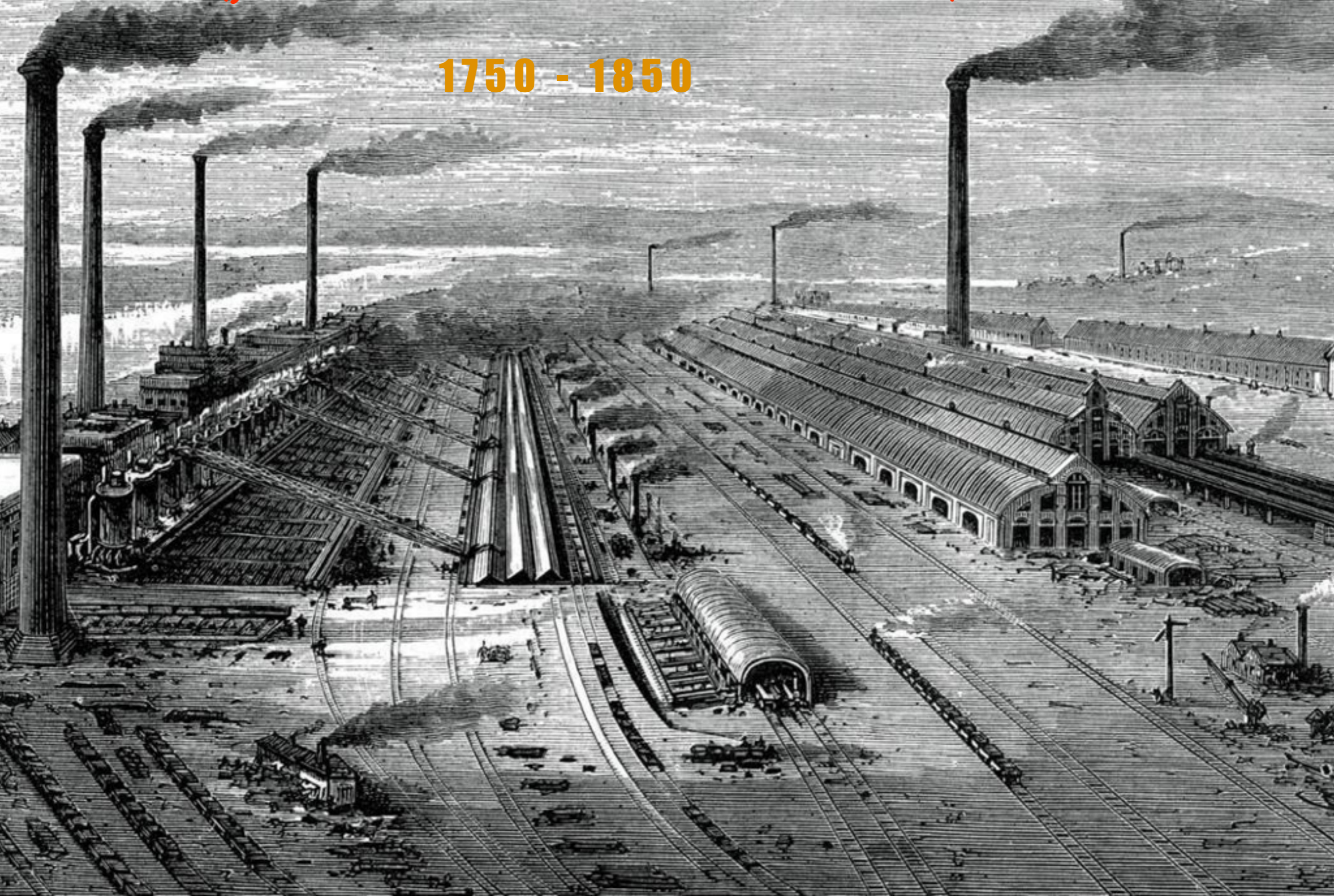


# INDUSTRIAL REVOLUTION

1750 - 1850



# OVERVIEW OF THE INDUSTRIAL REVOLUTION

- What?
  - Shift from a labor intensive economy to a capital intensive economy with the goal of increasing production
- So What?
  - As part of the “Dual Revolution” it defines the movement of Europe into the Modern Age
- Industrialization required the combination of all the factors of production (Britain has all the necessary factors of production)
  - Land
    - natural resources
  - Labor
    - human resources
  - Capital
    - machinery and/or wealth for investment
  - Entrepreneurs
    - those who start business

INDUSTRIAL REVOLUTION  
1750 - 1850

WHY BRITAIN??



