

CHAPTER
21
SECTION 1

Note Taking Study Guide

THE INDUSTRIAL REVOLUTION SPREADS

Focus Question: How did science, technology, and big business promote industrial growth?

As you read this section in your textbook, complete the following chart to identify main ideas about the major developments of the Industrial Revolution.

The Second Industrial Revolution	Transportation/ Communication	<ul style="list-style-type: none"> • _____ • _____ • _____
	Industry/Business	<ul style="list-style-type: none"> • _____ • _____ • _____ • _____ • _____ • _____
	New Powers	<ul style="list-style-type: none"> • _____ • _____ • _____

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Section Summary
THE INDUSTRIAL REVOLUTION SPREADS

During the early Industrial Revolution, Britain was the world’s industrial giant. Later, two new industrial powers emerged—Germany and the United States. These nations had more abundant supplies of coal, iron, and other resources than Britain. This helped them become the new industrial leaders. These nations also had the advantage of being able to follow Britain’s lead, borrowing its experts and technology. The demands of an industrial society brought about many social, economic, and political changes.

Technology sparked industrial and economic growth. **Henry Bessemer** patented the process for making steel from iron. Steel became so important that industrialized countries measured their success in steel output. **Alfred Nobel** earned enough money from his invention of dynamite to fund today’s Nobel prizes. Electricity replaced steam as the dominant industrial energy source. **Michael Faraday** created the first simple electric motor, as well as the first **dynamo**. In the 1870s, **Thomas Edison** made the first electric light bulb. Soon, electricity lit entire cities, the pace of city life quickened, and factories continued to operate after dark. **Interchangeable parts** and the **assembly line** made production faster and cheaper.

Technology also transformed transportation and communication. Steamships replaced sailing ships. Railroads connected cities, seaports, and industrial centers. The invention of the internal combustion engine sparked the automobile age. In the early 1900s, Henry Ford developed an assembly line to produce cars, making the United States a leader in the automobile industry. The air age began when **Orville and Wilbur Wright** flew their plane for a few seconds in 1904. Communication advances included the telegraph and telephone. **Guglielmo Marconi’s** radio became the cornerstone of today’s global communication network.

New technologies needed investments of large amounts of money. To get the money, owners sold **stock** to investors, growing businesses into giant **corporations**. By the late 1800s, what we call “big business” came to dominate industry. Corporations formed **cartels** to control markets.

Review Questions

1. What advantages did the new industrial powers have?

2. How did the development of electricity change life in cities?

READING CHECK

What two new industrial powers emerged in the mid-1800s?

VOCABULARY STRATEGY

What does the word *dominate* mean in the underlined sentence? It comes from a Latin word that means “lord” or “master.” Use this information about the word’s origin to help you figure out what *dominate* means.

READING SKILL

Identify Main Ideas How was transportation transformed during the Industrial Revolution?

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SECTION 2

Note Taking Study Guide

THE RISE OF THE CITIES

Focus Question: How did the Industrial Revolution change life in the cities?

As you read this section in your textbook, complete the following outline to identify main ideas and supporting details about how the Industrial Revolution changed life in the cities.

I. Medicine and the population explosion

A. The fight against disease

1. _____

2. _____

B. _____

1. _____

2. _____

II. _____

A. _____

1. _____

2. _____

B. _____

1. _____

2. _____

C. _____

1. _____

2. _____

D. _____

1. _____

2. _____

III. _____

A. _____

1. _____

2. _____

B. _____

1. _____

2. _____

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SECTION 2 THE RISE OF THE CITIES

Between 1800 and 1900, the population of Europe more than doubled. Advances in medicine slowed death rates and caused a population explosion. In the fight against disease, scientists speculated about a **germ theory**. They believed that certain germs might cause specific diseases. In 1870, French chemist **Louis Pasteur** showed that this link is real. Ten years later, German doctor **Robert Koch** identified the bacteria that causes tuberculosis, a deadly respiratory disease. As people began to understand how germs cause diseases, they practiced better hygiene. This helped decrease the number of deaths from disease. Better hygiene also led to improvements in hospital care. British nurse and reformer **Florence Nightingale** introduced sanitary measures in hospitals. The English surgeon **Joseph Lister** discovered how antiseptics prevent infection.

