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U.S. History Readers: Conflicts and Resolutions

The Industrial Revolution in the USA

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The Industrial Revolution in the USA

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The Industrial Revolution in the USA

This unit focuses on two interrelated questions concerning the Industrial Revolution in the United States: (1) Were the doctrines of *laissez-faire* and Social Darwinism as practiced during the latter half of the 19th century beneficial to the nation as a whole? (2) Were the interests of working men and women served by the emerging industrial complex? Teachers can weave their lessons around different aspects of these basic questions. They may also use this material to supplement or even replace the basal text and treat every lesson-chapter as an important part of the traditional story of the Industrial Revolution.

The first chapter defines the term “industrial revolution,” explains what is needed to have one, and provides concrete examples. Chapter 2 covers the philosophies of *laissez-faire* and “survival of the fittest,” along with the theory of “trickle down.” Chapter 3 is the first of three on the oil business in the United States, John D. Rockefeller, and Standard Oil. This series ends with the information and directions needed to stage a mock trial of Standard Oil for allegedly violating the Sherman Antitrust Act.

Chapter 6 shifts to living and working conditions of the men and women who did not benefit from the Industrial Revolution, and Chapter 7 uses the Pullman trial as an example of conflict between labor and management and provides the opportunity for teachers to stage a debate on who—Pullman or his nemesis, Eugene Debs—was primarily responsible for the turmoil accompanying the strike. Chapter 8 describes tactics used in the struggle between management and labor. It also asks students to write an imaginary dialogue between George Pullman and Eugene Debs in which they argue their views on the major issues raised in this unit.

Each chapter is designed to accommodate a wide range of student abilities. The first part of every chapter is written at a lower reading and conceptual level than the second part. The two parts are separated by a series of student exercises, including a graphic organizer and several questions intended to help students master basic information and stimulate higher-order thinking skills. The second part of each chapter, “For Further Consideration,” is written at a higher reading and conceptual level. It is followed by a question that requires students to write a strong paragraph and/or be prepared to present their opinions in class. In some cases, this section continues the story; in others, it challenges students to think deeply about issues related to the overarching question raised in the unit. In addition, I (Inquiry)-Charts are provided to help students optimize what they already know or think about a topic and integrate it with identifiable additional information they find in the text and in other sources. Finally, each lesson includes vocabulary words and key terms in flash card format; these can be used either for review or reference.

This unit is also designed to stimulate informed discussions and higher-order thinking skills rather than recitation and rote learning. Students are provided with

the information they need to acquire and share factually supported opinions and/or consider important philosophic issues. Opportunities are provided for a mock trial of Standard Oil for violating the Sherman Act, a debate involving the Pullman Strike, and discussions on *laissez-faire*, business practices, the need for regulation, and the relative importance and prerogatives of management and labor. This unit is designed for students to experience the conflicts and passionate viewpoints of the men and women who made history, and not merely to memorize inert factual information.

Chapter 1. The Industrial Revolution in the USA

Teacher Page

Overview:

To heighten student interest, this chapter starts with a “teaser” on the evolution of musical recordings, from their grandparents listening to vinyl records to their generation’s addiction to iPods. The chapter defines what an industrial revolution is and depicts what life is like in countries that have not been industrialized. It lists seven prerequisites for a nation to industrialize (including raw materials, technology, infrastructure, labor, and capital) and provides examples of how each played a role in America’s industrial revolution (one other prerequisite is covered in Chapter 2). The graphic organizer question asks students to match the prerequisites with specific examples (such as the steam engine). The “For Further Consideration” section provides short biographies of three entrepreneurs and requires advanced students to do further research and prepare a report on one of them.

Objectives:

Students will:

- learn what an industrial revolution is and what is necessary to have one
- be acquainted with the quality of the lives of people living in societies that have not experienced an industrial revolution
- identify examples of each of the prerequisites for an industrial revolution

Strategies:

Before Class: Assign the chapter either up to or including the “For Further Consideration” section and inform students they will be expected to write their answers to all the Student Activities questions covering the assigned section(s).

In Class: Start by asking students to trace the evolution of recordings from vinyl records to iPods and ask them to predict the next innovation. Change the topic to asking them to define the term “industrial revolution,” what is needed to have one, and what life is like in countries that haven’t industrialized. Ask students to share their answers to the graphic organizer question, and see how many can recall details on items such as interchangeable parts, the meeting of the rails, the importance of the steam engine, and so forth. Leave time for advanced students to report on a number of their entrepreneurs.

