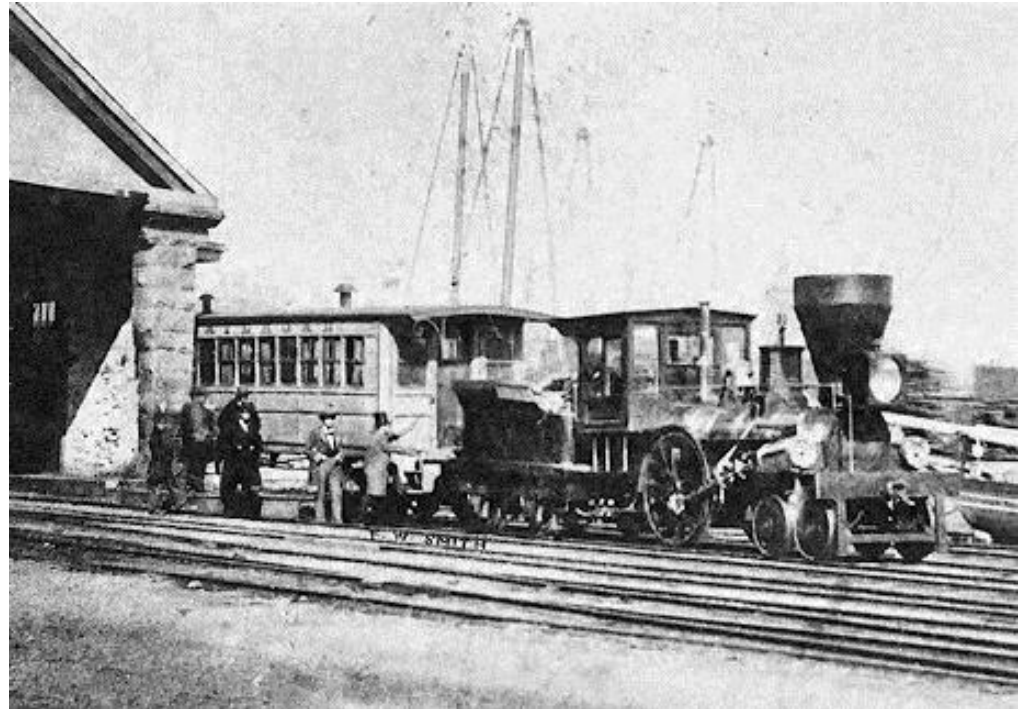


Chapter 9: The Industrial Revolution, 1700–1900

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



Rail locomotives began connecting U.S. cities in the 1840s, enabling transport of goods between factories, cities, and ports.

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



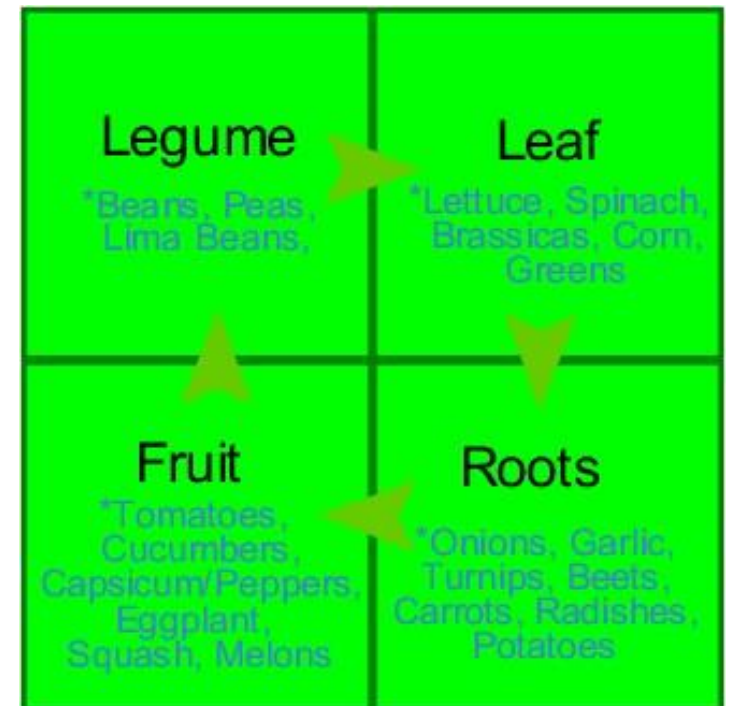
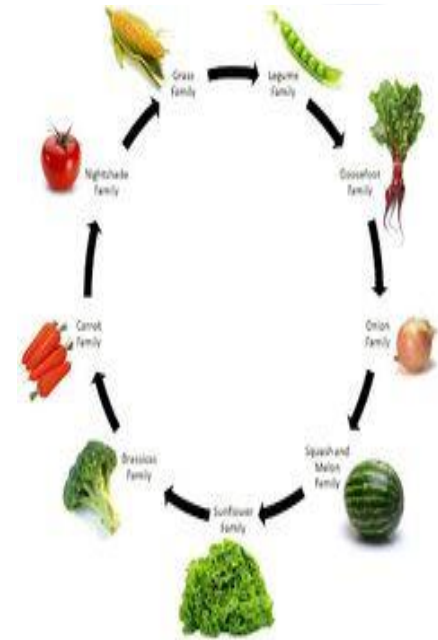
continued **Industrial Revolution
Begins in Britain**