## A. Geography

- i. Natural resources - iron and coal
- ii. System of navigable rivers and canals
- iii. Separation from the European continent kept them out of wars
- iv. Climate and good soil = abundant food sources

## B. Government

- i. Trade encouraged and population allowed to relocate
- ii. Helped build canals and roads
  - i. Transforms transportation
- iii. Stability

## C. Social Factors

- i. Strong banking system
  - Profits from overseas trade provided the necessary capital to invest in new technology
- ii. British society less rigid than other European countries
- iii. Strong military
- iv. Inventors change working life = better quality of life

CAUSES...

# AGRICULTURAL REVOLUTION

## A. Enclosure Movement

- i. landlords fenced in common land and used new farming technology
- ii. more people and less farm jobs
  - i. large supply of factory labor
  - ii. peasants became poorer

## B. Crop Rotation

- i. fields regained nutrients by planting different crops

## C. Other Discoveries

- i. seed drill planted seeds quickly
- ii. new crops: corn and potato

## D. Results in more food and population increase

- i. higher demand for clothing
- ii. cheaper food
- iii. cottage industry struggles to keep up with the demand
  - i. need new technology for spinning and weaving to speed up the process

# Cottage Industry and Early Capitalism

## "Industrious Revolution"

### A. Merchants Role

- i. supplied materials - wool and cotton
- ii. transported supplies
- iii. merchants make profits

### B. Capitalism

- i. private ownership, free competition, and profit
- ii. cottage industry early example of capitalism
- iii. Laissez-faire economics
  - i. the lack of government restrictions on businessmen encouraged growth and innovation among the burgeoning class of entrepreneurs

### C. Effects of the Cottage Industry

- i. big profits for new class of merchants
- ii. alternative source of income for peasants
- iii. The water frame, spinning mule, and power loom could not coexist with the cottage system
  - i. Too bulky and required a different power source
- iv. Now, entrepreneurs brought workers to the machines rather than vice versa
  - i. Usually in rural areas

# From Cottage to Factory







# Iron and Coal: Energy for the Industrial Revolution

## A. The Need for Iron

- i. Farming tools, new factory machinery, railways

## B. The Need for Coal

- i. Steam engines powered by coal
  - i. Steam forced from high to low pressure produces power
  - ii. Steam Engine improved mining which increased metals
- ii. New demands for machines = iron industry needs to adapt
  - i. How? new technology
  - ii. 1780s —> Henry Cort invent puddling
    - i. pig iron - wrought iron —> better quality and able to withstand strain

## C. Effect of Iron and Coal

- i. Improvements in coal mining and iron making allowed for the creation of the railroad
  - i. 1830s: George Stephenson's *Rocket* opened the Liverpool-Manchester Railway
  - ii. Effect: Increased size of market —> larger factories —> demand for more workers = increase in urbanization
- ii. Britain produced more iron than rest of the world
- iii. Coal powered Britain's enormous navy
- iv. Bessemer Process - added air to iron smelting, which made bro easier to mold and strong

Turner: Rain,  
Steam, and  
Speed (1844)



Claude Monet:  
Gare Saint Lazare  
(1877)

# GREAT EXHIBITION AT THE CRYSTAL PALACE (1851)

- Britain had become the “workshop of the world”
  - 2/3 of world’s coal
  - 1/2 of world’s iron
  - 1/2 of world’s cotton cloth –
  - 20% of industrial goods
- Man had conquered nature, and Britain was the first to do it!



# CONTINENTAL EUROPE

- Like Britain, Continental Europe also experienced:
  - Population growth – Agricultural improvements
  - Foreign trade growth
  - Cottage industry growth
- Continental Europe lacked the key advantages that Britain possessed:
  - Lack of efficient transportation
  - Internal tariffs increased costs and prices
  - Existence of guilds hampered the growth of entrepreneurs
  - Continental entrepreneurs were more thrifty and took less risks than did their British counterparts
- Why did the Continent fail to industrialize in the late 18 century?
  - The French Revolution and Napoleonic Era brought political and economic instability to Europe!
    - Disrupted trade
    - High inflation rates
    - Social anxiety
- By 1815 Continental Europe had 4 main challenges to overcome
  - Britain's dominance of the market
  - Britain's technological superiority
  - Lack of capital
  - Resistance to change

