New Technologies: 1850-1900

Railroads
By 1850: every industrializing country began to build railroads
- Tremendous railroad systems: Great Britain, France, Canada, Russia, Japan, and United States
- United States had largest in world by 1865

Non-Industrial World – railroads built if it benefited business or government

Railroads – consumed huge amounts of land, timber for railroad ties and bridges

Railroads – opened new land to agriculture, mining, other human needs

Mid-nineteenth century – development of faster and better ships
- sizes of ships increased too
- iron (and then steel) used for hulls, propellers, better engines

Shipping line – entrepreneurs used this for more efficient use of larger and expensive ships

Submarine telegraph cables – coordination of ships

Steel – elastic form of iron – only in small quantities by blacksmiths before 18th century

18th – 19th Centuries – inventions = large quantities of steel at low cost

Until late 18th Century – chemicals produced in small amounts in workshops
19th Century – large scale manufacture of chemicals and synthetic dyes and new organic chemicals developed

19th Century advances – explosives
Example: dynamite (inventor Alfred Nobel)
- Civil engineering
- Firearms
Industrial chemistry – becoming a major field

Germany – cooperation of universities and industries – government funded research
Made Germany most advanced in the world

Electricity:
1870s – efficient generators – mechanical energy into electricity
- arc lamps
- incandescent lamps
- streetcars
Electricity – alleviated urban pollution: horse-drawn vehicles
-Made streets less crowded
Created demand for copper
-Brought Chile, Montana, and southern Africa into the world economy

Thomas Edison (1847-1931):
-American inventor
-Best known for inventing the electric light bulb, acoustic recoding on wax cylinders, and motion pictures

World Trade and Finance:

1850-1913 – world trade increased 10 times
Freight costs dropped 50%-95%
Agriculture, raw materials, machinery – shipped around the world
Industrial areas of the world – interrelated business cycle

Financial powers of Great Britain = major interdependence of the world

Non-Industrial areas – more vulnerable to business cycle
Reason: depended on export of raw material (industrial nations could then change supply of using synthetic materials)

Until World War I, value of exports from tropical countries increased, size of population remained moderate

Social Changes:
Between 1850-1914: Europe experienced very rapid growth
-Emigration to United States, Canada, Australia, New Zealand, and Argentina
Result: European decent in world increased 1/5 to 1/3
-Death rate lowered
-Crop yields increased
-New sources of grain in North America
-Canning and refrigeration – year round diet

Asian migration increased
-Indentured servants
-Caribbean
-Brazil
-California
Late-19th Century: Europe, North America, Japanese cities increased tremendously in size and population
Great Britain: 80% of people lived in cities by 1914

English Midlands, German Ruhr, and Tokyo Bay all had towns that fused together and made new cities
Urban life developed:

Technology:
Mass transportation
Sewage
Water systems
Gas and electric
Police and fire departments
Sanitation
Garbage removal
Building and health inspection
Schools, parks, etc

New neighborhoods created, while other neighborhoods rebuilt
- rectangular grid pattern
- boulevards
- Modern apartment buildings
- Zoning: industrial, commercial, residential (different social classes)

Air quality lowered
- Coal – major source of fuel
Horse-drawn carts – animal waste
20th Century – replaced by street cars, automobiles – different form of pollution

Middle Class Women:

Victorian Age:
Period of English Queen Victoria (reign 1837-1901)
- Also referred to as rules of behavior
Ideology – family and relations between men and women
‘Separate spheres”: men – workplace; women – home

Refuge from competition in the world

Before electrical appliances – home demanded lots of work
Modern technology in 19th Century – eliminated some tasks – made some easier
- But increase in cleanliness standards – did not result in housewife total workload lessening
Most important duty – raise children
Victorian women – loved raising children
-But girls received different education than the boys

Government – legal discrimination of women – 19th Century
-Society – women with careers looked down upon

Women excluded from jobs that needed higher education
Teaching – women could enter profession, but gave up when they got married
-Teaching was an extension of motherly duties
Some women – volunteer work, women’s suffrage movement

Working class women:
Toil and pain
Domestic servants
Long hours
Physical labor
Sexual abuse
Young women – factories
Poorly paid jobs
Textiles and clothing trades

Married women – stayed home
Raised children
Housework
Took in boarders = increased income for family
Sewing
Washing other people’s clothes
Eventually laws tried to protect women from industrial abuse. These laws actually hurt women – denied access to better paid jobs, some of these jobs were dangerous