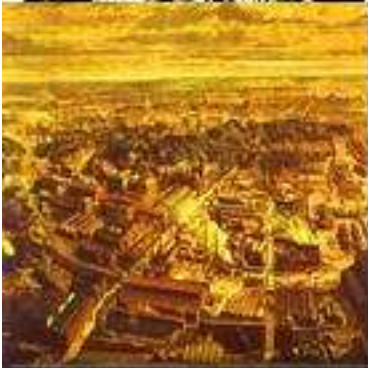


# Industrial Revolution Spreads

Ms. Ramos  
Alta Loma High School

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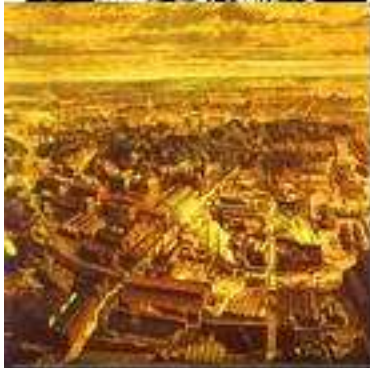
# New Industrial Pwrs Emerge

- Germany, US, France, Belgium
- Why?
  - Natural resources
  - Follow the UK



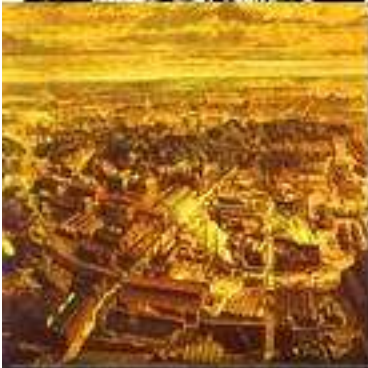


- By 1900, US leads IR
- Russia- slow
- Asia- Japan quick

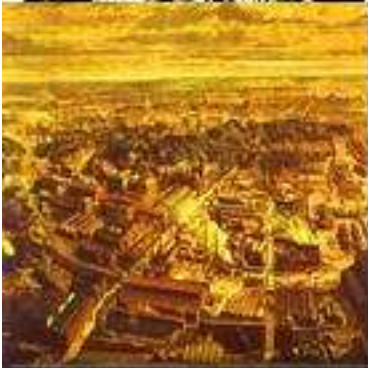


# Tech Sparks Growth





- Bessemer- steel process
- Alfred Nobel- dynamite
- Michael Faraday- elec motor
- Thomas Edison- light bulb



- Interchangeable parts--- increase efficiency

- Assembly line--- division of labor

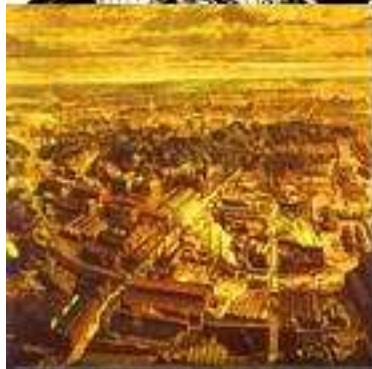




# Transport & Communication

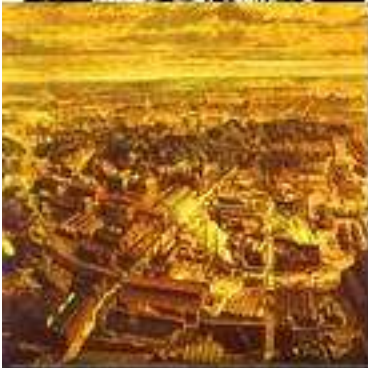


# RAILROADS!





# Automobiles



Karl Benz  
3 wheels

Gottlieb Daimler  
Four wheels

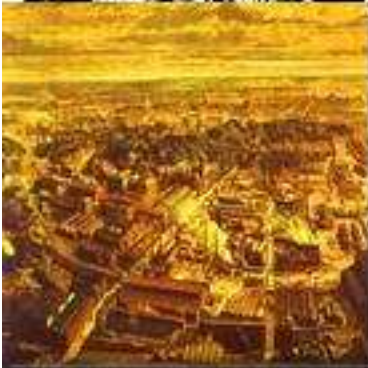
Henry Ford  
Mass produced  
& 25 mph!