# AGENTS OF INDUSTRIALIZATION

- The Continent had 3 Key Agents
  - New technology did not need to develop —> borrowed from Britain
  - Strong governments capable of encouraging industrial growth
  - Creation of corporate banks
- 1. **“Smuggling” Industrialization to the continent**
  1. British law forbid the export of skilled laborers and technology
    1. However, British workers moved to the continent to start their own businesses (William Cockerill)
    2. Some British workers were recruited to the continent by foreign entrepreneurs (Fritz Harkort)
- 2. **Crucial government support: European governments actively encouraged industrialization**
  1. Set up protective tariffs to help infant industries survive in a market full of British goods
  2. Friedrich List’s economic nationalism attacked the liberal policies of the British
  3. German Zollverein promoted free trade within Germany but not outside of Germany
  4. Improved the transportation system = Railroads!!!
- 3. **Corporate Industrial Banks**
  1. With gov’t support, banks began to be established as corporations:
    1. Shareholders had limited liability (they wouldn’t lose all of their money)
  2. Due to LL, everyone began to invest in these banks
    1. Growth in capital was then used to invest in industrial companies, especially those building railroads!
      1. Example:Credit Mobilier

## ★ VARIATIONS IN CONTINENTAL INDUSTRIALIZATION

- Centers of Industry:
  - France
  - Belgium
  - German States
- Europe's textile technology was about a generation behind that of Britain
  - Hand looms still in use in 1849
  - Europe's IR mostly occurred in
- The heavy industry of iron!
  - Germany's Ruhr valley contained a massive amount of coal, which serves to build up the strength of Prussia!

**EFFECTS OF THE  
INDUSTRIAL REVOLUTION**



# POSITIVES

- New middle class
- More goods available at cheaper prices = more people can afford goods
- Medical care and city planning improved
- new inventions improved the quality of life



# MIDDLE CLASS

- Upper Middle Class - government employees, doctors, lawyers
- Lower Middle Class - factory overseers, skilled workers



URBANIZATION:

CITY BUILDING AND THE  
MOVEMENT OF PEOPLE TO  
CITIES

# LIFE IN CITIES

- NO DEVELOPMENT PLANS
- NO SANITARY CODES
  - RISE OF EPIDEMICS
  - CHOLERA, TYPHUS
- NO BUILDING CODES
- TENEMENTS - MULTISTORY BUILDINGS DIVIDED INTO APARTMENTS
  - NO RUNNING WATER, SEWAGE

# CHOLERA

AND

# WATER.

## BOARD OF WORKS

FOR THE LIMEHOUSE DISTRICT,  
Comprising Limehouse, Ratcliff, Shadwell,  
and Wapping.

The INHABITANTS of the District within  
which CHOLERA IS PREVAILING, are  
earnestly advised

**NOT TO DRINK ANY WATER  
WHICH HAS NOT  
PREVIOUSLY BEEN BOILED.**

Fresh Water ought to be Boiled every  
Morning for the day's use, and what  
remains of it ought to be thrown away  
at night. The Water ought not to stand  
where any kind of dirt can get into it,  
and great care ought to be given to see  
that Water Butts and Cisterns are free  
from dirt.

BY ORDER,

**THOS. W. RATCLIFF,**  
CLERK OF THE BOARD.



- Cities were where the factories were!
- 1800-1850
  - Cities with more than 100,000 people doubled
  - >50% of the population lived in towns or cities
- Some cities even quadrupled in size!
  - London had 4.5 million by 1901
- 1901 – ratio of urban to rural was 3:1



# NEGATIVES

- Pollution
  - Air, Water and Land
- Slums
  - Disease
- Luddites
  - Protestors to economic changes of the Industrial Revolution
- Child Labor
- Class tension



# LUDDITES

- ✦ **1812** : CRAFTSMEN IN NORTHERN ENGLAND UTILIZED COLLECTIVE ACTION TO ACHIEVE AN OBJECTIVE!
- ✦ **OBJECTIVE:** DESTROY THE MACHINES THAT THREATENED THEIR JOBS!
- ✦ **RESULT:** FAIL! PARLIAMENT PASSED THE “MACHINE- BREAKING” ACT, AND MANY WERE EXECUTED!



THE J. FACER OF THE LUDDITES

Printed by W. H. Colburn and Knight, Strand, London.



