The Industrial Revolution:

Enterprises, Entrepreneurs, and Exploitations

A Unit of Study for Grades 9–12

Linda Miller

World History

Era Seven: An Age of Revolutions, 1750–1914

National Center for History in the Schools

University of California, Los Angeles

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Cover Illustration: *Iron Bridge*, "Birthplace of the Industrial Revolution." Photo by Linda Miller.

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Acknowledgments

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Photo: Linda Miller

The author while visiting a replica of a Victorian classroom

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Introduction

I. Approach and Rationale

Industrial Revolution: Entrepreneurs, Enterprises, and Exploitations is one of over seventy teaching units published by the National Center for History in the Schools that are the fruits of collaborations between history professors and experienced teachers of both United States and World History. The units represent specific issues and dramatic episodes in history from which you and your students can pause to delve into the deeper meanings of these selected landmark events and explore their wider context in the great historical narrative. By studying crucial turning points in history, the student becomes aware that choices had to be made by real human beings, that those decisions were the result of specific factors, and that they set in motion a series of historical consequences. We have selected issues and dramatic moments that best bring alive that decision-making process. We hope that through this approach, your students will realize that history in an ongoing, open-ended process, and that the decisions they make today create the conditions of tomorrow's history.

Our teaching units are based on primary sources, taken from government documents, artifacts, journals, diaries, newspapers, magazines, literature, contemporary photographs, paintings, and other art from the period under study. What we hope to achieve using primary source documents in these lessons is to remove the distance that students feel from historical events and to connect them more intimately with the past. In this way we hope to recreate for your students a sense of "being there," a sense of seeing history through the eyes of the very people who were making decisions. This will help your students develop historical empathy, to realize that history is not an impersonal process divorced from real people like themselves. At the same time, by analyzing primary sources, students will actually practice the historian's craft, discovering for themselves how to analyze evidence, establish a valid interpretation and construct a coherent narrative in which all the relevant factors play a part.

II. Content and Organization

Within this unit, you will find the Teaching Background Materials which should provide you with a good overview of the entire unit and with the historical information and context necessary to link the **Dramatic Moment** to the larger historical narrative. You may consult it for your own use and/or share it with students.

The Lesson Plans that follow include a variety of ideas and approaches for the teacher which can be elaborated upon or cut as you see the need. These lesson plans contain student resources which accompany each lesson. The resources consist of primary source documents, handouts and student background materials, and a selected bibliography.

This unit, as we have said above, focuses on certain key moments in time and should be used as a supplement to your customary course materials. Although these lessons are recommended for use by grades 9–12, they can be adapted for other grade levels.

In our series of teaching units, each collection can be taught in several ways. You can teach all of the lessons offered on any given topic, or you can select and adapt the ones that best support your particular course needs. We have not attempted to be comprehensive or prescriptive in our offerings, but rather to give you an array of enticing possibilities for in-depth study, at varying grade levels. We hope that your students will never again see history as a boring sweep of facts and meaningless dates but rather as an endless treasure of real life stories and an exercise in analysis and reconstruction.

Teacher Background Materials

I. Unit Overview

Trade and industry changed dramatically during the great event known as the Industrial Revolution. New machines and the growth of factories altered the working ways of most people. The movement toward industrialization represented a big shift in the way people lived, not only in England but around the world. The process of industrialization continues today in China, Southeast Asia, Latin America, and other lands. Although the beginnings of industrialization can only be well understood within the framework of the harnessing of fossil fuels, international trade, financial trends, and technological innovation and borrowing around the world, this unit focuses on developments that occurred mainly in England.

Scholars continue to research the history of industrialization, originating new theories of how and why the process occurred. It is clear that the new technology altered the organization of work and changed how people lived. But historians continue to debate the effects on standards of living.

Many types of evidence can be studied to understand industrialization in the eighteenth and nineteenth centuries. These include testimony before the British Parliament, literary works, and statistical information, as well as records of the careers of major inventors, business leaders, and government reformers. This unit presents various elements of this evidence. Lesson One investigates major inventors and the impact of their inventions, as well as business leaders and reformers. Lessons Two and Three examine social conditions for women and children through analysis and interpretation of testimony from British parliamentary hearings and present evidence for reforming the system. It was not, however, only factory conditions that were deplorable. The home scene was also less than desirable, contributing to disease and death. Housing and public health are the subjects of Lesson Four.