Ms.Ramos

# Airplanes

Orville & Wilbur Wright  
Kitty Hawk

Commercial flight  
1920s



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# Advances in Transportation

## *Steam Powered Trains*

- Boats on canals, rivers best for long-distance travel, in early 1800s
- With development of efficient steam engines, trains replace boats
- Trains could carry heavy loads, traveled faster than watercraft
- World's first rail line, Britain 1830
- 3,000 miles of railroads, Eastern U.S. 1840

## *Improvements in Steel*

- **Bessemer process**, forcing air through molten metal to burn out impurities, strengthen steel
- Factories increased production of locomotives, tracks
- Stronger steel used to build bridges
- 30,000 mile network of railroads linking major American cities, 1860
- New railroads helped grow cities in American West

# Advances in Transportation

## *Rail technology around the world*

- India's first train, 1851
- First African railroad, Egypt 1852
- Trans-Siberian Railroad in Russia, world's longest, 1891

## *Travel and trade*

- Expansion of railroads increased markets
- Trains moved huge loads efficiently, transportation costs declined
- New products became available

## *Food products*

- Perishable foods could get to market before spoiling
- Frozen beef shipped by rail from west to east
- Shoppers had more food choices



# Advances in Transportation

## *Steamships*

- Steamships changed ocean travel
- Not dependent on wind, could travel through any weather
- U.S. steamship service began, west around South America to east, 1849
- Long distance movement of goods economically viable by 1870
- Passenger travel began shortly thereafter

## *The Automobile*

- First attempts, Europe 1769
- 1885-1886 Daimler and Benz developed practical automobiles
- Early U.S. autos too expensive
- **Henry Ford** built first affordable cars, mass production, 1908
- More roads than rail lines, 1915

## *The Airplane*

- **Wilbur and Orville Wright** flew first sustained powered flight, 1903
- Developed airplane over four years
- Glider-powered with internal combustion engine
- Paved the way for commercial, military airplanes

## Identifying Cause and Effect

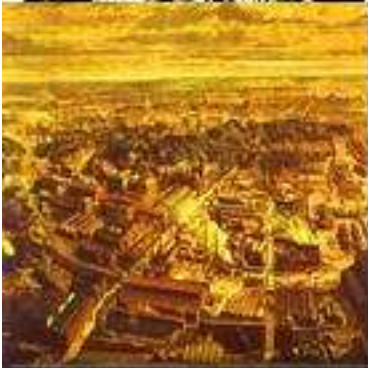
What effect did advances in transportation have on daily life?



## Identifying Cause and Effect

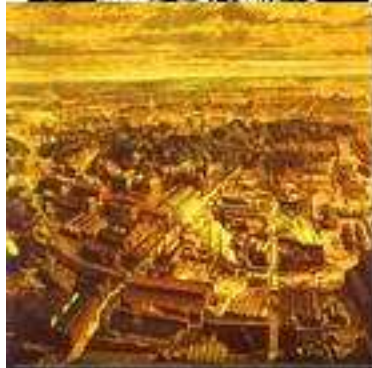
What effect did advances in transportation have on daily life?

**Answer(s):** better and faster means of transportation; made it possible to get more goods to market at lower costs, increasing consumers' choices



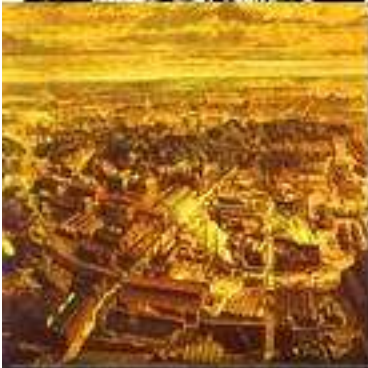
# Communication

- Samuel Morse- Telegraph
- Alexander Graham Bell- Telephone
- Trans-Atlantic cable
- Guglielmo Marconi- Radio



# "Big Business"



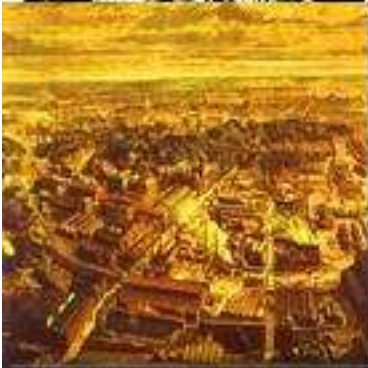


# Need for capital

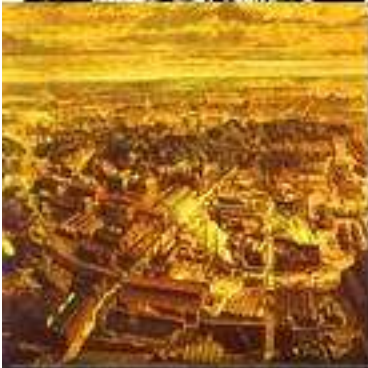
- Stock
  - Share in a company
- Corporations
  - Owned by many investors