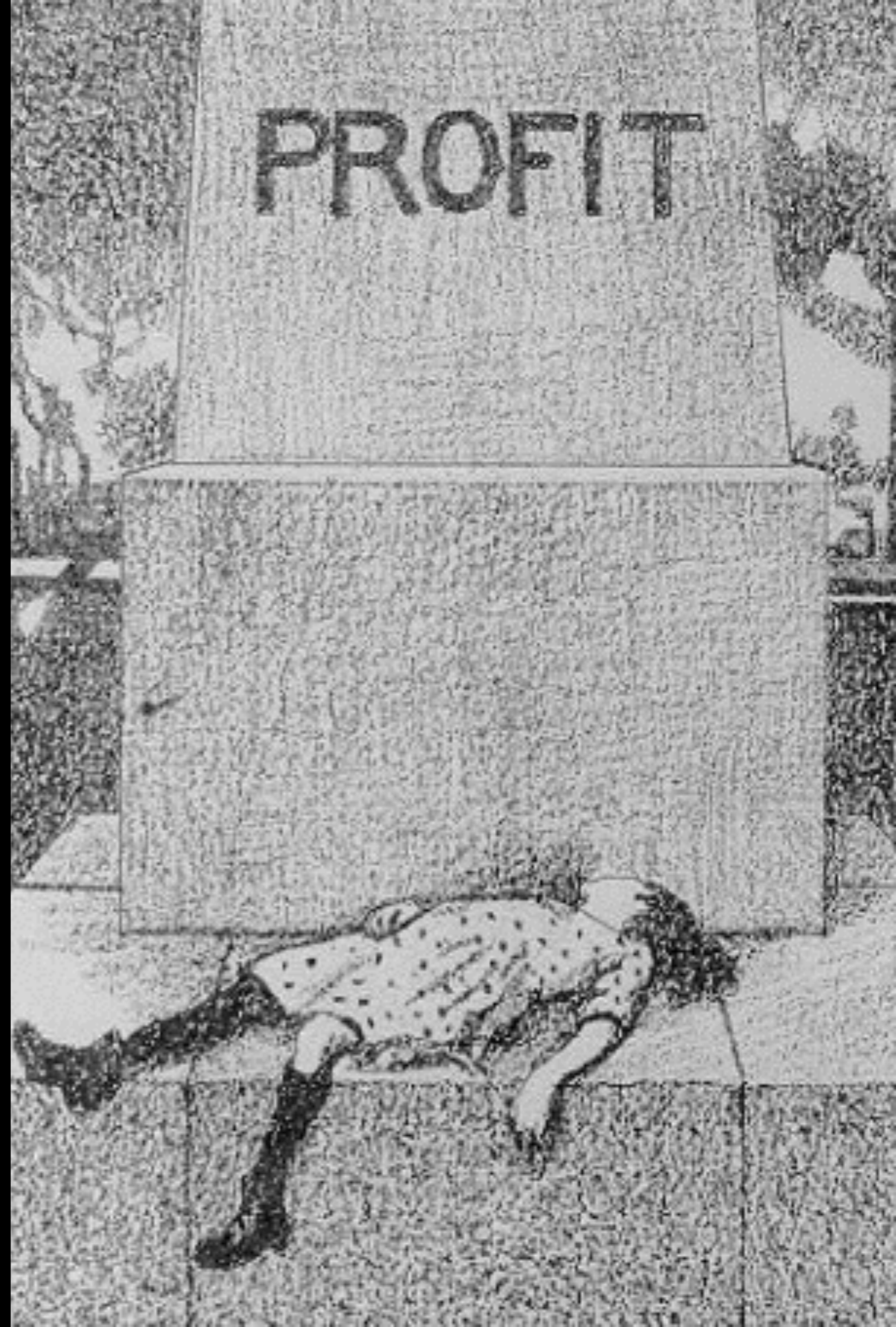
# THE FACTORY SYSTEM

## Rise of the Factory

- i. New machines, often too big for homes, were put in factories
- ii. Located near power source: coal, iron, water
- iii. Long and monotonous hours
  - i. 14 hour days, 6 days a week, 52 weeks a year
- iv. No safety regulations
- v. Whole families work in factories
- vi. Children forced to work in factories, live on streets (gangs)
- vii. Workers eventually join labor unions

