

The Industrial Revolution

A. What Was the Industrial Revolution?

1. narrow sense
2. broad sense

B. Two Chronological Phases

1. Old, or First, Industrial Revolution (1750–1850)
2. New, or Second, Industrial Revolution (1850–1970)

C. Roots of Industrial Revolution

1. Medieval Technology (water power, cam)
2. Renaissance Spirit (innovation)
3. Commercial Revolution (capitalization)
4. Domestic System (textile manufacturing methods)

D. Why England?

1. Markets — colonies (esp. India)
2. Population — enclosure acts; skilled textile workers
3. Natural Resources — Coal and Iron
4. Government — move from mercantilism to laissez-faire policies
5. Financial Institutions — banks

E. Agricultural Revolution

1. Primitive Agricultural Methods
2. Industrial Growth Spurs Agriculture
3. “Scientific” Agriculture (Charles Townshend; Robert Bakewell)
4. Effects

F. Cholera and Sewage Disposal: London as a Case Study

1. Cholera outbreak and riots of 1831 — “anarchical, Socialist and infidel forces”
2. William Farr, statistician; Sir John Snow, doctor; John Simon, medical officer
3. Parliament passes emergency acts renewing and developing sewer system (1858)

G. Political Economy

1. “Pig Philosophy”; the “dismal science”
2. Economic Theorists

From Economic Theory to Practical Reforms

| <i>Economic Theorist</i> | <i>Major Work</i> | <i>Key Concept</i> |
|--------------------------------------|--|--|
| Adam Smith (1732–1790) | <i>An Inquiry into the Nature and Causes of the Wealth of Nations</i> (1776) | “invisible hand” |
| Jeremy Bentham (1748–1832) | <i>Principles of Morals and Legislation</i> (1789) | “the greatest happiness of the greatest number” |
| Thomas Malthus (1766–1834) | <i>Essays on the Principle of Population</i> (1798) | “Population, when unchecked, increases in a geometrical ratio. Subsistence only increases in an arithmetical ratio.” |
| David Ricardo (1772–1832) | <i>The Principles of Political Economy and Taxation</i> (1817) | “iron law of wages” “labor theory of value” |
| James Mill (1773–1836) | <i>Elements of Political Economy</i> (1821) | capital tends to increase less rapidly than population, therefore, the chief object of reform is to prevent population from growing too rapidly |
| Nassau William Senior (1790–1864) | <i>An Outline of the Science of Political Economy</i> (1836) | abstinence theory “Last Hour” |
| Friedrich List (1789–1846) | <i>Das nationale System der politischen Ökonomie</i> (1840) | the duty of governments is to see to it that every individual makes the most of their talents in cooperating for the general good |
| John Stuart Mill (1806–1873) | <i>On Liberty</i> (1859) | “The only purpose for which power can be rightfully exercised over any member of a civilized community against his will is to prevent harm to others.” |

First Industrial Revolution—1750–1850

| <i>Inventors</i> | <i>Inventions</i> | <i>Year</i> | <i>Significance</i> |
|---------------------------------|--------------------------|-------------|--|
| <i>Textiles:</i> | | | |
| John Kay (English) | Flying Shuttle | 1733 | hand-operated, sped up weaving by loom and created demand for thread |
| James Hargreaves (English) | Spinning Jenny | 1765(1770) | hand-operated, spun eight threads at one time |
| Richard Arkwright (English) | Water Frame | 1769 | used water power for spinning |
| Samuel Crompton (English) | Spinning Mule | 1774–1779 | combined best features of spinning jenny and water frame |
| Edward Cartwright (English) | Power Loom | 1785 | used water power for weaving |
| Eli Whitney (American) | Cotton Gin | 1793 | hand-operated at first, removed seeds from raw cotton |
| <i>Steam Power:</i> | | | |
| Thomas Newcomen (English) | crude Steam Engine | 1705–1712 | served chiefly to operate pumps draining water from coal mines |
| James Watt (English) | efficient Steam Engine | 1769 | adapted for textile mills by 1785 |
| John Fitch (American) | Steamboat | 1787 | steamboats soon appeared on rivers and along coasts; in 1838 a steamboat crossed Atlantic Ocean in 15 days |
| Robert Fulton (American) | | 1807 | |
| George Stephenson (English) | Steam Locomotive | 1814 | railroads soon became leading means of transportation |
| <i>Agricultural Revolution:</i> | | | |
| Jethro Tull (English) | Seed Drill | 1701 | planted seeds in rows; improved on “broadcast,” or hand, sowing |
| Charles Newbold (American) | Cast-Iron Plow | 1797 | turned soil deeper and more easily than wooden plow |
| Cyrus McCormick (American) | Reaper | 1834 | cut grain many times faster than a scythe |
| John Deere (American) | Self-Cleaning Steel Plow | 1837 | improved upon cast-iron plow |