France and Germany turned to Marxism. French and German Socialists were in favor of revolution as a way of bringing down their capitalist systems. British workers, however, had more say in their government than did French and German workers, and so the British did not seek revolution to overthrow their government. The Liberal and the Conservative political parties in Great Britain needed the votes of the workers to gain control of the British government. Therefore, members of the British House of Commons had to listen and respond to British workers in order to gain their votes.

In Great Britain, the working class was first represented by the Liberal Party. In 1924 the working class broke from the Liberal Party and formed the Labor Party. The Labor Party was one of the two major political parties in Great Britain. As a result of the Labor Party's popularity, Britain developed some Socialist policies. The British government's policies blended socialism and *capitalism*.

The working class in the United States was also less revolutionary than the working classes in France and Germany. This was true because the Democratic and the Republican parties needed the workers' support. To win the support of the working class, both American political parties promised reforms for workers.

This system is called *industrial democracy*. As a result, Socialist ideas never became popular in the United States. This is not to say that the labor struggle in the United States was uneventful. In fact, there were many violent and bloody strikes in the United States at the end of the 19th century and after.

Historically in the United States, the Democratic Party has been the party of the working class. Recently, the Republican Party has been working hard to gain the support of working-class people.



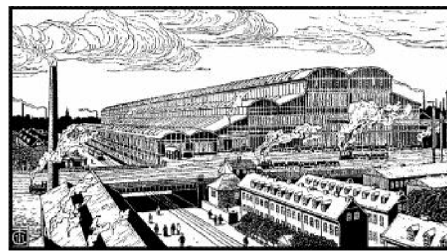
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The Labor Struggle

Let us examine the workers' struggle to organize labor unions in the United States. The story that follows is one example of the difficult labor struggles workers faced in the early 20th century. The answers to two questions helps us to better understand this turbulent period. *What conditions triggered the workers' strike? What were the results of the strike?*

The Lawrence Textile Story: Workers against Industrialists

Like many towns in New England, Lawrence, Massachusetts, was a place where *textiles* were made. Lawrence was the home of one of the largest textile companies in the United States. Most of the men, women, and children who lived in Lawrence worked in the textile factories.



factory

Adult workers earned about 16 cents an hour. Children earned about 12 cents an hour. Workers spent about 56 hours a week on the job. Even if every person in a family worked, the family could barely pay its bills each month. Workers in Lawrence usually ate bread, molasses, and beans. The homes of the workers were poorly made. Rats, bedbugs, and roaches were a common sight in their homes. Their homes provided little protection against the cold winters and hot summers. There were usually no bathrooms in the homes of workers. Many families had to share one toilet. About one-third of all workers died before they were 25 years old.

In 1912 the state of Massachusetts passed a law permitting workers to work 54 hours instead of 56 hours a week. However, the owners of the factories did not want to decrease production of textiles. What the workers had produced in 56 hours would now have to be produced in 54 hours. This angered the workers—they would now have to work harder and faster, yet earn less money for their labor.

The Workers Go on Strike. In response to the same low wages for harder work, the workers went on strike. Instead of going to work, the workers *picketed*. That is, each morning the workers marched with signs. Written on the signs were demands for better working conditions, higher wages, and extra money for overtime. Workers organized relief efforts. Soup kitchens for the hungry and shelters for the homeless were set up. Some doctors gave free medical services to the sick.

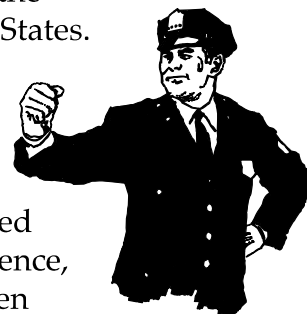
The Owners React to the Strike. Company owners asked the governor of Massachusetts for help. The governor sent the state police to Lawrence to force the workers to end their strike. Violence was met with violence. During the freezing days of January, the police sprayed water on the strikers. The strikers threw chunks of ice at the police. Strikers were shot, beaten, and jailed. Leaders of the strike were arrested on false charges. The governor declared a state of emergency in Lawrence, and all meetings were outlawed. The police were ordered to shoot to kill any striker who was on the streets during certain times of the day.

The Union Replies to the Owners and Governor. The strike lasted a very long time. Workers were growing tired; they were cold and hungry. The union then came up with an idea. During February, about 200 children were sent to New York City. In their ragged clothing, these children looked like they were starving. Many newspapers around the country showed pictures of these children. As a result, the strikers gained much sympathy from people across the country.

More Blood Is Spilled. The town of Lawrence was getting bad publicity in the newspapers. The factory owners and the government in Lawrence were beginning to lose the war. Authorities in Lawrence said that no more children would be allowed to leave Lawrence. The union, however, was not about to stop its publicity campaign. On a cold morning in late February, 150 children and their mothers stood by the railroad tracks awaiting the train to New York City. Suddenly, about 100 police showed up. Swinging clubs, the police closed in on the women and children. When it was all over, the snow was covered with blood.

This event was the turning point of the strike. President William Howard Taft asked for an investigation into factory conditions across the United States. By the end of March 1912, the strikers had won their demands for higher wages, payment for overtime, and better working conditions.

Hard Times Return to Lawrence. Two years after the Lawrence strike, bad economic times hit the United States. Many workers in the Lawrence textile factories lost their jobs. The factory owners once again increased the speed of the machines to produce more. This time, however, the workers were too tired to strike. Many of the workers quit the union which had helped them during the 1912 strike. Nevertheless, the Lawrence, Massachusetts, textile strike of 1912 proved that when workers organize, they can often achieve good results.



Review

During the Industrial Revolution, people applied science and *technology* to their lives. They invented power-driven machines to do the work people once did, and machines began to replace people in the production of goods. Goods could now be produced more quickly and cheaply in large factories. This change in the way goods were manufactured created much wealth for the factory owners, or *industrialists*.

The men, women, and children who worked in the factories did not fare so well. They worked long hours in poor and dangerous conditions and made little money. The *factory system* created two groups with two different interests. The industrialists wanted to pay the workers low wages in order to keep their own profits high. The workers, on the other hand, wanted higher wages and better working conditions. The economists Adam Smith, David Ricardo, and Thomas Malthus believed in the policy of *laissez-faire*. They believed that the government should not interfere with the workings of the economy.

To improve their salaries and working conditions, workers began organizing labor unions. Workers began to see that they would have more power if they united in their demands. At first, governments outlawed labor unions. The workers often risked their lives and welfare to continue organizing. Eventually their risks paid off, and they gained improved working conditions and higher wages.

The Industrial Revolution began in Great Britain for a number of reasons. Great Britain had a large supply of coal, which powered many of the new machines. It had the people with money and knowledge to build and run factories, as well as enough workers, or a labor force, to work in the factories. Great Britain also could sell its good in its overseas markets. Other countries, including Germany, the United States, and France, followed Great Britain and became industrialized, or *developed*, nations.

The German thinker Karl Marx was the most important Socialist writer to emerge from the Industrial Revolution. He (and other Socialists) responded to the terrible conditions brought on by the Industrial Revolution. He wrote of a day when the proletariat, or working class, would rise up against the industrialists, or capitalists, and make government work for the workers. Eventually, he claimed, there would be no classes in society and everyone would work for the good of all.