

Revolutions of Industrialization

1750–1914

Revolutions of Industrialization, 1750–1914

- Industrialization eventually embraced globally for its wealth & power
- Industrial Rev drew on the Scientific Rev, Enlightenment & French Rev & then propelled Europe to global dominance, 1750-1914
- The Industrial Rev represents the biggest change since the Agricultural Revolution
- Unlike the Ag Rev the Industrial Rev started only in 1 place: Europe
- The Scientific Rev & the Industrial Rev as Europe's most widely adopted ideas

Revolutions of Industrialization, 1750–1914

- The last 250 years are a distinct phase of human history; the Industrial Revolution ushered in new techniques of production & economic growth
- Characterized by tremendously fast technological change driven by new sources of energy; coal & petroleum
- Outputs increased hugely; 50-fold increase in British production between 1750-1900
- Not just a single invention; *A Culture of Innovation!*
- 19th c. Britain jumped ahead w/ steam engine, textiles, iron, steel, food, construction, chemicals, electricity, telephone, telegraph, rubber, pottery, printing
- Agriculture was mechanized then chemically fertilized & then farmers applied chemical pesticides
- Ind. Rev that started in Britain spread to W. Europe then U.S. then Russia & then Japan; in the 20th c. industrialization went global

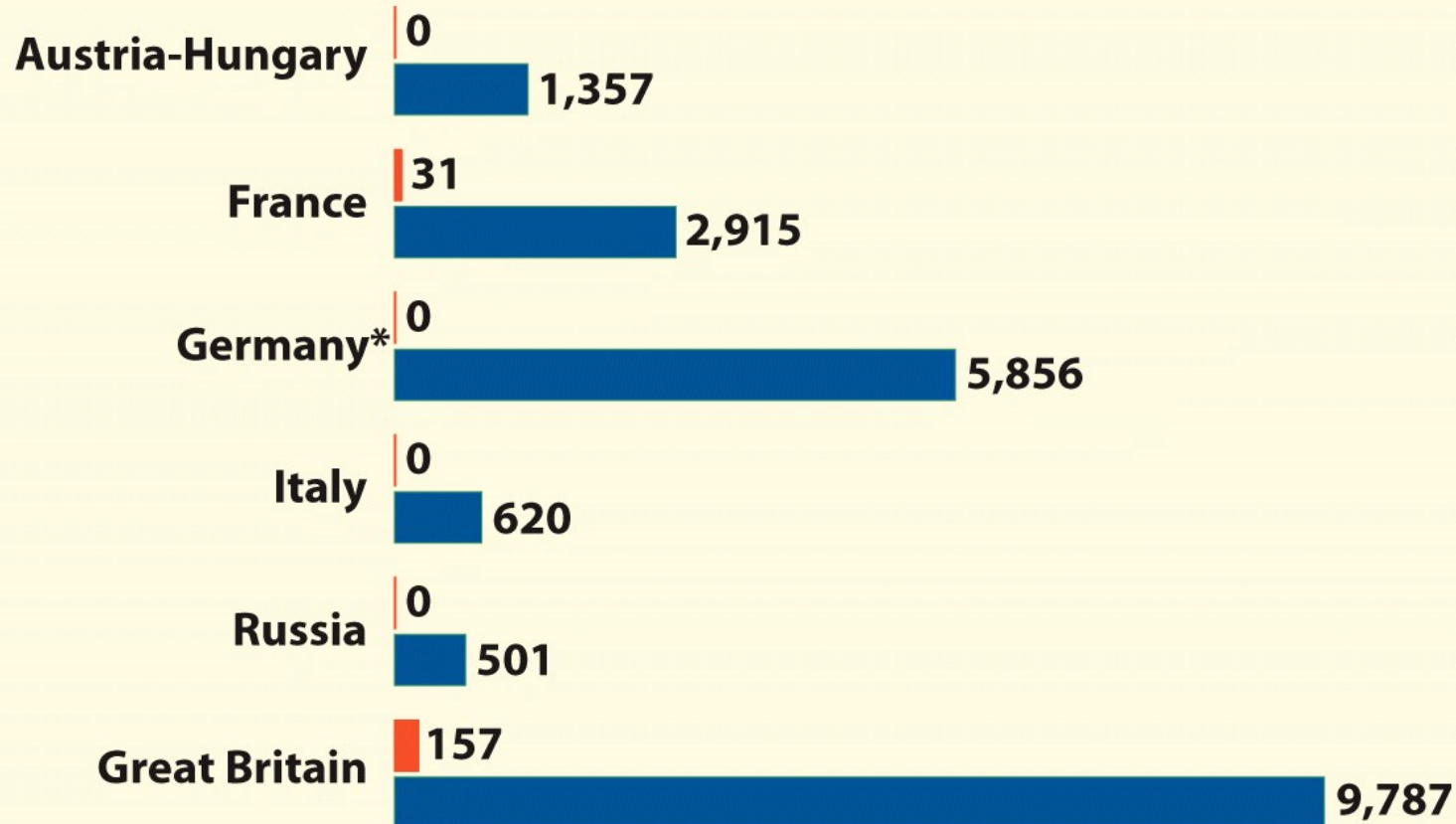
Why Europe?