As industrialization progressed, city life underwent dramatic changes in Europe and the United States. The most extensive **urban renewal** took place in Paris in the 1850s. Wide boulevards, paved streets, and splendid public buildings replaced old streets full of tenement housing. Architects used steel to build soaring buildings called skyscrapers. Electric streetlights illuminated the night, increasing safety. Massive new sewage systems in London and Paris provided cleaner water and better sanitation, sharply cutting death rates from disease.

Despite these efforts, urban life remained difficult for the poor. In the worst tenements, whole families were often crammed into a single room. Slums remained a fact of city life. Still, millions of people were attracted to cities because of the promise of work, entertainment, and educational opportunities.

However, industrialization and urban improvements did not improve conditions for workers. Most experienced low wages, long hours, unsafe environments, and the constant threat of unemployment. Workers protested these terrible conditions. They formed **mutual-aid societies** and organized unions. Pressured by unions, reformers, and working-class voters, governments passed laws to regulate working conditions. Wages varied, but overall, the **standard of living** for most workers did rise.

Review Questions

1. How did advances in medicine cause a population explosion?

2. What two changes in the 1800s made city life safer and healthier?

READING CHECK

What did Louis Pasteur do in 1870?

VOCABULARY STRATEGY

What does the word *illuminated* mean in the underlined sentence? The root of this word is from *lumen*, which is Latin for "light." How can you use the root of *illuminated* to help you figure out its meaning?

READING SKILL

Identify Supporting Details In what ways were working conditions difficult for most industrial workers?

CHAPTER
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SECTION 3

Note Taking Study Guide

CHANGING ATTITUDES AND VALUES

Focus Question: How did the Industrial Revolution change the old social order and long-held traditions in the Western world?

As you read this section in your textbook, complete the following table. List new issues that caused change in the first column and identify two supporting details for each in the second column.

Changes in Social Order and Values	
Issue	Change
<ul style="list-style-type: none"> • New social order 	<ul style="list-style-type: none"> • Upper class: old nobility, new industrialists, business families • •
<ul style="list-style-type: none"> • Rights for women 	<ul style="list-style-type: none"> • •
<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • •
<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • •
<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • •

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Section Summary
CHANGING ATTITUDES AND VALUES

In the late 1800s, the social order in the Western world slowly changed. Instead of nobles and peasants, a more complex social structure emerged, made up of three classes. The new upper class included very rich business families. Below this tiny elite were a growing middle class and a struggling lower middle class. Workers and peasants were at the bottom of the social ladder.

The middle class developed its own values and way of life, which included a strict code of rules that dictated behavior for every occasion. A **cult of domesticity** also emerged that idealized women and the home.

Demands for women’s rights also challenged the traditional social order. Across Europe and the United States, many women campaigned for fairness in marriage, divorce, and property laws. Many women’s groups also supported the **temperance movement**. In the United States, reformers such as **Elizabeth Cady Stanton** and **Sojourner Truth** were dedicated to achieving **women’s suffrage**.

Industrialized societies recognized the need for a literate workforce. Reformers persuaded many governments to require basic education for all children and to set up public schools. More and more children attended school, and public education improved.

At the same time, new ideas in science challenged long-held beliefs. **John Dalton** developed the modern atomic theory. The most controversial new idea, however, came from the British naturalist **Charles Darwin**. His ideas upset those who debated the validity of his conclusions. Darwin argued that all forms of life had evolved over millions of years. His theory of natural selection explained the long, slow process of evolution. In natural selection, members of each species compete to survive. Unfortunately, some people applied Darwin’s theory of natural selection to encourage **racism**. Others applied his ideas to economic competition.