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



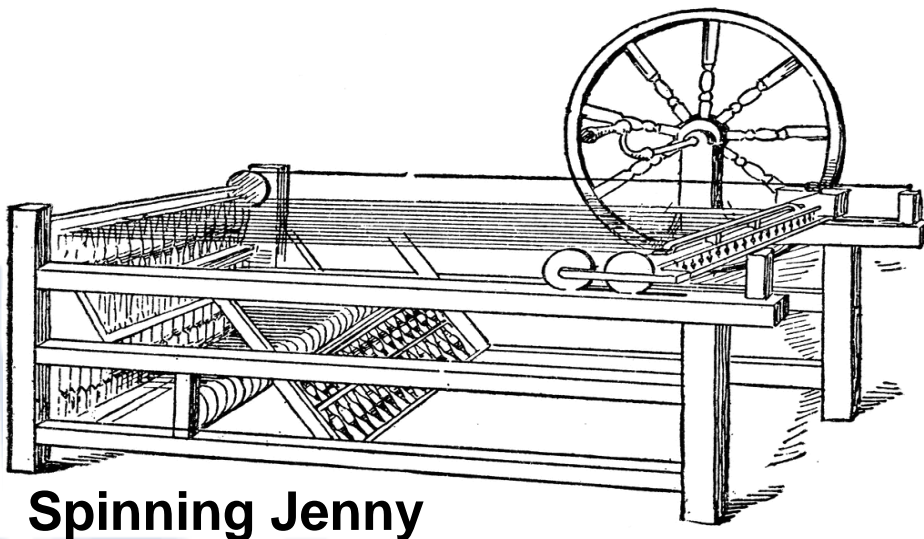
Inventions Spur Industrialization

Changes in the Textile Industry

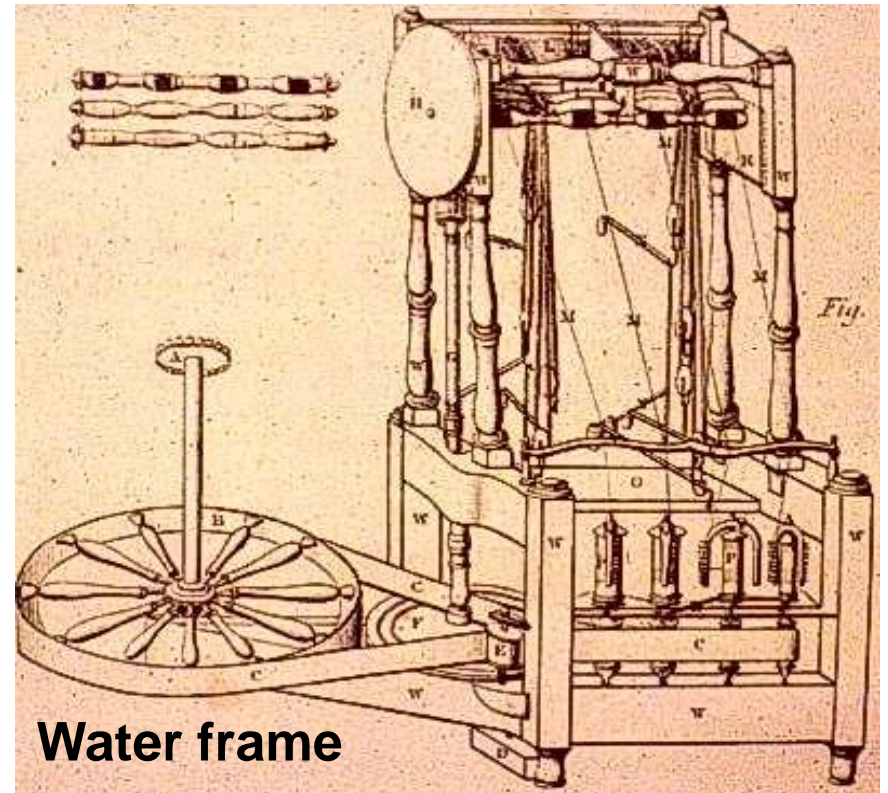
- Weavers work faster with flying shuttles, spinning jennies
- Water frame uses water power to drive spinning wheels



Flying shuttle



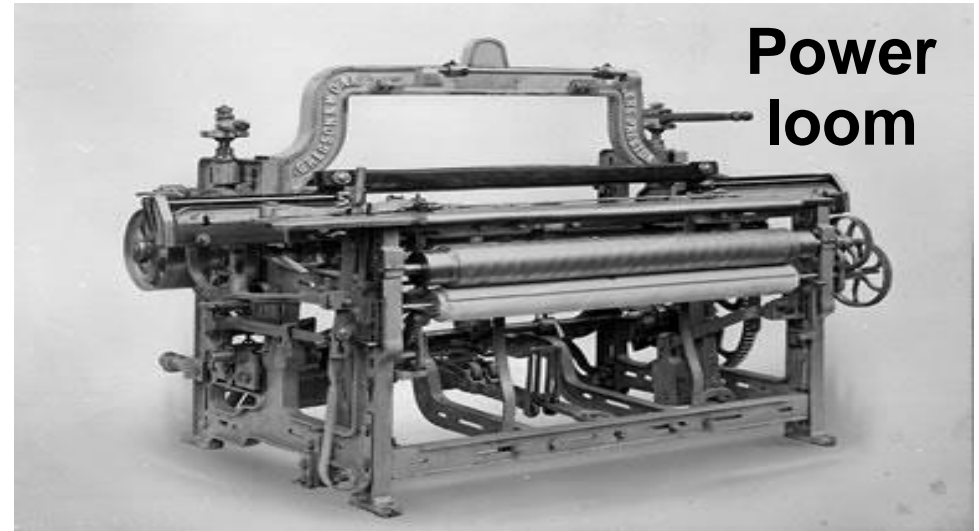
Spinning Jenny



Water frame

continued **Inventions Spur Industrialization**

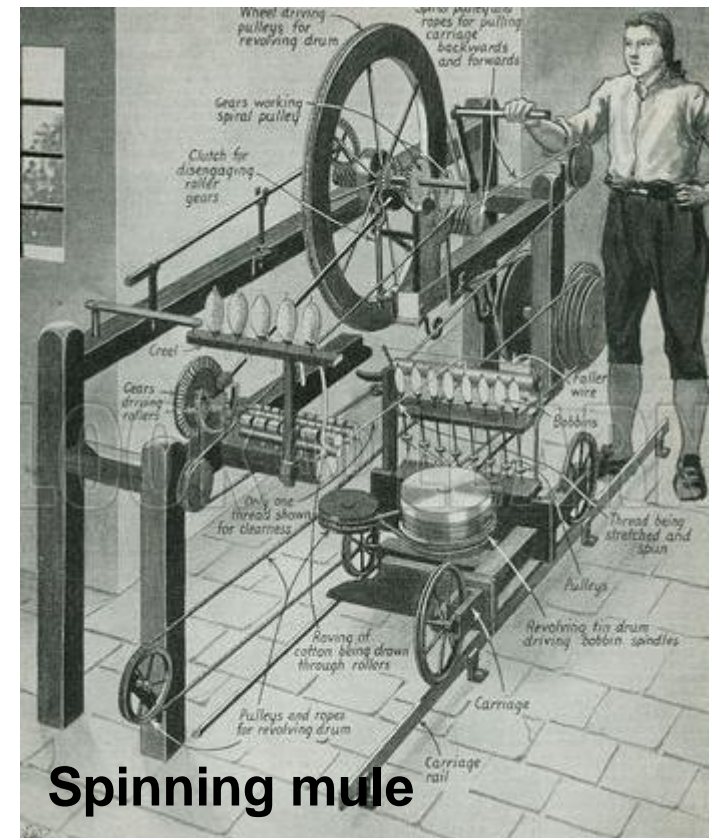
- Power loom, spinning mule speed up production, improve quality
- **Factories**— buildings that contain machinery for manufacturing
- Cotton gin boosts American cotton production to meet British demand



