IDX G10 [History][S]
Study Guide Issue 2
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Chapter 19.1: Dawn of the Industrial Age

Key Terms: Industrial Revolution, **enclosure**, **agricultural revolution**, **crop rotation**, **James Watt**, **smelt**, **capital**, **entrepreneur**.

- **Life Changes as Industry Spreads**
  - Pre-1750: Most people lived and worked on farms in rural villages.
  - Post-Industrial Revolution: People moved to cities for factory jobs. Small villages grew into industrial towns and cities.
- **Agriculture Spurs Industry**
  - The **Agricultural Revolution** was a key cause of the Industrial Revolution.
  - **Farming Methods Improve**: New techniques like **crop rotation** and the seed drill increased food yields.
  - **Enclosure Increases Output, Causes Migration**: **Enclosure** was the process of taking over and consolidating land once shared by peasant farmers.
    - Positive Effect: Farm output and profits rose.
    - Negative Effect: Farm laborers lost jobs and land, forcing them to migrate to cities for work.
  - **Population Multiplies**: A surplus of food and better diet led to a rapid population growth.
- **New Technology Becomes Key**
  - **An Energy Revolution**: The **steam engine**, improved by **James Watt**, became a key power source using coal.

- **Quality of Iron Improves**: The Darby family used coal to **smelt** (separate) iron from its ore, producing cheaper, better-quality iron for machines.

Review & Analysis:

- **Q:** How did the agricultural revolution contribute to the Industrial Revolution?
  - **A:** It increased the food supply, leading to population growth. It also displaced farm workers, creating a ready labor force for city factories.
- **Q:** Identify two new technologies that helped trigger the Industrial Revolution and explain their impact.
  - **A:** The steam engine provided a reliable power source for factories and transportation. Improved iron smelting produced the strong, affordable metal needed to build machines, engines, and railroads.

Chapter 19.2: Britain Leads the Way

Key Terms: putting-out system, **Eli Whitney**, **cotton gin**, **factory**, **turnpike**, **entrepreneur**.

- **Why Britain?**
  - **Natural Resources Abound**: Had large supplies of coal and iron, plus rivers for water power and transport.
  - **Effects of Demand and Capital**: A growing population created demand for goods. Profits from trade provided **capital** (investment money). **Entrepreneurs** invested in new businesses.
  - Strong navy and stable government protected trade and economic growth.
- **Textile Industry Advances**
  - **Inventions Speed Production**: The **putting-out system** (home-based cloth making) was too slow. Inventions like the spinning jenny and water frame sped up production.
  - **Factories Are Born**: To house large machines, manufacturers built the first **factories**, bringing workers to a central location.
  - **American Impact**: **Eli Whitney's cotton gin** increased the supply of raw cotton for British mills.
- **Transportation Revolution**
  - **Canals and Turnpikes**: Built to move goods faster and cheaper.
  - **Steam Locomotive**: The invention of the steam-powered train revolutionized land transport (e.g., Liverpool to Manchester railway, 1830).

Review & Analysis:

- **Q:** How did the factory system differ from the putting-out system?
    - **A:** In the putting-out system, workers made goods at home at their own pace. In the factory system, workers had to come to a central location and work long, rigid hours set by machines and a clock.
- **Q:** Why was the development of railroads important to industrialization?
    - **A:** Railroads provided a fast, cheap, and reliable way to transport raw materials to factories and finished goods to markets, linking the entire economy.

Chapter 19.3: Social Impact of the Industrial Revolution

Key Terms: urbanization, **tenement**, **labor union**, **Luddite**, **standard of living**.

- **People Move to New Industrial Cities**
    - **Urbanization**: The movement of people to cities for factory jobs.
- **New Social Classes Emerge**
    - **The Industrial Middle Class**: Entrepreneurs and factory owners who gained wealth.
    - **The Industrial Working Class**: Factory and mine workers who lived in poverty.
    - **Workers Stage Futile Protests**: Some, like the **Luddites**, smashed machines in protest.
    - **Workers Find Comfort in Religion**: Movements like Methodism provided community and hope.
- **Life in the Factories and Mines**
    - **Harsh Conditions**: 12-16 hour days, 6-7 days a week. Dangerous machinery with no safety devices. Low pay, especially for women and children.
    - **Worse Conditions in Mines**: Danger of cave-ins, explosions, and lung disease.
    - **Child Labor**: Children as young as 5-7 worked in dangerous jobs.
- **Results of Industrialization**
    - **Negative (Harms)**: Pollution, slums (**tenements**), disease, child labor, wide gap between rich and poor.
    - **Positive (Benefits)**: Creation of jobs, eventual rise in **standard of living**, cheaper goods, technological progress.

- **Reforms**: Workers formed **labor unions** to bargain for better conditions. Eventually, laws were passed to limit child labor, improve safety, and regulate hours.