- 4 reasons the Industrial Revolution was NOT predestined to happen in Europe
- Others had led earlier so technology & innovation possible elsewhere:
 - Islam was an innovative leader in shipbuilding, tides & falling water for power, chemical technology & clocks, 700-1100
 - India led in cotton production, sugar, Agriculture & math
 - China was a world leader in technological invention 700-1400 (me...back to Han?)
- Eurasian societies alike economically; Europe didn't have an advantage in life expectancies, wages, consumption, nutrition, living standards, free markets & merchants
- Later rapid industrialization in the rest of the globe shows it could have happened there earlier
- Lots of places had commercialized market economies including Japan, China & India

Why Europe?

- 3 Major Factors favored Europe:
 - Many small, competitive states; lack of unity pushed innovation
 - The relative newness of European monarchies meant they often lacked established tax systems...this led to alliances with merchants...hence gov't supported & promoted trade (charters for corporations & prizes for inventions)
 - European command of world resources fed their Industrial Revolution; silver & calories drawn from the Americas; labor from Africa
- 3 more minor factors favoring Europe included:
 - Wide contact with new places & people; Europeans traveled the world including the Americas, Africa, Mid-East, East Asia & Southeast Asia
 - Competition from Indian & Chinese goods stimulated European manufacturers
 - Availability of profitable markets in the Americas
- Merchants actually controlled the states in Holland & Venice

Snapshot Measuring the Industrial Revolution¹⁶



*German states that formed a unified Germany in 1871, including Prussia but not Austria.

Railroad Lines (in kilometers)

1830 1850

Why Britain?

1. Most commercialized place
2. Enclosed land & Ag innovations such as crop rotation, selective breeding & high yield seeds
3. Guilds mostly gone
4. Growing landless population (available labor)
5. Brit nobility not as culturally opposed to trade
6. Relative religious toleration brought people in
7. Pro-business tariffs
8. Infrastructure of roads & canals
9. Legal checks on gov't authority including trials by jury & parliament
10. Brit science more experimental, more hands-on (less based on logic)
11. Artisans & scientists worked together more
12. Emphasis on 'useful' knowledge; mechanics libraries; Royal Society public lectures integrated science & technology
13. Accident of geography...Brit had coal & iron
14. Brit an island so less impact of destructive invasions



Within 100 years the Industrial Rev produced an 'economic miracle'

It led to huge increases in production:

52 million pounds of cotton were used in 1800, but 588 million in 1850

Britain produced 5.23 tons of coal in 1750, but 68.4 million tons in 1850

Agriculture shrank in relative importance

The Ind. Rev. led to a huge change in social life; it destroyed old ways of living

Not everyone was affected the same way by the traumatic processes of change

The British Aristocracy

- Landowning Brit aristocrats suffered little due to industrialization
- In the late 19th c. a few thousand families own ½ the land in Britain; they lease to tenants who hire wage workers
- The decline of the landed aristocracy happened relative to urban \$, merchant \$ & Industrial \$
- Landowners dominated parliament in the 19th c; at 1900 businessmen dominated parliament
- The titled nobility retained social prestige & wealth; many went overseas as agents of empire; colonial administrators; the empire cushioned the decline of the aristocracy

The British Middle Classes

- The 'middle class' expanded & benefited most from industrialization
- Strayer includes owners of factories as 'middle class'
- The definition of 'middle class' being applied is one of culture; those not traditionally wealthy {landed aristocrats}, but not laboring {poor} Strayer places into a large category of 'middle class' that can include incredibly rich people

As Strayer defines them, some of the late 19th c.
American 'middle class'



Bankers, merchants, factory owners, mine owners as a rising so-called 'middle class'; they easily assimilated into the aristocracy



The more modest middle class included Doctors, Lawyers, Engineers, Teachers, Journalists & Scientists

In general the middle class held to 'liberal' ideology: constitutional gov't, property, free trade, limited social reform & "respectability"...a notion of a rigid moral code