Chapter 1. The Industrial Revolution in the USA

I-Chart

	What is an industrial revolution?	What is life like in a country that has not industrialized?	What is necessary to have an industrial revolution?
What I already know			
What I learned from Chapter I, Part I			
What I learned from Chapter I, Part II			
What I would still like to learn			

Chapter 1—The Industrial Revolution in the USA

infrastructure

expanding

innovation

interchangeable

completion

technological

contaminated

financed

Chapter 1—The Industrial Revolution in the USA

<p>The facilities in a country or region (roads, water supplies, etc.) needed for industrial development</p>	<p>Getting larger</p>	
<p>A new way of doing things</p>	<p>When one thing can be used as a substitute for another</p>	<p>State of being finished</p>
<p>Having to do with machines, tools, etc. that replace work by hand</p>	<p>Impure, dirty, or polluted</p>	<p>Paid for by</p>

Chapter 1

The Industrial Revolution in the USA

Introduction

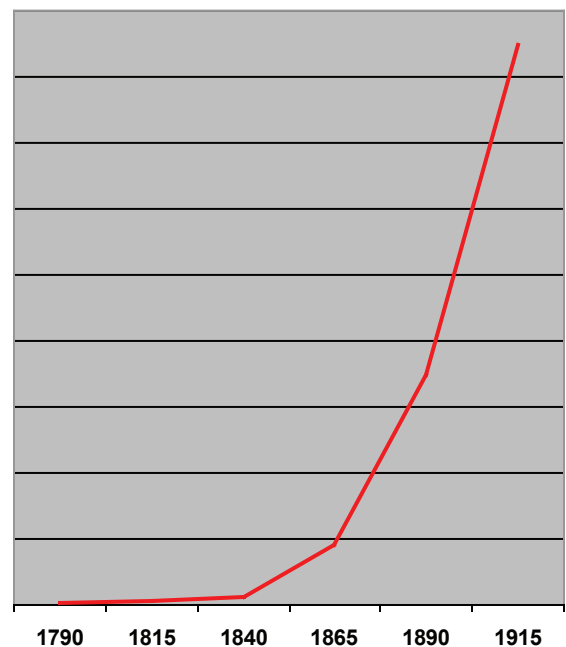
When your great-grandparents were young, they probably listened to heavy 78-rpm records that played for barely four minutes at a time. Later, your grandparents danced to the latest tunes on smaller vinyl “45s” or listened to 33-rpm “long-playing” recordings. Then, around the time your parents were your age, the cassette-tape player came along. Today, records and tapes are largely a thing of the past, and your generation listens to music on iPods, burns their own CDs, and shares their favorite tunes over phones and the Internet. These changes, fueled by the digital age, demonstrate some of the thousands of ways technology has shaped the way we live.

In this chapter, you will learn how the changes that we call the Industrial Revolution started the rapid chain of technological improvements that enrich our lives today.

What is an Industrial Revolution and When Did the U.S. Industrial Revolution Start?

The word “revolution” implies a rapid change and is usually used to describe a political event like the American or the French Revolutions. The term also can be used to describe an economic change. In an “industrial revolution,” there is a rapid change from a society in which most people live on farms to one where most people live in towns or cities. For example, when George Washington was president, nine out of ten Americans made their living by planting and harvesting; today, fewer than three out of 100 people live on farms.

Sometime during the years between 1800 and 1920, the U.S. experienced an industrial revolution that caused many changes in the ways people thought, spent their free time, dressed, traveled, talked to one another, and earned their living. It is difficult to point to the exact years in which these changes took place. Most historians, however, would agree that the smaller changes occurred slowly during the 1790s, picked up during the years before the Civil War, and gathered speed after the war. By 1920, the U.S. had completed its change from a nation of farmers to an industrialized society.