Religion continued to be a major force in Western society. The grim realities of industrial life stirred feelings of compassion and charity. For example, the **social gospel** urged Christians to push for reforms in housing, healthcare, and education.

Review Questions

1. How did the social structure change in the late 1800s?

2. For what rights did women in Europe and the United States campaign?

READING CHECK

What new scientific theory did Charles Darwin promote to explain evolution?

VOCABULARY STRATEGY

What does the word *controversial* mean in the underlined sentence? Use context clues, or surrounding words and sentences, to figure out what *controversial* means.

READING SKILL

Identify Supporting Details
What changes in education were brought about by the Industrial Revolution?

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SECTION 4

Note Taking Study Guide

ARTS IN THE INDUSTRIAL AGE

Focus Question: What artistic movements emerged in reaction to the Industrial Revolution?

As you read this section in your textbook, complete the following table. Identify supporting details about the major features of the artistic movements of the 1800s.

Major Artistic Movements of the 1800s		
Movement	Goals/Characteristics	Major Figures
Romanticism	<ul style="list-style-type: none"> • Rebellion against reason • • • • • 	<ul style="list-style-type: none"> • William Wordsworth • • • • • • •
Realism	<ul style="list-style-type: none"> • • • • • 	<ul style="list-style-type: none"> • • • • •
Impressionism	<ul style="list-style-type: none"> • • 	<ul style="list-style-type: none"> • •
	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • • •

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ARTS IN THE INDUSTRIAL AGE

From about 1750 to 1850, a cultural movement called **romanticism** emerged in Western art and literature. The movement was a reaction against the rationality and restraint of the Enlightenment.

Romanticism emphasized imagination, freedom, and emotion. In contrast to Enlightenment literature, the works of romantic writers included direct language, intense feelings, and a glorification of nature.

Poets **William Wordsworth**, **William Blake**, and **Lord Byron** were among the major figures of the romantic movement. Romantic novelists, such as **Victor Hugo**, were inspired by history, legend, and folklore. Romantic composers also tried to stir deep emotions. The passionate music of **Ludwig van Beethoven** combined classical forms with a stirring range of sound. Painters, too, broke free from the formal styles of the Enlightenment. They sought to capture the beauty and power of nature with bold brush strokes and colors.

By the mid-1800s, another new artistic movement, **realism**, took hold in the West. Realists sought to represent the world as it was, without romantic sentiment. Their works made people aware of the grim conditions of the Industrial Age. Many realists wanted to improve the lives of those they depicted. **Charles Dickens**, for example, vividly portrayed in his novels the lives of slum dwellers and factory workers. Some of his novels shocked middle-class readers with images of poverty, mistreatment of children, and urban crime. Painters such as **Gustave Courbet** also portrayed the realities of the time.

By the 1840s, a new art form, photography, emerged. **Louis Daguerre** produced some of the first successful photographs. Some artists questioned the effectiveness of realism when a camera could make such exact images. By the 1870s, one group had started a new art movement, **impressionism**. Impressionists, such as **Claude Monet**, sought to capture the first fleeting impression made by a scene or object on the viewer's eye. By concentrating on visual impressions, rather than realism, artists created a fresh view of familiar subjects. Later painters, called postimpressionists, developed a variety of styles. **Vincent van Gogh**, for example, experimented with sharp brush lines and bright colors.

Review Questions

1. How did the romantic movement differ from the Enlightenment?

2. What was the goal of the impressionist artists?

READING CHECK

Against what was the romantic movement a reaction?

VOCABULARY STRATEGY

What does the word *intense* mean in the underlined sentence? What clues can you find in the surrounding words, phrases, or sentences that might have a similar meaning? Use these context clues to help you learn what *intense* means.

READING SKILL

Identify Supporting Details

Identify two supporting details for the following main idea: The artists of the realism movement made people more aware of the harsh conditions of life in the Industrial Age.