Power loom



Cotton gin



Spinning mule

Improvements in Transportation

Watt's Steam Engine

- Need for cheap, convenient power spurs development of steam engine
- James Watt improves steam engine, financed by

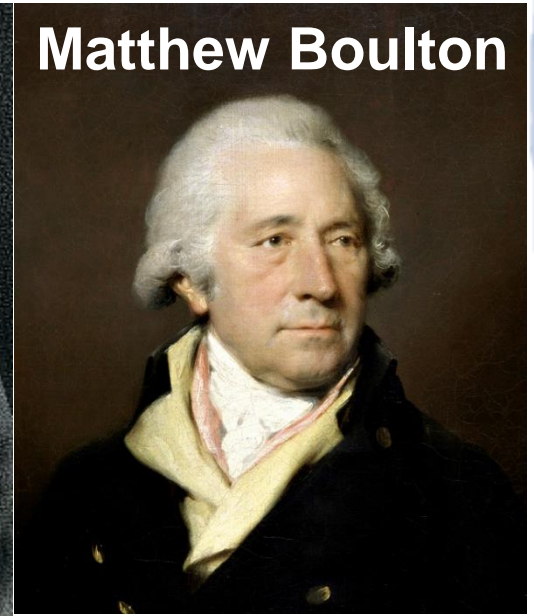
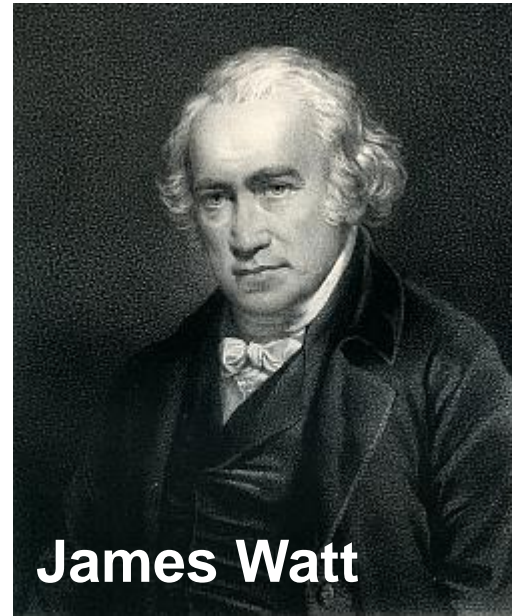
entrepreneur Matthew Boulton

Water Transportation

- 1807: Robert Fulton builds first steamboat, the *Clermont*
- 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

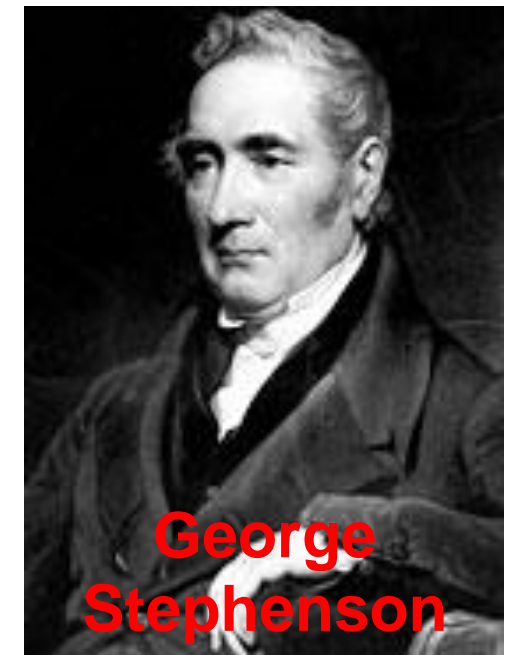
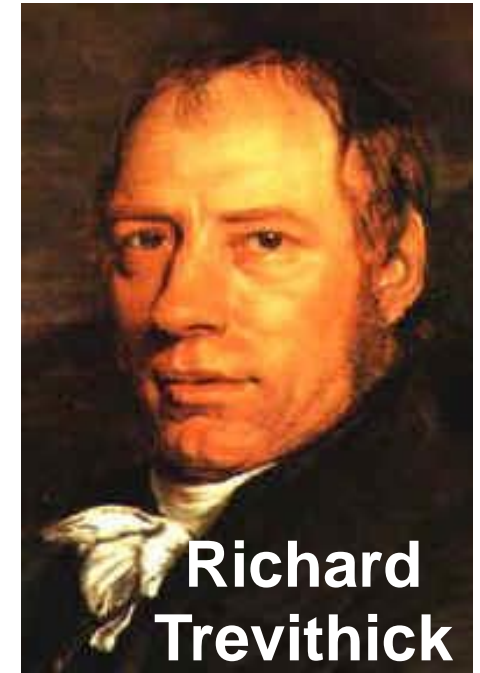
- 1804: Richard Trevithick builds first steam-driven locomotive
- 1825: George Stephenson builds world's first railroad line

The Liverpool-Manchester Railroad

- Entrepreneurs build railroad from Liverpool to Manchester
- 1829: Stephenson's *Rocket* acknowledged as best locomotive

