The Industrial Revolution, 1700–1900

The Industrial Revolution begins in Britain, spreads to other countries, and has a strong impact on economics, politics, and society.

Section 1
The Beginnings of Industrialization

The Industrial Revolution starts in England and soon spreads to other countries.

Industrial Revolution Begins in Britain

New Ways of Working
- **Industrial Revolution**—greatly increases output of machine-made goods
- Revolution begins in England in the middle 1700s

The Agricultural Revolution Paves the Way
- **Enclosures**—large farm fields enclosed by fences or hedges
- Wealthy landowners buy, enclose land once owned by village farmers
- Enclosures allow experimentation with new agricultural methods

Rotating Crops
- **Crop rotation**—switching crops each year to avoid depleting the soil
- Livestock breeders allow only the best to breed, improve food supply

Why the Industrial Revolution Began in England
- **Industrialization**—move to machine production of goods
- Britain has natural resources—coal, iron, rivers, harbors
- Expanding economy in Britain encourages investment
- Britain has all needed **factors of production**—land, labor, capital
**Inventions Spur Industrialization**

**Changes in the Textile Industry**
- Weavers work faster with flying shuttles and spinning jennies
- Water frame uses water power to drive spinning wheels
- Power loom, spinning mule speed up production, improve quality
- **Factories**—buildings that contain machinery for manufacturing
- Cotton gin boosts American cotton production to meet British demand

**Improvements in Transportation**

**Watt’s Steam Engine**
- Need for cheap, convenient power spurs development of steam engine
- James Watt improves steam engine, financed by Matthew Boulton
- Boulton an entrepreneur—organizes, manages, takes business risks

**Water Transportation**
- Robert Fulton builds first steamboat, the Clermont, in 1807
- England’s water transport improved by system of canals

**Road Transportation**
- British roads are improved; companies operate them as toll roads

**The Railway Age Begins**

**Steam-Driven Locomotives**
- In 1804, Richard Trevithick builds first steam-driven locomotive
- In 1825, George Stephenson builds world’s first railroad line

**The Liverpool-Manchester Railroad**
- Entrepreneurs build railroad from Liverpool to Manchester
- Stephenson’s Rocket acknowledged as best locomotive (1829)

**Railroads Revolutionize Life in Britain**
- Railroads spur industrial growth, create jobs
- Cheaper transportation boosts many industries; people move to cities

**Section 2**

**Industrialization**

**CASE STUDY: Manchester**

The factory system changes the way people live and work, introducing a variety of problems.
Industrialization Changes Life

Factory Work
• Factories pay more than farms, spur demand for more expensive goods

Industrial Cities Rise
• Urbanization—city-building and movement of people to cities
• Growing population provides workforce, market for factory goods
• British industrial cities: London, Birmingham, Manchester, Liverpool

CASE STUDY: Manchester

Living Conditions
• Sickness widespread; epidemics, like cholera, sweep urban slums
• Life span in one large city is only 17 years
• Wealthy merchants, factory owners live in luxurious suburban homes
• Rapidly growing cities lack sanitary codes, building codes
• Cities also without adequate housing, education, police protection

Working Conditions
• Average working day 14 hours for 6 days a week, year-round
• Dirty, poorly lit factories injure workers
• Many coal miners killed by coal dust

Class Tensions Grow

The Middle Class
• Middle class—skilled workers, merchants, rich farmers, professionals
• Emerging middle class looked down on by landowners, aristocrats
• Middle class has comfortable standard of living

The Working Class
• Laborers’ lives not improved; some laborers replaced by machines
• Luddites, other groups destroy machinery that puts them out of work
• Unemployment a serious problem; unemployed workers riot
Positive Effects of the Industrial Revolution

**Immediate Benefits**
- Creates jobs, enriches nation, encourages technological progress
- Education expands, clothing cheaper, diet and housing improve
- Workers eventually win shorter hours, better wages and conditions

**Long-Term Effects**
- Improved living and working conditions still evident today
- Governments use increased tax revenues for urban improvements

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The Mills of Manchester

**Manchester and the Industrial Revolution**
- Manchester has labor, water power, nearby port at Liverpool
- Poor live and work in unhealthy, even dangerous, environment
- Business owners make profits by risking their own money on factories
- Eventually, working class sees its standard of living rise some

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Children in Manchester Factories
- Children as young as 6 work in factories; many are injured
- 1819 Factory Act restricts working age, hours
- Factory pollution fouls air, poisons river
- Nonetheless, Manchester produces consumer goods and creates wealth

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Section 3

**Industrialization Spreads**

The industrialization that begins in Great Britain spreads to other parts of the world.
Industrial Development in the United States