# Monopolies

- Control industries/areas



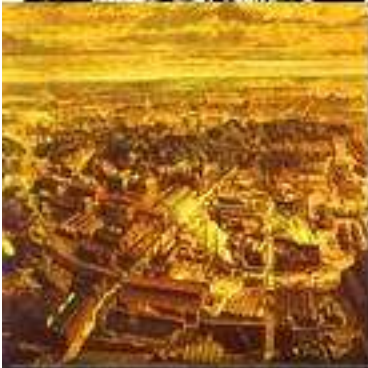




# Ex: Alfred Krupp

- Steel industry
- Buy supply lines
- Make tools, cars, weapons



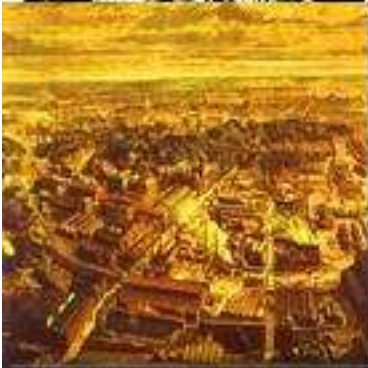


# EX: John D. Rockefeller

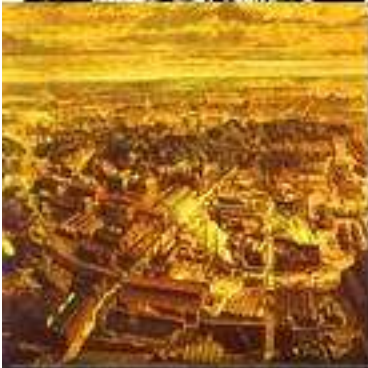
- Standard Oil Company
- Control wells, refineries, oil pipelines

# Cartels

- Business groups that fix prices, set production levels, control markets
- Forces out competition- then free to raise prices



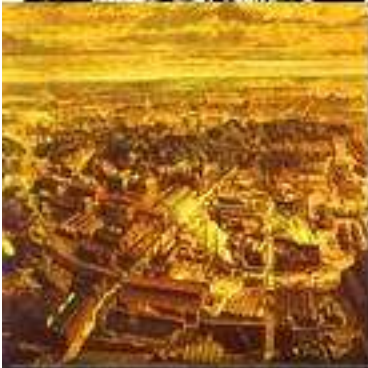




# Captains of Industry

- Vision and skill
- Employ workers & add to prosperity





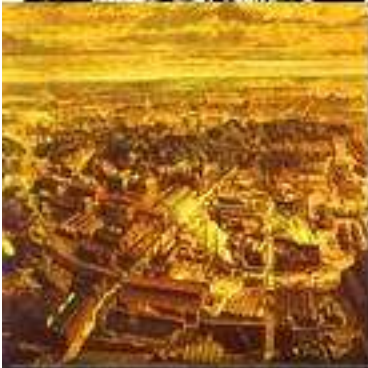
# Robber Barons

- Aggressive
- Destroy competition & damage free-enterprise



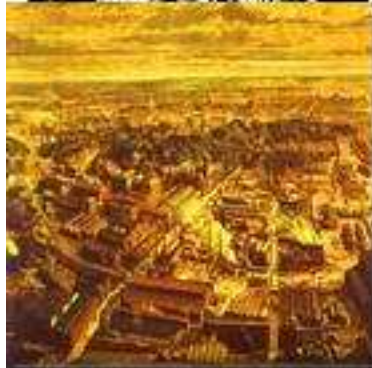
# Rise of Cities





# Medicine adds to pop explosion





# Louis Pasteur

- Germ theory
- Rabies & anthrax vaccine
- Pasteurization process

# Medical Breakthroughs

## *Preventing Disease*

- Breakthroughs in late 1800s as result of scientific advances earlier in century
- Fundamental concepts of disease, medical care, sanitation revealed
  - Mysteries of what caused diseases began to be solved

## *Microbes and Disease*

- **Louis Pasteur** showed link between the two, 1870
- Disproved spontaneous generation concept of bacteria from nonliving matter
  - Showed bacteria always present though unseen, can reproduce