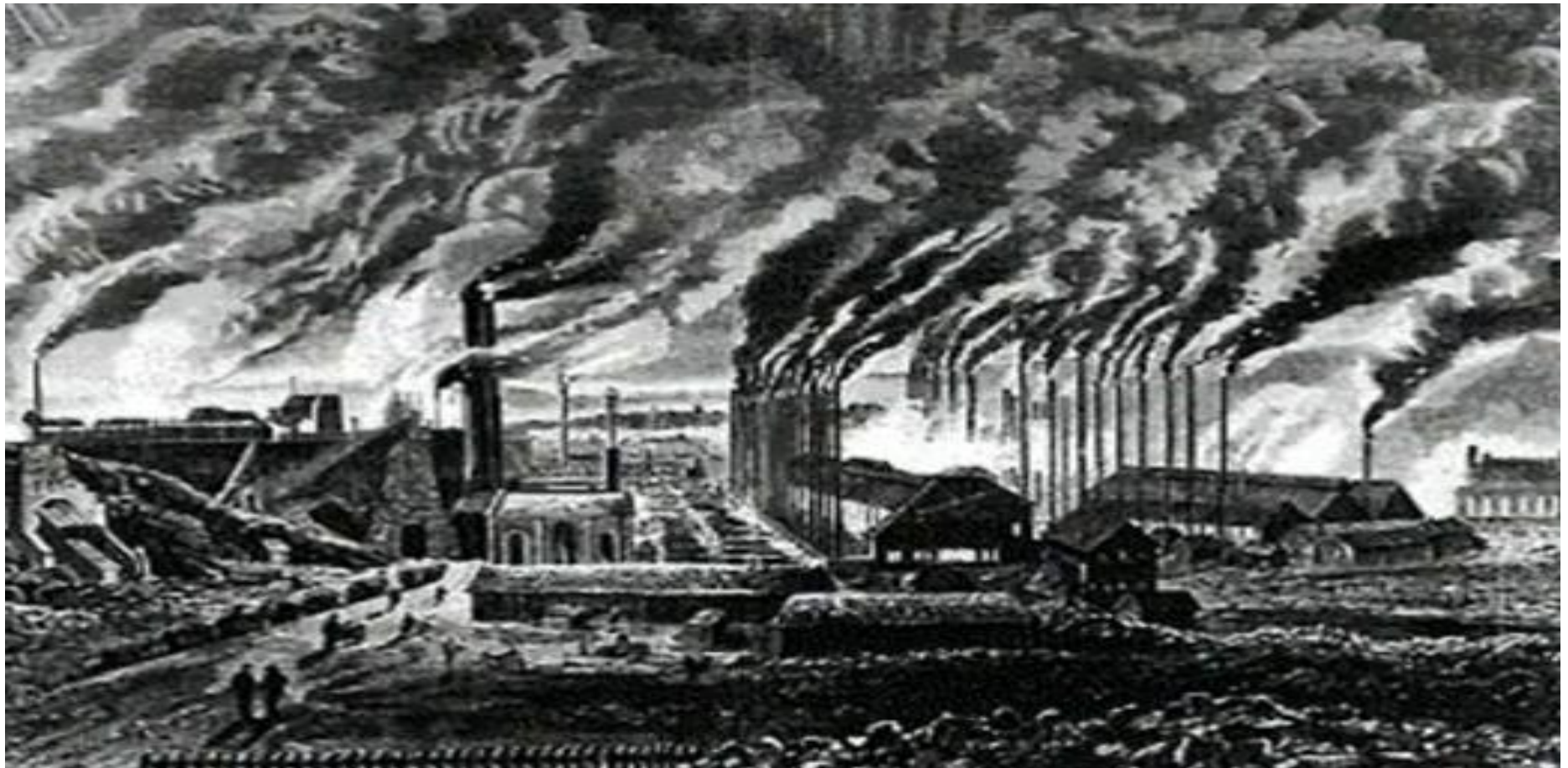
Railroads Revolutionize Life in Britain

- RRs 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
work force, market for factory
goods
- British industrial cities:
London, Birmingham,
Manchester, Liverpool



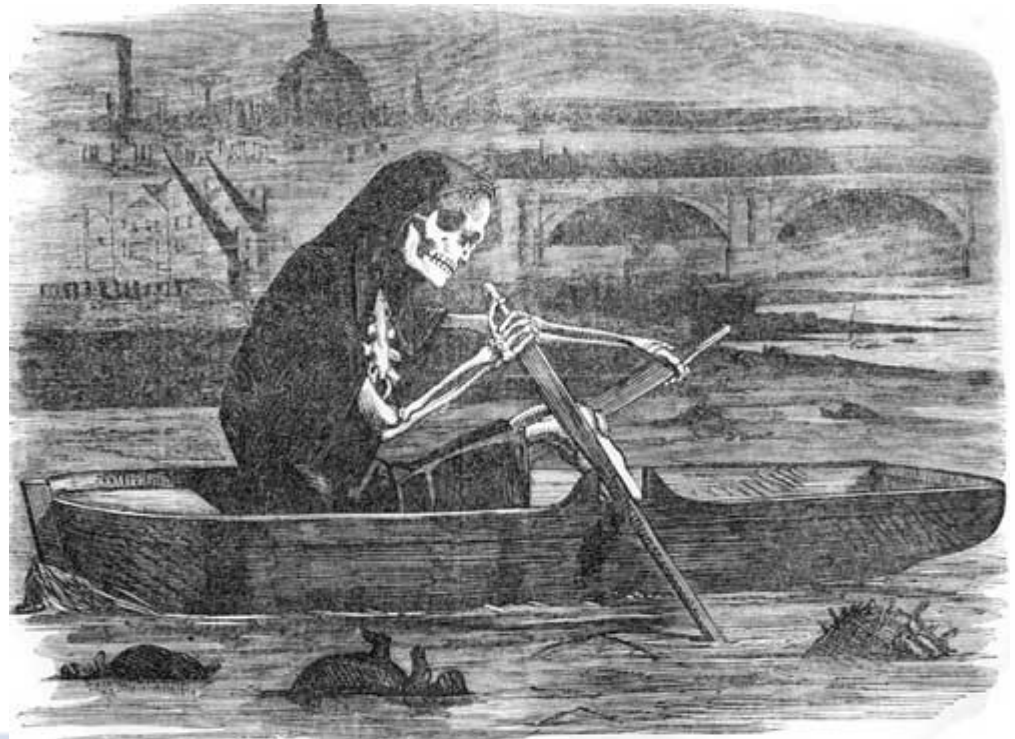
continued **Industrialization**
Changes Life

Living Conditions

- Sickness widespread; epidemics, like cholera, sweep urban slums
- Life span in one large city is only 17 years, while wealthy merchants, factory owners live in luxurious suburban homes
- Rapidly growing cities lack sanitary codes, building codes, adequate housing, education, and fire/police protection

Working Conditions

- Average work day 14 hrs./day, 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