The British Middle Classes & 'Domesticity'

- By the Reform Bill of 1832 more middle class men voted...not women
- Women were viewed as wives, mothers & homemakers in the British "Ideology of Domesticity"
- Domesticity defined the home and charitable activities as the 'proper' women's sphere
- Domesticity reserved employment & public life for men

Man for the field and women for the hearth:

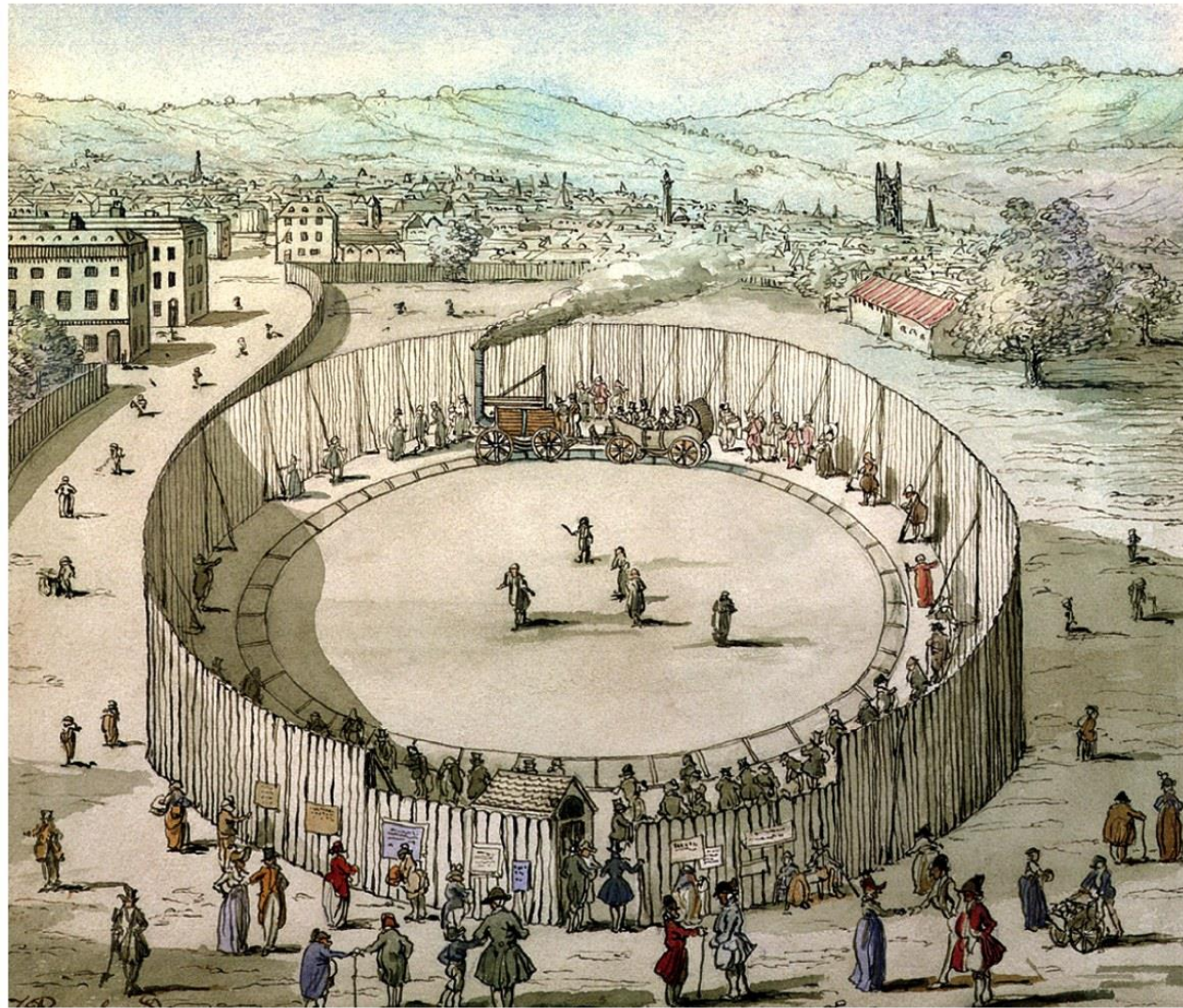
Man for the sword and for the needle she:

Man with the head and women with the heart:

Man to command and women to obey:

All else confusion.