U.S. industrial production, 1790–1915

Advantages of Having an Industrial Revolution

It is easy to see the advantages an industrial revolution can bring. Imagine not having electricity, running water, or a car. Imagine walking 10 miles to a one-room school, wearing clothes that were made at home, and having a fireplace as your only source of heat. These were just a few hardships faced by our pre-industrial ancestors. Today, in countries that have not gone through an industrial revolution, one out of five children die before their fifth birthday, most adults die before reaching age 50, many go hungry and suffer from malnutrition, and a family's yearly income is less than many students in America are likely to spend on their senior prom. People who live in non-industrial countries such as Bangladesh, Haiti, Nigeria, or Algeria typically can't read or write, never see a doctor, get their water from a well that may be contaminated, and share small living quarters with extended families. In an industrialized nation like the United States, however, many of the poor eat meat several times a week and get to see a doctor if they are sick.

What is Necessary to Have an Industrial Revolution?

Industrial revolutions don't just happen. To have an industrial revolution, a country must possess at least seven different things:

- Natural resources, such as fertile soil, coal, and iron ore
- Basic inventions, such as the telegraph and electric generators
- A transportation system, called an infrastructure, that includes roads and railroads
- A large workforce
- A surplus of money to invest
- Men or women of talent, ambition, and energy, with administrative abilities
- A favorable government policy

Raw Materials

England was the first country to industrialize, but France and Germany soon followed. Across the Atlantic Ocean, the United States was also beginning to industrialize. Always rich in natural resources, the former English colonies were blessed with a huge supply of fertile land. Dense forests throughout the country supplied wood for building and heating. In the Northeast, many swift rivers provided the power to turn water wheels. Huge deposits of coal were discovered in the Allegheny Mountains around the time of the Civil War. The mighty Mesabi Mountain Range in Minnesota provided the ore needed to make iron and steel. Rich deposits of copper were found in the West. Reserves of crude oil were discovered in Pennsylvania and Ohio, and when these ran out, new ones were found in Oklahoma and Texas. The United States was truly a land of plenty.

Inventions

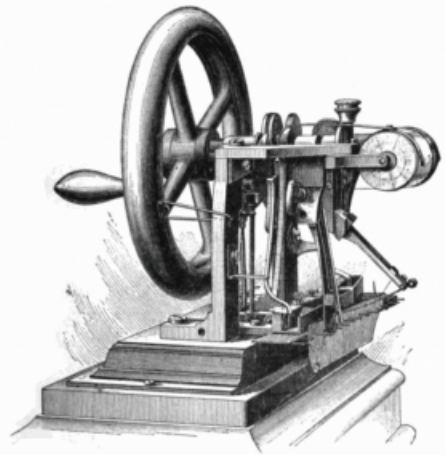


Even more important than his invention of the cotton gin was Eli Whitney's discovery of the idea of interchangeable parts

Although many of the machines needed for industrialization were devised in England, it was not long before Americans added to the world's list of important inventions. Eli Whitney made a machine that separated cotton fiber from cottonseeds at a rate 50 times faster than it took one man to clean a pound of cotton. Years later Whitney was able to demonstrate the principle of making *interchangeable parts*. He showed a government committee how each of the different parts of a rifle—the stocks, triggers, rifle barrels, etc.—could be made exactly alike. Even a worker with no training could pick any part from a series of piles and assemble them into a working gun.

James Watt, a Scot, is credited with inventing the steam engine that was first used in factories in England. Robert Fuller, an American, revolutionized water transportation by attaching a steam engine to paddlewheels and was able to send ships “steaming” up America's rivers. Not long afterwards, Watt's basic invention was mounted on wheels, giving birth to the first American railroad. The Baltimore and Ohio started in 1828, at about the same time that the British began building their first railroad. Many minor inventions were needed to make the railroad safe and efficient, including the cowcatcher, which swept animals off the track (inventor unknown), and George Westinghouse's brainchild, the air brake. Railroad mileage in the U.S. expanded quickly in the 1840s and reached 30,000 miles by 1860.