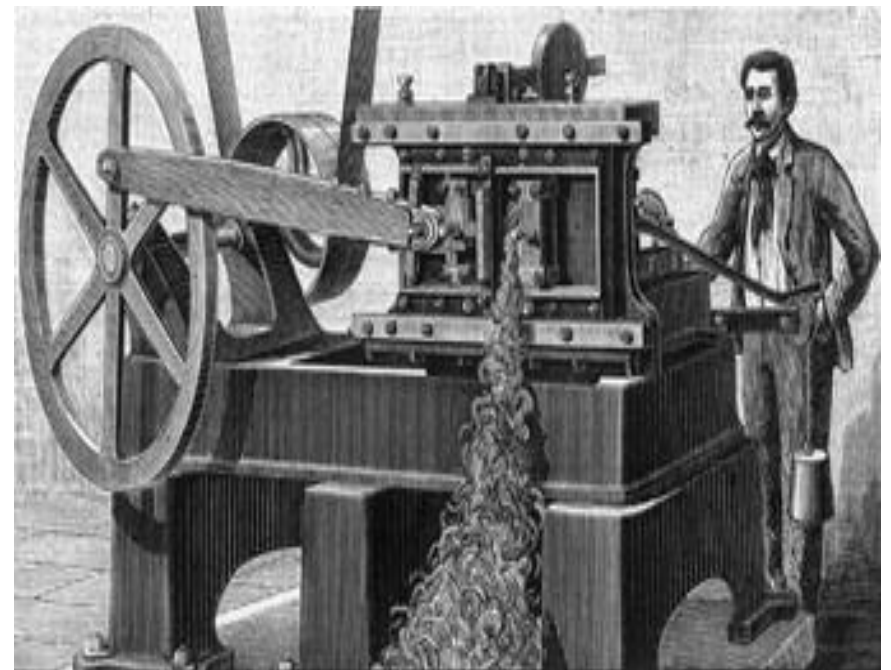
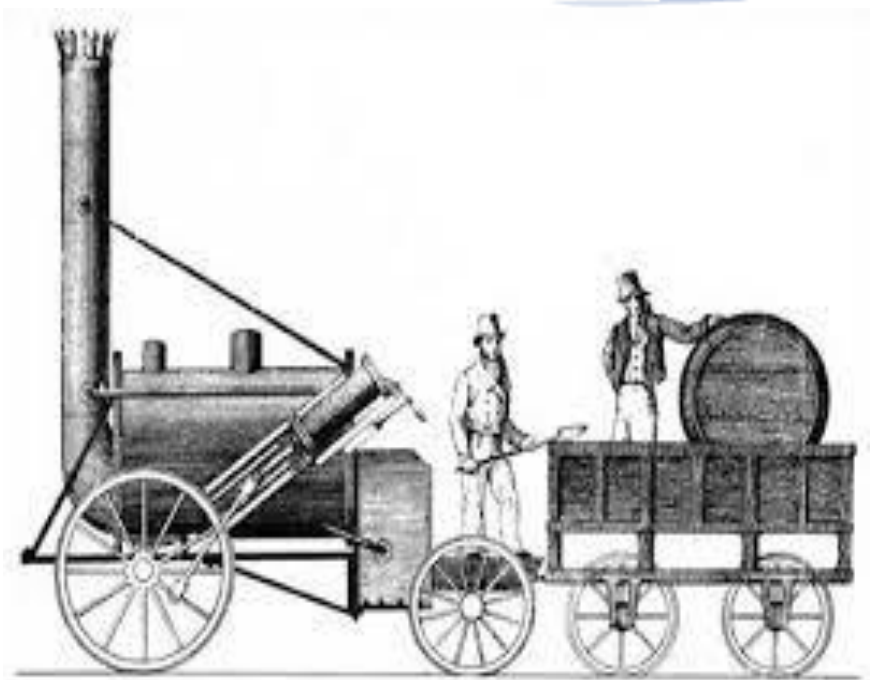
Positive Effects of the Industrial Revolution

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



The Mills of Manchester

Manchester and the Industrial Revolution

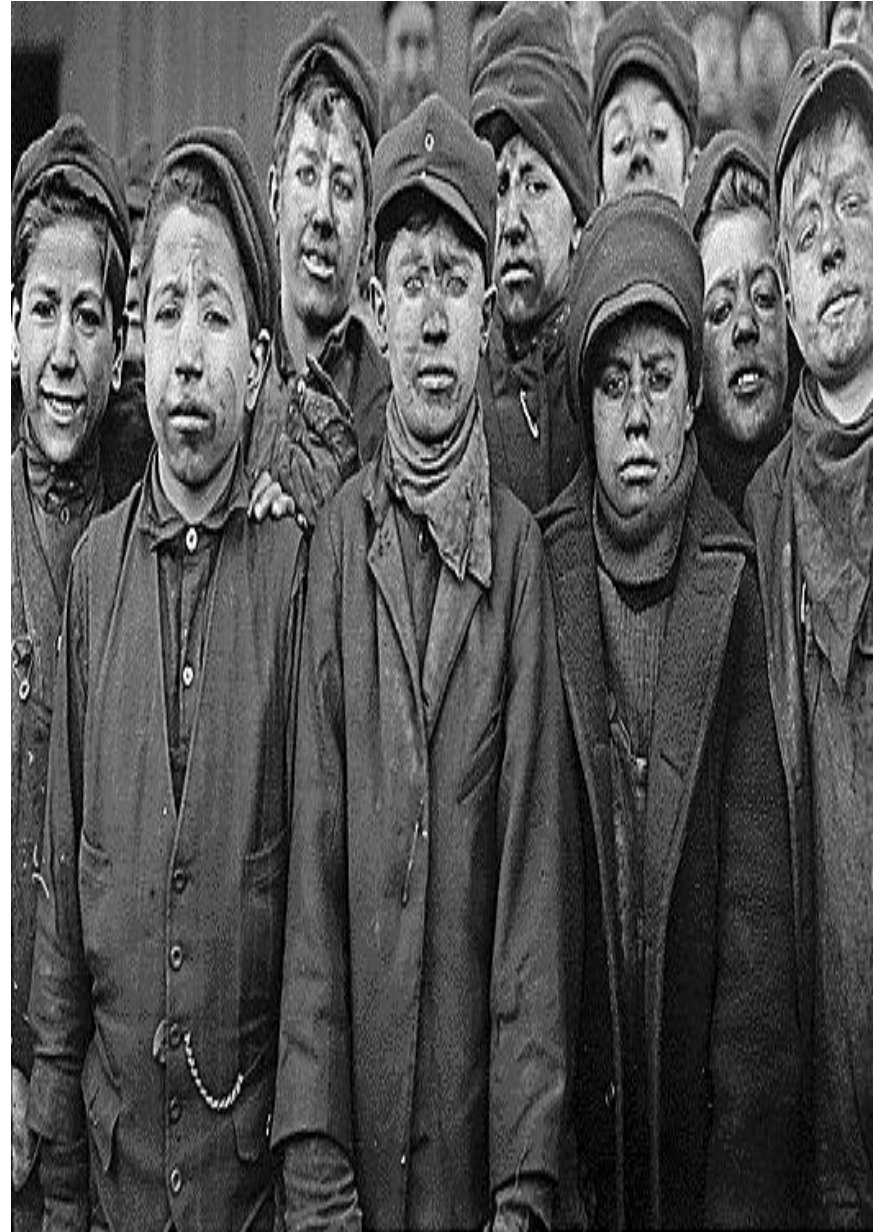
- Manchester has labor, water power, nearby port at Liverpool
- Poor live and work in unhealthy, even dangerous, environment
- Business owners make profits by risking their own money on factories
- Eventually, working class sees its standard of living rise some