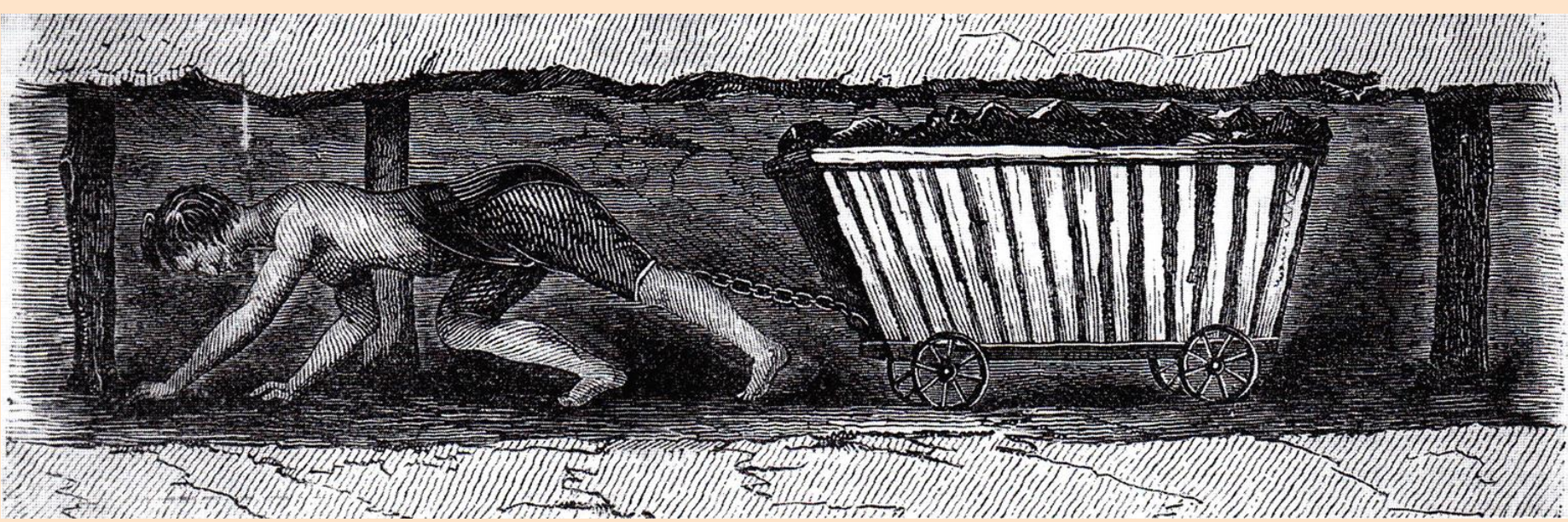
The middle class 'consumed' leisure & entertainment including rides on this early railroad



A 'lower middle class' of clerks, salespeople, bank tellers, hotel staff, secretaries, police, telephone operators & etc...

They increasingly defined themselves as 'middle class' by avoiding manual labor ~ not by relative wealth