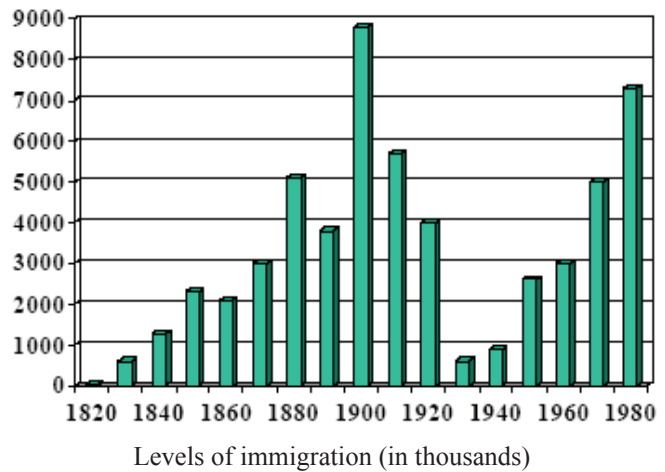
Many other American inventors contributed to the industrialization of the U.S. as well as western Europe. Elias Howe invented the sewing machine in 1846 and Isaac Singer perfected it. An African American by the name of Jan Matzelinger made a machine that could sew the sole to the top of a shoe. Samuel Morse's creation—a series of dots and dashes called the Morse code—was used by telegraph operators to represent the letters of the alphabet; and a man named Colt invented a revolver that fired bullets in a matter of seconds. In 1839, Charles Goodyear turned springy rubber into hardened surfaces by a process called vulcanization. In the 1850s, an American, William Kelly, invented a process for turning iron into steel. By 1860, the U.S. Patent Office had granted 36,000 applications, and 30 years later, 440,000 patents had been issued.



Howe's sewing machine

Workers

The workforce for America's Industrial Revolution came from two sources. First, inventions such as the mechanical reaper meant that machines could do much of the work on farms that people used to do. With less labor needed to run farms, hundreds of thousands of people decided to move to the city, where they found jobs in the new factories and offices built during this industrial age. Women found work as typists, salespersons, and clerks, as well as well as in teaching, cleaning, and nursing. By 1900, there were a total of 5 million women working outside of the home, representing 17% of the work force. Their pay was barely half the amount paid to men. Over 1.7 million children under 16 years of age had also entered the workforce by 1900 and were paid even less than women.



Meanwhile, millions of immigrants left England, Germany, Italy, Poland, Romania, Russia, Greece, and dozens of other countries and came to the United States, where they hoped to find jobs created by the Industrial Revolution.



The famous "East meets West" photo taken at Promontory Summit, Utah, May 10, 1869

The Infrastructure

The infrastructure that included, first and foremost, a system of transportation was also constructed during the Industrial Revolution. By the time of the Civil War, there were already 30,000 miles of railroads spanning America. This was just the start. Another 200,000 miles of railroads were built between 1865 and 1910. Steel rails covered the country, connecting East to West, North to South, and all regions in between. Certain captains of industry, like Cornelius Vanderbilt and James J. Hill, played leading roles in this feat. The most notable accomplishment was completing the transcontinental railroad in 1869. The occasion was celebrated by hammering the famous golden spike into the ground where track coming from the east met track from the west. Millions of dollars and over 400,000,000 acres of land were granted to the corporations that built these railroads. Built in a hurry, the railroad track needed was often torn up later and replaced in order to make travel safer.

Capital

Then of course there was money! The American Industrial Revolution was financed by two sources: first, profits from previous commerce, such as New England's famous "China trade" of the 1840s and later from the profits made by industrialists like Andrew Carnegie and John D. Rockefeller; second, from investors from foreign countries, particularly the British. Foreigners invested over 500,000,000 dollars in American businesses before the Civil War. America's stable society and rule of law, in addition to an ever-expanding economy, gave investors a reasonable chance of making large profits.

Industrial Leaders and Favorable Government Policy

The Industrial Revolution in the U.S. may never have occurred without the contributions of a small group of talented and hardworking men. They applied their intelligence, daring, energy, and special skills to making money by creating huge industrial empires. A few of the most important are mentioned here. Industrial leaders will be discussed later in the "For Further Consideration" section. Favorable government policy, which helped them build the industrial empires that made them rich and famous, will be discussed in the next chapter.

Student Activities

A. Student Exercises

1. What is an industrial revolution and what is needed to have one?
2. Compare the way people live in countries that have not yet had an industrial revolution with the way people live in countries that have had one.

B. Graphic Organizer

In the chart below, place each of the following examples of what was needed to have an industrial revolution under its proper heading.

Raw materials	Technology	Infrastructure	Workers

- Mesabi Range
- Telegraph
- Oil
- Meeting of the rails
- People leaving farms
- Grand Central Station
- Immigrants
- Roads and canals
- Women
- Sewing machine
- Coal
- Interchangeable parts