continued **The Mills
of Manchester**

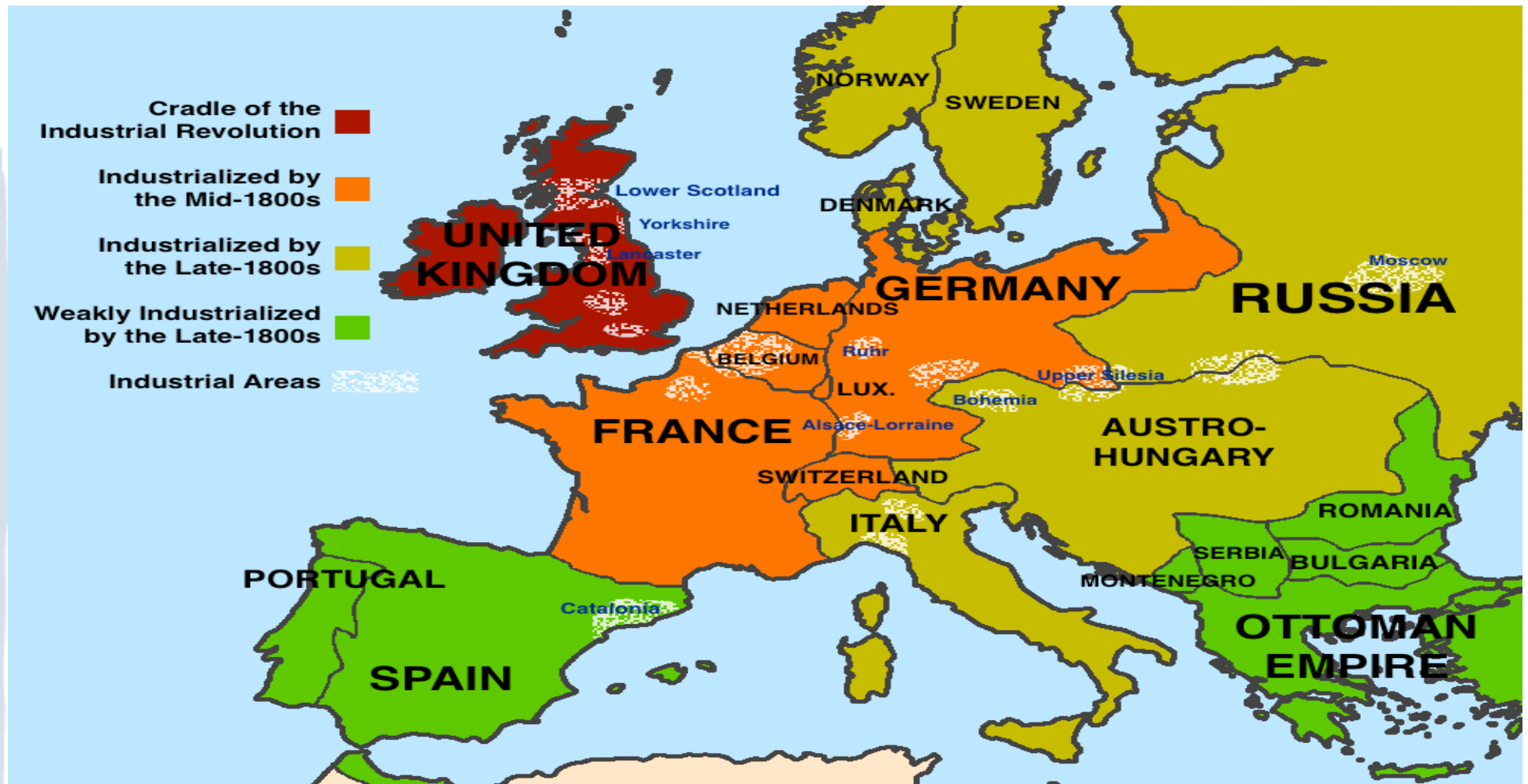
**Children in Manchester
Factories**

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



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, MA a mechanized textile center by 1820; manufacturing towns spring up around factories across the country
- Young single women flock to factory towns, work in textiles
- Clothing, shoemaking industries soon mechanize



continued **Industrial Development in the United States**

Later Expansion of U.S. Industry

- Industrialization picks up during post-Civil War technology boom
- Cities like Chicago expand rapidly due to location on RR 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, with fewer urbanization problems; agriculture remains strong

The Impact of Industrialization

Rise of Global Inequality

- Wealth gap grows; non-industrialized countries lag further
- European powers, U.S., Japan exploit colonies for resources
- Imperialism spreads due to need for raw materials, markets

Transformation of Society

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



Section 4: Reforming the Industrial World

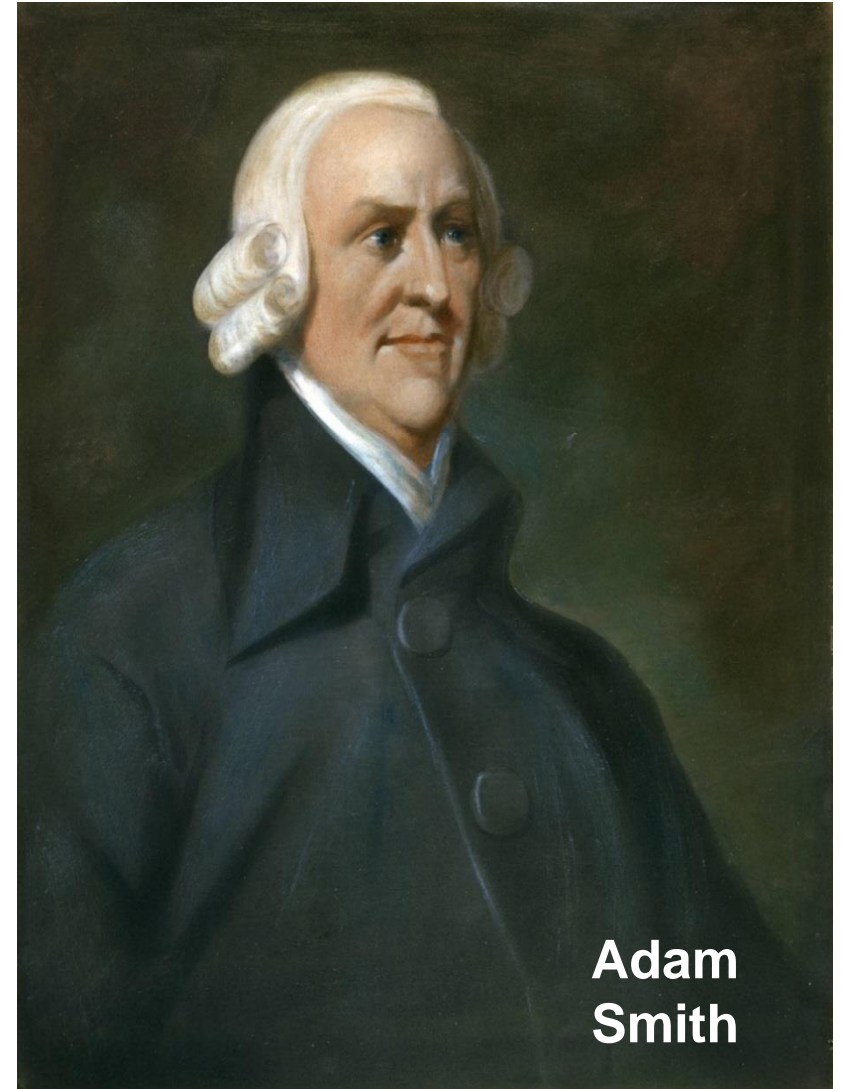
The Industrial Revolution leads to economic, social, and political reforms.