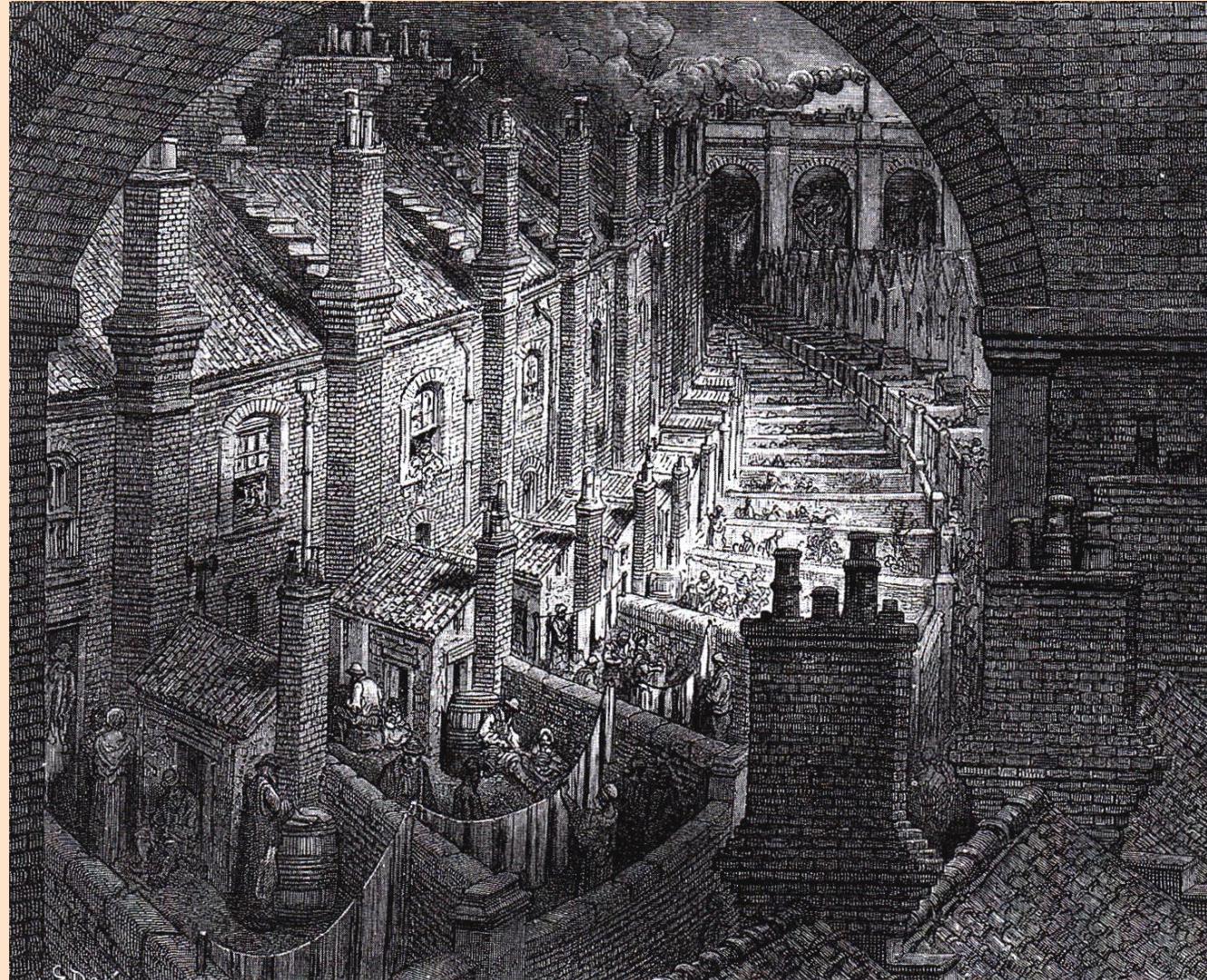
By 1900 the 'middle class' was 20% of the British population



The British Laboring Classes

- They worked in mines, ports, factories, construction & on farms; pick & shovel work; 70% of the British population
- The laboring classes suffered most & benefited least from industrialization
- Their resistance to dreadful conditions shaped Industrial societies

Rapid urbanization crowded workers into British cities that were overcrowded, smoky & suffered from poor sanitation, diseases & bad water



By 1850 the British population was more urban than rural

London, the worlds largest city, held 6 million by 1900

1866 political cartoon in Britain. A poor urban family gets water from a polluted water pump operated by Death