## *Fermentation*

- Bacteria in the air causes grape juice to turn to wine, milk to sour
  - Heating liquids, foods can kill bacteria, prevent fermentation
- Process became known as **pasteurization**, makes foods germ-free

# Medical Breakthroughs

## *Anthrax*

- Deadly disease a constant threat to people, livestock
  - Pasteur sought to prevent anthrax
- Injected animals with vaccine containing weakened anthrax germs

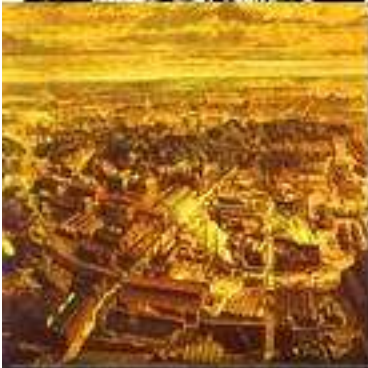
## *Antibodies*

- Vaccine worked because body builds antibodies
- Antibodies fight weakened germs when they enter body

## *Rabies*

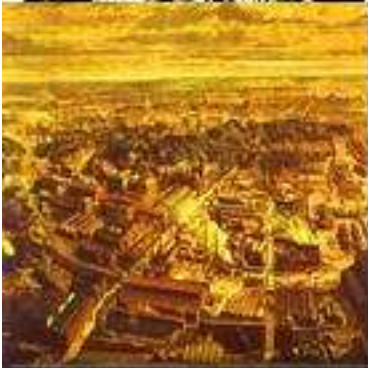
- Pasteur's next goal
- Developed vaccine, 1885
- Saved life of young boy bitten by rabid dog





# Microbe/bacteria traced

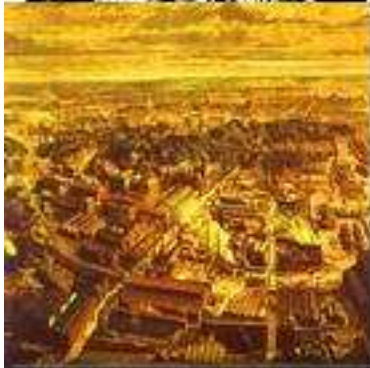
- Ex: Tuberculosis, Yellow Fever, Malaria
- Ppl improve hygiene & decrease disease rate



# Hospital Care Improves

- Anesthesia
- Hospitals filthy---infection





What UK nurse  
said, "the first  
requirement in a  
hospital is that it  
should do the sick  
no harm"?



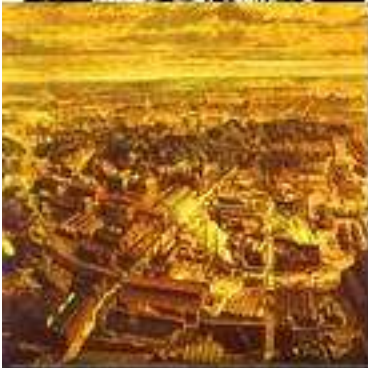
© Tony Northrup

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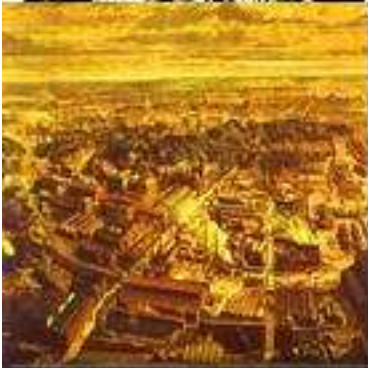


- Florence Nightingale
  - Intro sanitary measures
  - Est first school of nursing



- Joseph Lister
  - Antiseptics prevent infection
  - Sterilize instruments



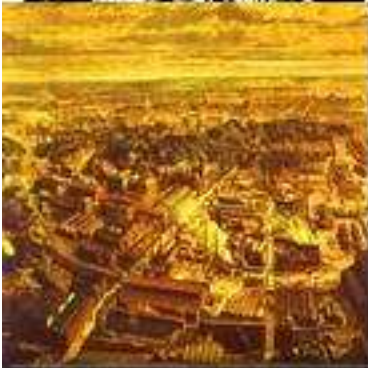


# City Life Changes

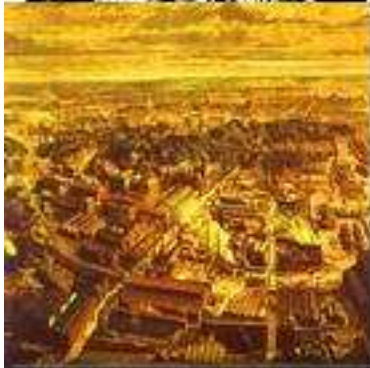


# Landscape

- Urban renewal
  - Rebuild poor areas
  - Wide boulevards
- Settlement shifts
  - Poor in city center
  - Trolleys make mvmt easier