The Philosophers of Industrialization

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

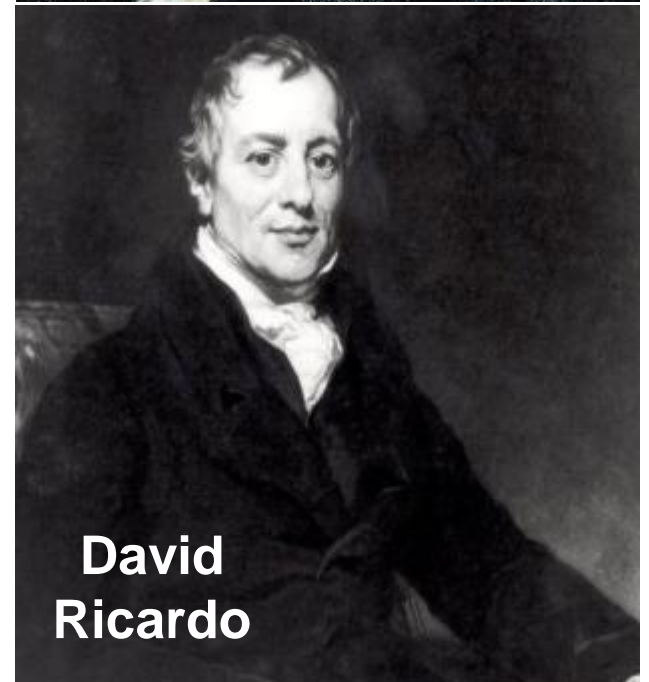
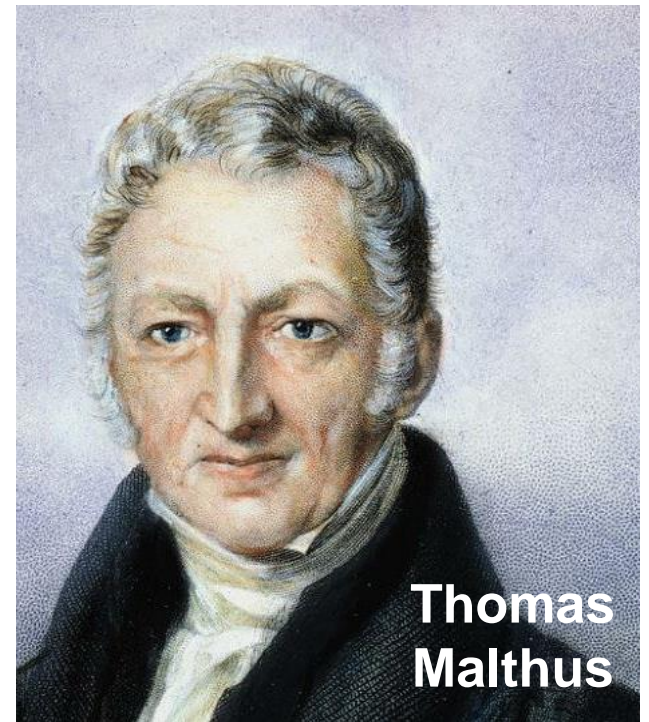


Adam
Smith

continued **The Philosophers of Industrialization**

The Economists of Capitalism

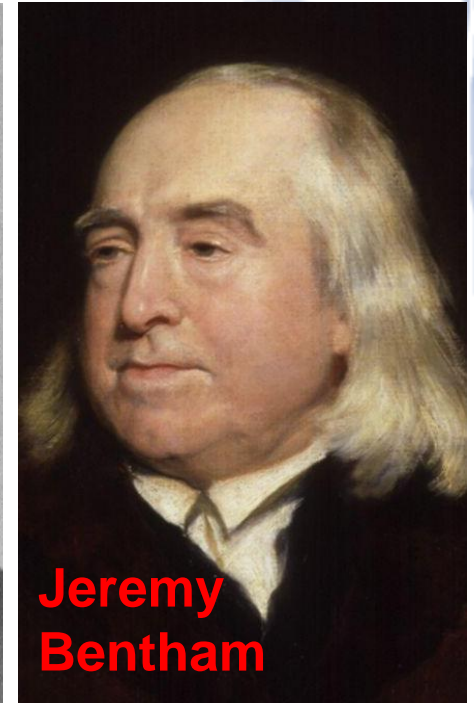
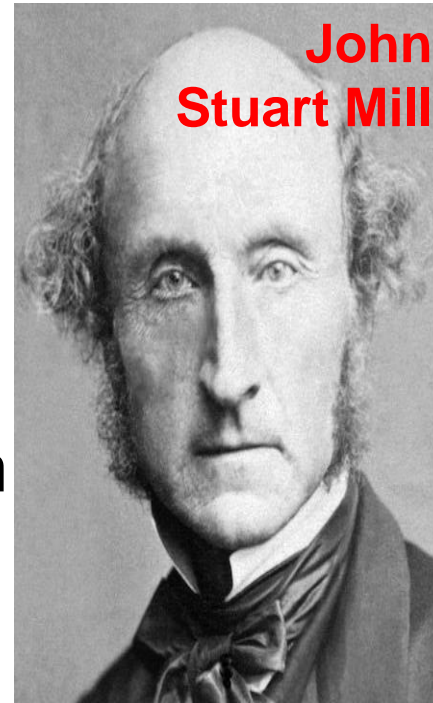
- Thomas Malthus, David Ricardo boost laissez-faire capitalism
- **Capitalism**— system of privately owned businesses seeking profits
- Malthus thinks populations grow faster than food supply
- Wars, epidemics kill off extra people or misery and poverty result
- Ricardo envisions a permanent, poor underclass providing cheap labor