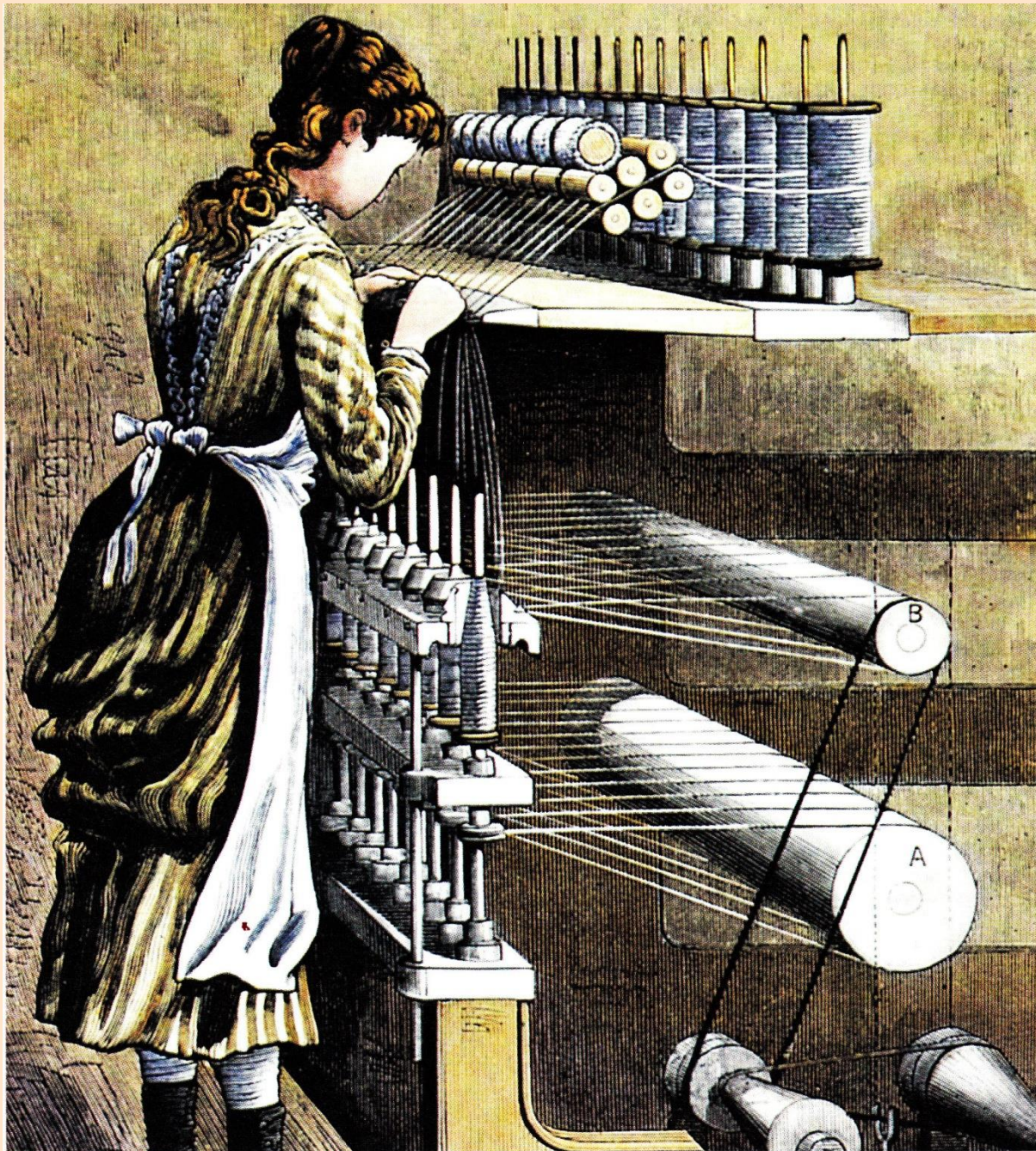
DEATH'S DISPENSARY.

OPEN TO THE POOR, GRATIS, BY PERMISSION OF THE PARISH.

Workers lived in worlds highly segregated from the middle & upper classes



Women of laboring classes worked more often outside the home; They struggled to achieve the ideal of the ideology of domesticity 19



People in factories were tethered to machines that dictated the pace of work to humans

Workers schedules & activities met the needs of machines

The hours of work no longer reflected a cycle of daylight



Factories added monotony to work & life

Workers were not used to the direct supervision associated with factory work

Factories introduced a new work discipline; factory whistles for starts & stops of work & breaks

Child labor was not new...

...that doesn't make it right



Social Protest among the Laboring Classes

- In response to industrialization workers, mostly artisans, formed self-help societies; they paid dues & provided for each other insurance, funerals & social activities
- Workers replaced by machines sometimes reacted by destroying the machines; some look to politics & voting to solve workers problems; by the 2nd ½ of the 19th c. most working men in industrialized countries can vote
- Britain legalized trade unions in 1824; lots of workers joined them seeking better working conditions & wages
- Many workers took up socialism in response to poor conditions; socialism challenged capitalism
- The most influential version of socialism was that of Karl Marx; he viewed history as driven by the class struggle between owners (*bourgeoisie*) & workers (*proletariat*)
- Marx thought that the extra production of Industrial societies could eliminate poverty, but that it would not so long as there was private property & competition
- Industrial societies were failing due to unequal distribution of the goods they produced

The labor radicals in Britain took up Marxism and founded the British Labor Party in 1890; they advocated a peaceful democratic switch to socialism; reformist...not revolutionary



French Socialists pictured in 1908

Social Protest among the Laboring Classes

- Marx's predictions fell short in some regards...
- He failed to account for the increasing standards of living of factory workers in Industrialized societies in the late 19th c.
- As Industrialization proceeded workers in Britain & the US enjoyed better material conditions which blunted their discontent
- Marx also missed the development of a sizable middle class located between the owners & laborers; the status pretensions of the 20-30% of the middle class (non-owners & non-manual-workers) in industrial societies identified their interests with the elite – the capitalists
- Capitalist gov'ts also reformed to soften the affects of industrialization: they abolished child labor, regulated factory conditions, set up unemployment relief & sanitary reform
- Reform left enormous inequalities; 40% of British workers toiled officially in 'poverty' around 1900