Review & Analysis:

- **Q:** Why was the Industrial Revolution seen as both a blessing and a curse?
  - **A:** It was a **curse** due to immediate human suffering: terrible urban slums, dangerous work, and poverty for the laboring class. It was a **blessing** in the long term, creating economic growth, new technologies, a higher standard of living, and more available goods.
- **Q:** How did the nature of work change mentally and physically for a farmer who moved to a factory?
  - **A: Mentally**: Work changed from varied seasonal tasks to boring, repetitive machine operation. **Physically**: It changed from active outdoor labor to long hours of standing indoors, with new dangers from machinery.

Chapter 21.1: The Industrial Revolution Spreads

Key Terms: Henry Bessemer, **Alfred Nobel**, **Thomas Edison**, **dynamo**, **assembly line**, **stock**, **corporation**, **monopoly/cartel**.

- **New Industrial Powers Emerge**
  - **Why Others Caught Up**: Nations like Germany and the U.S. had abundant resources (coal/iron) and could borrow British technology.
  - **Uneven Development**: Some nations (e.g., Russia, parts of Southern Europe) industrialized slowly due to lack of resources or capital.
- **Technology Sparks Industrial Growth**
  - **Steel**: The **Bessemer** process made steel cheap and strong, essential for construction and railroads.
  - **Chemistry**: New products like **dynamite** (**Alfred Nobel**) and fertilizers were invented.
  - **Electric Power Replaces Steam**: **Thomas Edison's** light bulb and the **dynamo** (generator) allowed factories to run day and night.
  - **New Methods of Production**: **Interchangeable parts** and the **assembly line** (pioneered by Henry Ford) made production faster and cheaper.
- **Transportation & Communication Advances**

    - **Automobile**: Internal combustion engine led to cars.
    - **Airplanes**: Wright brothers achieved first flight.
    - **Communication**: Telegraph, telephone (Alexander Graham Bell), and radio (**Guglielmo Marconi**) sped up information exchange.
- **Business Takes a New Direction**
    - **Rise of Big Business**: New technologies required lots of capital, leading to **corporations** that sold **stock** (shares).
    - **Move Toward Monopolies/Cartels**: Large companies like Standard Oil (Rockefeller) tried to control entire industries to eliminate competition.
    - **Move Toward Regulation**: Critics saw moguls as "robber barons." Governments eventually began passing anti-monopoly laws.

Review & Analysis:

- **Q:** How did steel, electricity, and the assembly line each transform industry?
    - **A: Steel** provided a stronger material for building. **Electricity** offered a cleaner, more flexible power source than steam. The **assembly line** drastically increased the speed and lowered the cost of manufacturing.
- **Q:** Were big business leaders "captains of industry" or "robber barons"?
    - **A: Captains of industry**: They created jobs, built infrastructure, and advanced the economy. **Robber barons**: They used ruthless tactics to crush competition, create monopolies, and exploit workers.

Chapter 21.2: The Rise of the Cities

Key Terms: germ theory, **Louis Pasteur**, **Robert Koch**, **Florence Nightingale**, **Joseph Lister**, **urban renewal**, **mutual-aid society**.

- **Medicine Contributes to Population Explosion**
    - **Fight Against Disease**: **Louis Pasteur** proved **germ theory**. **Robert Koch** identified disease-causing bacteria. This led to better hygiene.
    - **Hospital Care Improves**: **Florence Nightingale** improved sanitation in hospitals. **Joseph Lister** introduced antiseptics to prevent infection.
- **City Life Changes**
    - **City Landscapes Change**: **Urban renewal** projects (like in Paris) replaced slums with wide boulevards.

    - **Sidewalks, Sewers, and Skyscrapers**: Paved streets, sewers, streetlights, and steel-frame **skyscrapers** made cities cleaner, safer, and more modern.
    - **Slum Conditions & The Lure of the City**: Despite improvements, poor **tenement** slums persisted. People were still drawn to cities for jobs, entertainment, and education.
- **Working Class Advances**
    - **Labor Unions Grow**: Workers organized **unions** and used strikes to demand better pay and conditions.
    - **Standards of Living Rise Gradually**: Wages eventually increased, diets improved, and mass-produced goods became affordable.

Review & Analysis:

- **Q:** How did advances in medicine and public sanitation increase population and improve city life?
    - **A:** Germ theory and antiseptics reduced deaths from disease. Sewer systems and clean water supplies eliminated cholera epidemics. These changes caused the death rate to fall, making cities healthier and populations grow.
- **Q:** Describe the cycle of reform that began to improve conditions for the working class.
    - **A:** Harsh conditions → worker frustration → formation of **labor unions** and **mutual-aid societies** → strikes and protests → gaining political power (right to vote) → pressure on governments → passage of reform laws (regulating hours, safety, child labor).