The Rise of Socialism

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
- 1824: Owen founds utopian community, New Harmony, IN

Socialism

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



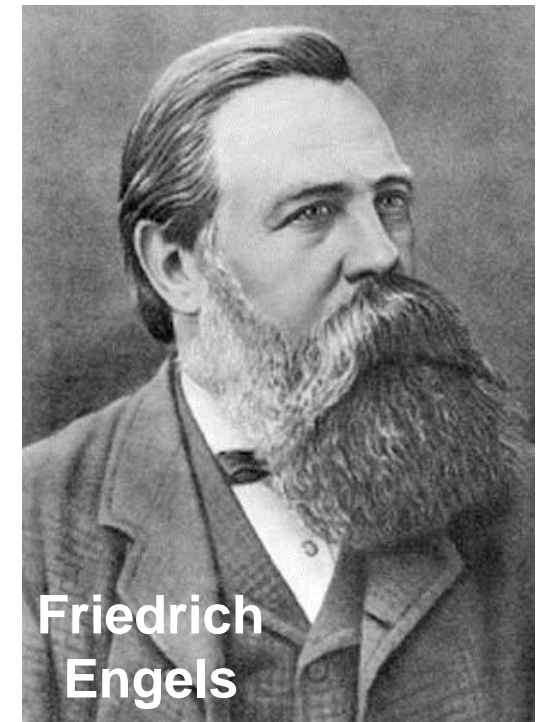
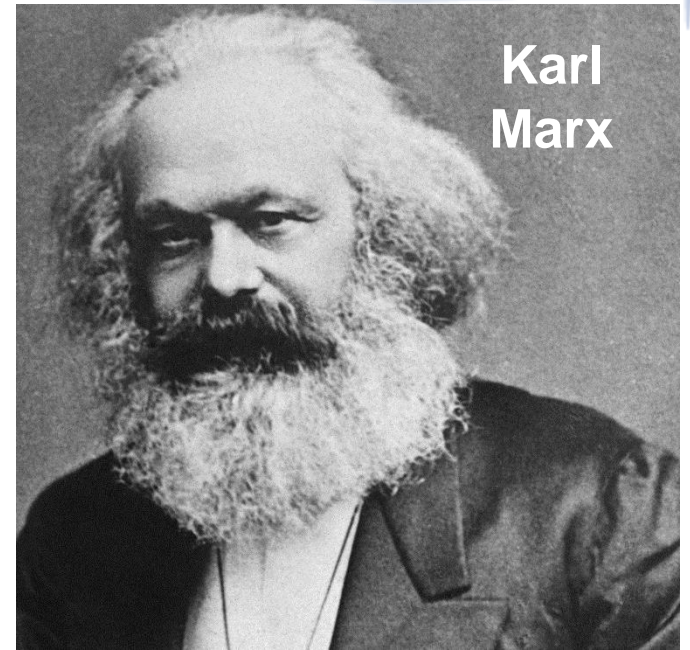
Marxism: Radical Socialism

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

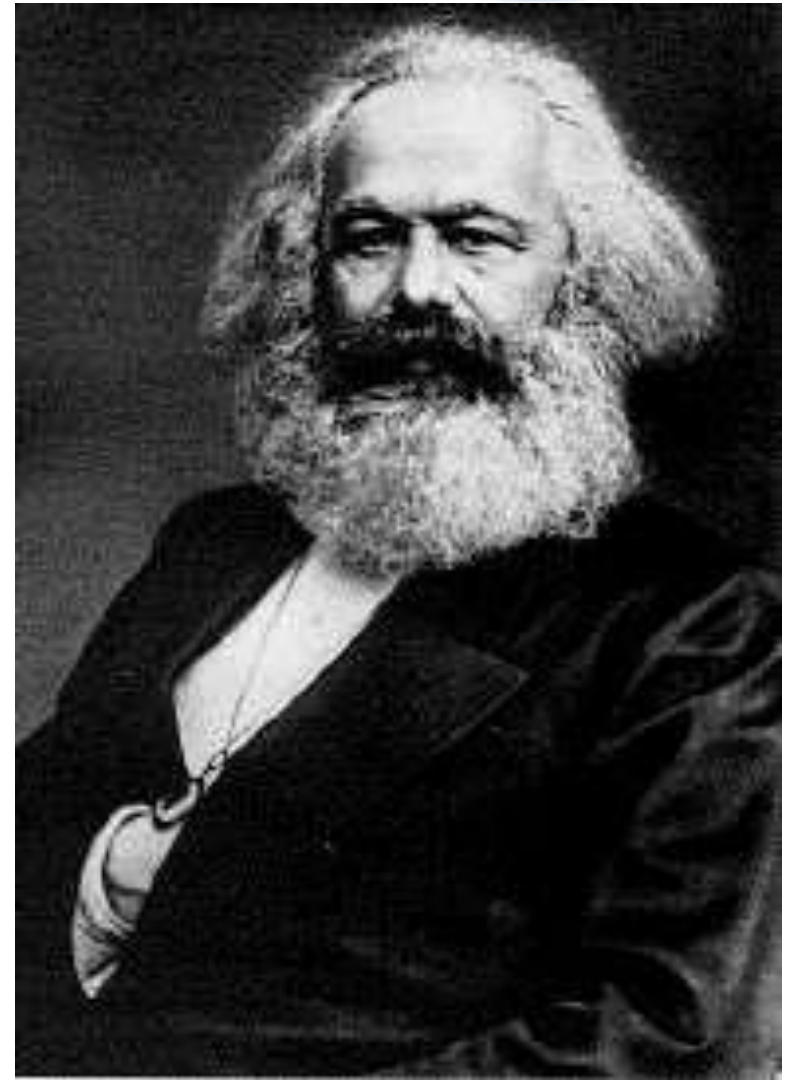
- Marx and Engels believe society is divided into warring classes
- Capitalism helps “haves,” the employers known as the bourgeoisie
- Hurts “have-nots,” the workers known as the proletariat
- Marx, Engels predict the workers will overthrow the owners



continued **Marxism: Radical
Socialism**

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

continued **Labor Unions and Reform Laws**

Reform Laws

- British, U.S. laws passed to stop worst abuses of industrialization
- 1842 Mines Act in Britain stops women, children working underground
- 1847: Workday for women, kids limited to 10 hours in Britain
- 1904: U.S. ends child labor, sets maximum hours