Spread of Industrialization

- The Industrial Rev spread to W. Europe, U.S., Russia & Japan with similar results:
 - Extra production led to urbanization
 - Changes in the class structure: aristocrats, artisans, peasants declined as numbers in the middle class & laboring class increased
 - Elite women withdrew from paid labor
- The differences from place to place include:
 - The pace & timing of the Ind Rev (French slow)
 - The role of the state in the Rev
 - Political expression of social conflict
 - Different size & shape of major industries (Germany heavy industry of iron, steel, coal)
- The Industrial Rev in the U.S. & Russia took notably different courses

Russian serfs could be bought & sold by Russian nobles until serfdom was abolished in 1861

French cartoon from the early 19th c. showing bundles of serfs being gambled by Russian aristocrats



Comparing the U.S. & Russian Industrialization

United States:

- US Indus started in textiles in N. England; a relatively free society with democracy
- The US grew to the biggest Indus power by 1914 producing 36% of world goods (Ger 16%, Brit 14%, France 6%)
- The US Govt aided Ind.
 - Tax breaks
 - Grants of land
 - Pro-corporate laws, limited regulation
- US pioneered in mass production
 - Interchangeable parts
 - Assembly line
 - Scientific Management

Russia:

- Russia industrialized as an absolute monarchy; no parliament, political parties or national elections
- Russian society dominated by a titled nobility; landowners were gov't officials & military elites
- Most Russian serfs until 1861 subject to sale of master
- Tsars Peter the Great & Catherine the Great tried Industrialization under state direction
- By 1900 Russia was 4th in Steel, Textiles, Coal, Iron
- There Industries were concentrated in a few cities in huge factories



Map 18-2
Ways of the World, First Edition
 © 2009 Bedford/St.Martin's

Comparing the U.S. & Russian Industrialization

United States:

- US classes grew apart with a wider gap in 1890s than 1850s
- The poor lived in growing slums & tenements of cities
- Bad conditions led to strikes in the US
 - RR Strike of 1877
 - Homestead Strike 1892
- Gov't suppressed these strikes violently
- Intense class conflict in late 19th c – early 20th c & yet no 'Labor party or wide socialist/Marxist movements
- At their height the Socialists get 6% of presidential votes in the election of 1912

Russia:

- The Middle class grew in Russia & sought political power, but relying on the state for jobs they rarely revolted
- Russian factory workers revolted more often due to dreadful conditions & poor treatment
- Small #s of Russians took up Marxist socialism; they formed an illegal party in 1898, the Russian Social-Democratic Labor Party, and tried organizing workers & a revolution
- During 1905 revolts in Moscow & St. Petersburg they formed representative councils called 'soviets'



Unrest in 1905 in Russia
 More than just strikes the unrest included peasant revolts, student protests, naval and army mutinies & ethnic revolts

Tsar Nicholas II was forced into concessions: constitution, legalizing unions & political parties, an elected national assembly called the 'Duma', and less censorship

The Tsar resisted these changes shortly after establishing them

Comparing the U.S. & Russian Industrialization

United States:

- Why no Socialism?
- Surviving American Unions conservative like the AFL
- Racial, religious, ethnic divisions amongst workers
- American workers share in a higher standard of living & get some home ownership
- Also white collar clerks in sales & service industries with pretensions to higher social status identified with elites & diluted socialist impulses
- Farm poor & factory poor never really united for justice in the US
- Change in the US was for 'reform' of capitalism...not a revolution to change the system

Russia:

- Nicholas II shifted electoral laws to favor the landed nobility
- Pro-Revolutionary sentiment grew
- WWI coalesced into a Russian Revolution due to the hardships of war & existing social tensions over Industrialization
- The most radical group came into power, the Bolsheviks, led by Vladimir Ulyanov (Lenin)
- Only in Russia was industrialization associated with a successful violent social revolution; The socialist party seized power and set up an autocratic version of a 'socialist' society
- {non-democratic...so not really socialist}

Global Industrialization

- Only Japan outside of Europe & USA did heavy industrialization in the 19th c.
- There were modest experiments w/ industrialization in colonial India, Egypt, the Ottoman empire, China & Latin America
- These places experienced less social change directly from their own industrialization ~ they didn't industrialize as much
- BUT...they felt impacts from Euro & US Industrial growth

Snapshot The Industrial Revolution and the Global Divide²²

During the nineteenth century, the Industrial Revolution generated an enormous and unprecedented economic division in the world, as measured by the share of manufacturing output. What patterns can you see in this table?