Industrialization in the United States
- U.S. has natural and labor resources needed to industrialize
- Samuel Slater, English textile worker, builds textile mill in U.S.
- Lowell, Massachusetts a mechanized textile center by 1820
- Manufacturing towns spring up around factories across the country
- Young single women flock to factory towns, work in textile mills
- Clothing, shoemaking industries soon mechanize

Later Expansion of U.S. Industry
- Industrialization picks up during post-Civil War technology boom
- Cities like Chicago expand rapidly due to location on railroad lines
- Small companies merge to form larger, powerful companies

The Rise of Corporations
- Stock—limited ownership rights for company, sold to raise money
- Corporation—company owned by stockholders, share profits not debts
- Large corporations attempt to control as much business as they can

Continental Europe Industrializes

Troubles in Continental Europe
- Revolution and Napoleonic wars disrupted early 19th-century economy

Beginnings in Belgium
- Belgium has iron ore, coal, water transportation
- British workers smuggle in machine plans, start companies (1799)

Germany Industrializes
- Political, economic barriers; but industry, railroads boom by mid-century

Expansion Elsewhere in Europe
- Bohemia develops spinning; Northern Italy mechanizes silk textiles
- Industrialization in France more measured; agriculture remains strong
The Impact of Industrialization

Rise of Global Inequality
- Wealth gap widens; non-industrialized countries fall further behind
- European nations, U.S., Japan exploit colonies for resources
- Imperialism spreads due to need for raw materials, markets

Transformation of Society
- Europe and U.S. gain economic power
- African and Asian economies lag, based on agriculture, crafts
- Rise of middle class strengthens democracy, calls for social reform

Reforming the Industrial World

Laissez-faire Economics
- Laissez faire — economic policy of not interfering with businesses
- Originates with Enlightenment economic philosophers
- Adam Smith — defender of free markets, author of The Wealth of Nations
- Believes economic liberty guarantees economic progress
- Economic natural laws—self-interest, competition, supply and demand

The Philosophers of Industrialization

The Economists of Capitalism
- Thomas Malthus, David Ricardo boost laissez-faire capitalism
- Capitalism — system of privately owned businesses seeking profits
- Malthus thinks populations grow faster than food supply
- Wars, epidemics kill off extra people or misery and poverty result
- Ricardo envisions a permanent, poor underclass providing cheap labor
Utilitarianism
- Jeremy Bentham’s utilitarianism—judge things by their usefulness
- John Stuart Mill favors regulation to help workers, spread wealth

Utopian Ideas
- Robert Owen improves workers’ conditions, rents cheap housing
- In 1824, Owen founds utopian community, New Harmony, Indiana

Socialism
- Socialism—factors of production owned by, operated for the people
- Socialists think government control can end poverty, bring equality

The Rise of Socialism

Marxism’s Prophets
- Karl Marx—German journalist proposes a radical socialism, Marxism
- Friedrich Engels—German whose father owns a Manchester textile mill

The Communist Manifesto
- Marx and Engels believe society is divided into warring classes
- Capitalism helps “have,” the employers known as the bourgeoisie
- Hurts “have-nots,” the workers known as the proletariat
- Marx, Engels predict the workers will overthrow the owners

The Future According to Marx
- Marx believes that capitalism will eventually destroy itself
- Inequality would cause workers to revolt, seize factories and mills
- Communism—society where people own, share the means of production
- Marx’s ideas later take root in Russia, China, Cuba
- Time has shown that society not controlled by economic forces alone

Labor Unions and Reform Laws

Unionization
- Unions—associations formed by laborers to work for change
- Unions negotiate for better pay, conditions with employers
- Sometimes they strike—call a work stoppage—to pressure owners
- Skilled workers are first to form unions
- Movement in Britain, U.S. must fight for right to form unions
- Union goals were higher wages, shorter hours, improved conditions
Reform Laws
• British, U.S. laws passed to stop worst abuses of industrialization
  • 1842 Mines Act in Britain stops women, children working underground
  • In 1847, workday for women, children limited to 10 hours in Britain
  • U.S. ends child labor, sets maximum hours in 1904

The Abolition of Slavery
• In 1833, reformers help end slavery in British empire
  • Slavery ends in U.S. in 1865; ends by 1888 in rest of Americas

The Fight for Women’s Rights
• Women pursue economic and social rights as early as 1848
  • International Council for Women founded 1888; worldwide membership

Reforms Spread to Many Areas of Life
• Reformers establish free public schools in Europe in late 1800s
  • Public schools common in U.S. by 1850s; prison reform also sought