## Effects of Textile Factories in Britain

- i. Amount of textiles increased and prices lowered
- ii. most villagers leave home to find work in urban factories



# CHILD LABOR

- Shortages of labor caused factory owners to use orphans → “Parish Apprentices” until age 21
- 1802 = Parliament outlaws the use of parish apprentices
  - Child labor still ok
- Children made up the majority of textile labor
  - Easily broken in to the new labor routine
  - Received 25% of adult male wages
- 1833 - women become dominate labor force
  - Received 50% of male wages
- Due to testimonies from men like Robert Owen, Parliament reduced child labor
  - Under 9 → mandated to attend school
  - 9-13 → limited to 8 hours a day
  - 14-18 → limited to 12 hours a day



# ADDITIONAL PARLIAMENTARY REFORMS

- Mines Act of 1842
- Outlawed the use of women underground
- Boys under 10 could not work in the mines
- Ten Hours Act of 1847
- Limited the work day for children and women to 10 hours

# "SEPARATE SPHERES"

- New Sexual Division of labor developed
- Men were the "breadwinners"
- Women expected to work part time at home
- Causes
- Reduction in child labor
- Factory discipline conflicted with married women
- Running the household was an arduous task
- Desire among older generations to reduce gender relations in the work place

"SUPPORTED" BY HER HUSBAND.



"A man works from sun to sun,  
A woman's work is never done."

# WHAT IS A UNION?

- A group of workers who join together for reforms in business
- In support of Laissez-faire, Parliament passed the Combination Acts of 1799
  - Outlawed unions and strikes
  - Repealed in 1824 due to a general disregard and an increase in strikes
- Collective Bargaining
  - Union leaders negotiate with employers for better working conditions
  - Compromise is the goal

# GRAND NATIONAL CONSOLIDATED TRADE UNIONS

- Robert Owen sought to develop a national union in 1834
- Goal = coordinate a general strike for the 8 hour working day
- Effort failed and craft-specific unions became the norm



# WHY BOTHER WITH UNIONS?

- Workers believed by working as a group it would be easier to obtain better working conditions, pay and benefits
- Reforms
  - Overtime!
  - 8 hour work day
  - End of child labor
  - Minimum wage
  - Safety reforms
- Negatives
  - Employers did not want workers to join unions
  - Could be blacklisted

# UNION REVIEW QUESTIONS

- What is a union?
- Why do workers form unions?
- What are some strategies unions could use to get what they want?
- Why wouldn't employers want unions to exist?



SOCIAL RECTIONS

# ABOLITIONISM IN 19TH CENTURY ENGLAND

- Profits from slave trade used to start the Industrial Revolution
- Free Labor Movement
  - Believed slave labor would hurt expansion of industry
- 1807 - End of the slave trade
- 1833 - Abolition of slavery in the British Empire



# POLITICAL REFORM IN 19TH CENTURY BRITAIN

- ✦ ONLY 6% OF POPULATION COULD VOTE IN 1800
- ✦ CALLS FOR DEMOCRATIC REFORM GREW BUT WERE SUPPRESSED BY CONSERVATIVE TORIES
- ✦ **REFORM BILL 1832**
  - ✦ WHIGS GAIN CONTROL OF COMMONS AND REFORMS THE REPRESENTATION OF ENGLAND
  - ✦ EXTENDED RIGHT TO VOTE TO THE UPPER MIDDLE CLASS - 12% OF POPULATION CAN NOW VOTE
- ✦ **CHARTIST MOVEMENT**
  - ✦ PEOPLE'S CHARTER OF 1838
    - ✦ UNIVERSAL MALE SUFFRAGE
    - ✦ ELIMINATION OF PROPERTY QUALIFICATIONS FOR MPs
  - ✦ 1848 —> MOVEMENT DIES WITH OUR SUCCESS
    - ✦ BUT DOES SUCCESSFULLY ORGANIZE MILLIONS OF BRITISH WORKING CLASS AND PROVIDES THEM WITH A SENSE OF CLASS CONSCIOUSNESS

# IMPACT

- Sparked Age of Imperialism
  - Increased competition among industrialized countries
  - Rise in global inequalities
- Sparked powerful movements of social and political reform
  - Social Criticism
  - Socialism



WHAT DO YOU THINK WAS THE WORST EFFECT OF THE INDUSTRIAL REVOLUTION AND WHAT COULD BE A POSSIBLE REMEDY TO THAT PROBLEM?