SHARE OF TOTAL WORLD MANUFACTURING OUTPUT (PERCENT)

	1750	1800	1860	1880	1900
Europe as a Whole	23.2	28.1	53.2	61.3	62.0
UNITED KINGDOM	1.9	4.3	19.9	22.9	18.5
FRANCE	4.0	4.2	7.9	7.8	6.8
GERMANY	2.9	3.5	4.9	8.5	13.2
RUSSIA	5.0	5.6	7.0	7.6	8.8
United States	0.1	0.8	7.2	14.7	23.6
Japan	3.8	3.5	2.6	2.4	2.4
The Rest of the World	73.0	67.7	36.6	20.9	11.0
CHINA	32.8	33.3	19.7	12.5	6.2
SOUTH ASIA (INDIA/PAKISTAN)	24.5	19.7	8.6	2.8	1.7

After Independence in Latin America

- Wars for Independence in L. America took longer & were more destructive due to societal divisions
- Then after Independence much of L. America suffered bad 19th c. wars: Mexico v. US; Argentina, Brazil, Uruguay v. Paraguay; Peru v. Bolivia
- Politics were turbulent & unstable; Conservatives who were Pro-Catholic faced off against Liberals who wanted social reforms of the Enlightenment
- In the chaos that often followed military strongmen called *caudillos* often seized power as defenders of property
 - Mexican Antonio Lopez de Santa Anna
- Not much changed after independence
 - Slavery abolished, but former slaves poor
 - Most legal distinctions based on race eliminated; people achieved official 'equality' & yet the Creoles still owned the land
 - Mestizos enjoyed some social mobility
 - Most people work on the *Haciendas*, plantations, of the rich
- Some fought class wars, rich v. poor, such as the Maya in the so-called Caste War from 1847-1901 in the Yucatan of Mexico



Latin America interacted with Industrializing countries via foreign investment, trade, immigration, & military intervention ~ mostly from the U.S.

Latin America Facing the World Economy

- Some L. Amer countries stabilized in the late 19th c. – Mexico, Peru, Argentina
- L. Amer in general integrated into the ‘western’ industrial economy
- L. Amer provided exports of food & raw materials; Silver, Mexico; Copper, Chile; Nitrates, Chile/Peru; rubber, bananas, coffee, sugar
- They were also markets for manufactured goods sent back from industrial nations; textiles, machinery, tools, weapons & luxury goods
- Europeans & Americans invested \$ in Latin America; by 1910 US corporations ‘owned’ 40% of Mexican property and ½ of Mexican Oil

Latin America Becoming Like Europe?

- L. American countries and...progress?
 - Populations grew, @ 30 million in 1850 to 77 million in 1912
 - Better public health & sanitation
 - Urbanization
- Europeans immigrated to L. Amer – mostly to Argentina, Brazil & Uruguay
- A very small # of elites took wealth from exports
- The middle class grew, but only moderately; e.g. Mexico in 1895, 1% rich, 8% middle class, 91% poor
- Unions formed of the poor & the gov't tried to suppress them
 - 1906 Mexican strike
 - 1907 Chilean Strike of nitrate workers at Iquique; more than 1000 men, women & children killed by the police
- Most L. Americans remained poor & rural; many were dependent laborers or 'peons' on *haciendas*
- Only in Mexico did these conditions generate a general revolution

The 20th c. Mexican Revolution represented an alliance of the middle class and poor against the ruling elite from 1910-1920

1 million people or 10% of the Mexican population died in the Rev

Peasant armies under Pancho Villa & Emiliano Zapata helped oust the gov't of the elite but then fought each other

The new Mexican Constitution granted universal suffrage, land redistribution, rights for workers, a minimum wage, 8 hour day, restrictions on foreign property ownership & placed limits on the Catholic Church in land & education



Women were active participants in the Mexican Revolution as shown in this French magazine illustration from 1913

Latin America & 'Dependent Development'

- The export boom in L. Amer did not lead to Industrial Revolution
 - Too many poor people, 90% of populations, to support manufactured goods sales
 - Massive wealth of landowners was in agriculture & ranching; they had no real reason to invest; they were rich & didn't work
 - No high tariffs; L. Amer gov'ts maintained lower revenue style tariffs & not higher protective tariffs; L. Amer was flooded with cheap goods from more advanced industrial nations
- Growth in L. America happened as 'Dependent Development'; foreign investors used \$, pressure, alliances w/ local elites to keep conditions favorable to foreign business interests
- Famous example of United Fruit Company; they allied with local elite landowners, greased the local gov't of what became called 'banana republics' & then called on US military intervention & political pressure if their 'interests' were threatened
- The US gov't intervened on behalf of United Fruit corporate interests numerous times
- Hence, Latin America took a less industrialized historical trajectory