CHAPTER 23 AGE OF INDUSTRY

SECTION 1 Living From the Land

- Before industrial Revolution of 1700s-life mostly unchanged for hundreds yrs.
  - Seasons & religious traditions measure time
  - Agriculture way of making a living
  - Rich & poor families small because poor medical care
    - 50% reached 21 & life expectancy 40
  - 25% Europeans live in city

- Village life
  - Most pop. Farmers
  - Wealthy owned land &rented out to families
  - Farmers worked collectively
  - Private &public land not fenced off
    - Many used public land "commons" for livestock & crops
  - Economics depend on transportations
    - Transportation difficult & dangerous
  - Nearly self-sufficient
    - Grow own food/make own tools
  - Rich landowners-large estates with servants/many buildings
  - Common people-rented /small cottages/often shared space with livestock
    - All daily activities revolve around farming
      - All members work long hours

- Early industries
  - Coal mines /iron works /glass making
  - Many workers also did farm work
    - Work schedules made along agricultural cycle
      - Harvest time most industry put on hold
      - Winter industry ran & supplies income

  - Wool
    - Second only to farming
    - 1700s demand so great –merchants have people produce in own home
      - home production-domestic system-spread other goods
        - leather work/sewing
        - many stages &material go through many hands
        - merchant –weaver –fuller-dyer-merchant
        - workers set own pace & hours
          - able to go to other work in between

  - Coal
    - Much coal under farmlands
    - In off season laborers mine-men/women/children
    - Domestic system employed as well

- With extra $ people able to buy what they cannot make
- Craftspeople provided-weapons/*furniture*/clothing/imports

SECTION 2 THE BEGINNINGS OF CHANGE

- Landowner felt large fenced farms increase efficiency
    - Parliament passed laws allowing fencing private & common
    - Forced many village farmers to move to city for work
    - Began competition between landowners for production
        - Started crop rotation & genetic *engineering*
        - Mechanical seed planters-Jethro Tull
- Successful large farmers able invest $ into business & industries
- Former farmers supplied work force fro new industry
- Britain led way of industry because of capital-national resources- able
    - Capital-money gained through colonial trade in goods & slaves
        - Many invested $ in hopes for profit
    - National resources =-good harbors & water ways>hydro power
        - Large supplies iron & coal
- Labor supply-growing pop. Moving to cities
        - More & better food increased health leads

- Textile Industry
    - "flying shuttle" developed by John Kay 1733
        - allowed weaver to produce wider fabric in less time
        - out produced supply of wool yarn 1760s
    - "spinning Jenny" developed by James Hargreaves
        - spun wool treads 80 at a time vs. 7 for human
        - could still be done in a home
    - "water frame" developed by Richard Arkwright 1768
        - spun wool on large scale & powered by water
            - could run continuously
    - weavers need faster machinery
        - "power loom" developed by Edmunt Cartwright 1787
        - machine weaved not humans
    - cotton expensive because no fast way to clean seeds out
        - "cotton Gin" Eli Whitney 1793
            - clean 50 times faster than human

- Factories & Industry
    - New machines large & expensive & not able to use in village
    - Large buildings built near power & trans. House manufacturing
        - Factory system-organized production with managers watching
    - Machinery & transportation needed steel-not iron
        - William Kelly (American) and Henry Bessemer (British)
            - Both developed cheap way to make steel
    - Roads needed paved & drainage improved
    - Canals built between 1761 & 1870
    - 1801 (British) Richard Trevithick 1st steam powered carriage on wheels
        - 1804 locomotive using rails
    - 1807 (American) Robert Fulton 1st practical steamboat

- industrial espionage

- **SECTION 3 GROWTH OF INDUSTRY**
  - (British) kept machines & plans from being exported & not allow skilled workers leave
  - Fulton stole steam engine plans & Samuel Slater 1789 Industrial spinning wheel
  - British realize, not able to keep secrets moved to profit from *licensing* & building
    - Industrial revolution spread to Europe-U.S. & rest of world mostly
      - By 1870 U.S. rivaled Britain in industry

- Growth of big business
  - Free enterprise (capitalism) allowed major innovations
    - Much competition made business cost efficient
      - Good & bad
  - Industrial capitalism-continually expanding factories & investing
    - Profits used hire more & buy more equipment
  - Mass Production
    - Used to increase profits/machines replace workers
    - Multiple machines brought Interchangeable parts
      - Machine made & repaired easily
      - Hand-make parts not standard
    - Frederick Taylor developed idea, Division of Labor
      - Each worker do one specialized task
      - Product travel along conveyor belt
      - Assembly line born
      - Henry Ford 1st use on large scale, 1913 Model T
  - Corporations born
    - Just like joint stock company

- Science & Industry
  - Communications
    - 1830s Samuel Morse (American) telegraph
    - 1895 Gugliclomo Marconi (Italian) wireless telegraph
    - 1876 Alexander Graham Bell (American) credited with telephone
    - all brought world close together
  - Electricity
    - 1831 Michael Faraday (British) dynamo (generator)
    - Thomas Edison brought electricity & light to world
  - Engines
    - Late 1880 Gottlieb Daimler (German) internal combustion gas
    - Rudolf Diesel (German) internal combustion with oil & more powerful
    - Ferdinand von Zeppelin & Wright brothers use to propel flying machine
      - Needed of gas/oil/rubber skyrocketed industry

SECTION 4 A NEW SOCIETY

- The Rise of the Middle Class
  - Old middle class> bankers/lawyers/doctors/merchants
  - New Middle class>owners & officers of railroads/mines/factories
    - Clerks/mangers/teachers add to class
  - Late 1800s men made $ for family and women ran house

- Servants hired to do lowly work, wash, and maintain heat
  - Women began putting time into leisure
- Embroidering- meal planning-education of children
- Books-magazines produced to give instruction & advice
  - Children
- Boys trained in fathers business
- Girls learned cook, sew, learn to run house

- The Working Class
  - Few luxuries
  - 10 hour, 6 day per week jobs, 3 dollars a week
  - men, women, children work
  - dangerous work because focus on efficiency & speed
- dark/cramp/dirty conditions-disease spread
- no insurance & many accidents
- mines many collapses & dust
  - Workers lives
- Children employed because paid less than women
- Women able to earn meager living not rely on marriage
- Apartments-tenement housing
- Cold, cramped, no pluming, dirty
- Disease spread because no sanitation
  - Workers begin to unite
- Shop guilds existed for skilled laborers
- Not much protection & no protection for unskilled
- Labor unions bean to rise in late 1800s
- Fought for wages, safety, hours
- Used strikes to get results
- Usually turned violent on both sides
- Union supporters black listed & hurt
- In Britain Parliament passed combination Acts 1799 &1800 to stop battle
- 1820 agreed workers meet over wages & hours
- 1870s strikes legal tactic