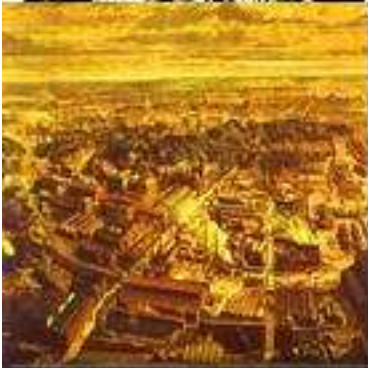






# City Changes

- Street lights
- Sewers- healthier, ↓ death
- Steel- build up
  - Louis Sullivan & skyscrapers



# Slum Conditions

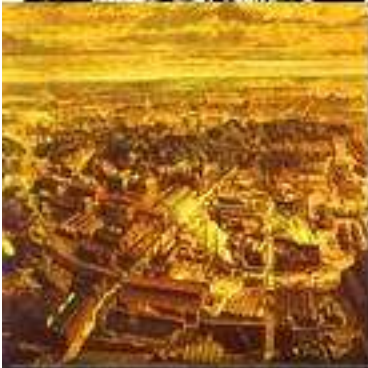
- Overcrowded
- Unemployment or injury could ruin a family
- High crime & alcoholism





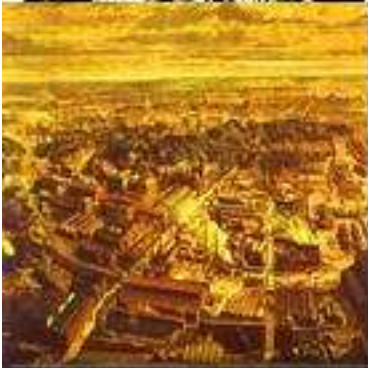
# Working Class Advances





# Standard of Living

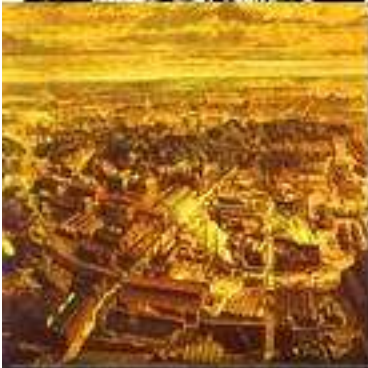
- Quality/avail of necessities & comfort
  - Diet varied
  - Better home & health
  - Manufactured clothes
  - Suburbs



# Labor Unions are Born

- Mutual-aid societies
  - Self-help groups for sick & injured workers
- Legalize unions late 1800s
  - Germany 1869
  - UK, Austria & France follow



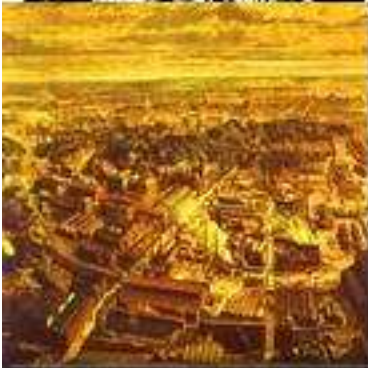


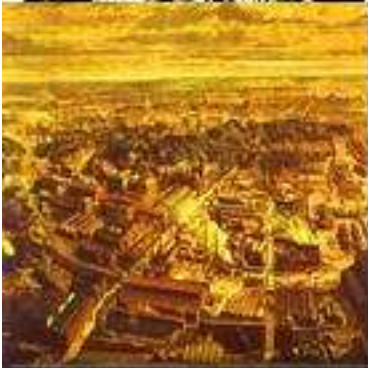
- Union Tactics
  - Work stoppage
  - Strike
  - Violence
- Pressure leads to new work laws



# New Laws

- No children under 10
- Ban women in mines
- Limit work hours & improve safety
- Old-age pensions
- Disability insurance





# Negatives of Working Class

- Skilled more \$
- Men more \$
- Periods of unemployment boosted union membership
- Bigger gap btwn workers & middle class