In 2002, Linda Miller, the author of this unit, was privileged to participate in a National Endowment for the Humanities summer seminar titled "Historical Interpretations of the Industrial Revolution in England." The meeting took place at the University of Nottingham, England. The participants not only saw the sights of the Industrial Revolution but also heard the deafening sounds of factory machines and steam engines. The group uncovered new interpretations of industrialization and realized that much of what they had been teaching in their schools needed correction and revision. This unit is an outgrowth of that experience, travels and discussions with Professor Peter Thomas emeritus, University of Wales Aberystwyth, as well as extensive reading of recent scholarship.

II. Unit Context

This unit should be coordinated with a study of the Industrial Revolution in world history, focusing on the period from 1750 to 1850. The lessons provide insight into the enterprises and entrepreneurs that had an impact on industrialization as well as the consequences of it for ordinary people. In addition, the unit reflects on why industrialization took a giant leap in England, why ordinary people paid a social and economic price for this development, and how social reform of the factory system and public health came about. Teachers may consider using this unit, which focuses on Britain, in conjunction with *Industrialism as a World-Wide Revolution*, a publication of the NCHS that offers a simulation approach to industrialization as a global event.

III. Correlation with the National Standards for World History

Era Seven
An Age of Revolutions, 1750–1914

Standard 2A

The student understands early industrialization and the importance of developments in England

Standard 2B

The student understands how industrial economies expanded and societies experienced transformations in Europe and the Atlantic basin.

IV. Unit Objectives

- To analyze primary source documents to understand events and issues as people experienced them in the eighteenth and nineteenth centuries.
- To practice active learning by role-playing and by listening to first-person testimonies.
- To analyze the impact of individuals and the industrial machines they invented.
- To analyze the causes and consequences of industrialization.
- To evaluate the impact of technology on society.

V. Historical Background

The Industrial Revolution was an international event, and it did not happen overnight. Historians and economists debate the speed and extent of the changes that occurred in connection with industrialization. Some think that it occurred rapidly between 1750 and 1850, while others argued that economic growth rates were incremental and that technical change and high productivity took place only in certain economic sectors such as cotton production. These gradualists argue against the date of 1750 as the approximate start of industrialization, contending that the process was much longer, occurring over several centuries and continuing into the twentieth century. Some of these historians reject term "revolution" to describe what happened. They argue that families in England had for a long time engaged in spinning and weaving using novel machinery, engaging in what they term "proto-industrialization;" that is, home-based production that first made peasants into a cheap and plentiful labor supply before factories even appeared. As real wages declined in the later eighteenth century, families sent more and more women and children into manufacturing. By this view, industrialization was a slow and uneven process. However, other economic historians such as Pat Hudson, argue that gradualists have oversimplified national data and that regional data for England reveals a "revolutionary" event.

The world historian William McNeill states that the Industrial Revolution was the single most important development in breaking human society loose from constraints on food supply and economic output. He claims that a unified global web helped make the Industrial Revolution happen. Europe became linked to Africa and Asia through colonization and to Latin America for markets. One important dimension of industrialization was that more people migrated abroad, including workers and peasants who could not make a decent living in their homelands.

Industrialization involved fundamental changes in machinery and organization of labor. Radical innovations in technology occurred in key manufacturing sectors and in agriculture. People were brought out of their "cottage industries" into factories, or centralized work

places that used machines for mass production. Technologies of coal and steam led to labor savings, but these new power sources also often replaced human workers. Some scholars speak of the "Fossil Fuel Revolution." The new power sources of coal and oil produced huge amounts of productive energy and were the dominant force of the Industrial Revolution. Virtually everything was altered: relationships between parents and children, between wives and husbands, and even between countries. Once industrialization became established in Britain, other parts of the world began to experiment with new technology and factory production. Historian Peter Stearns has proposed a three-phase periodization for the Industrial Revolution:

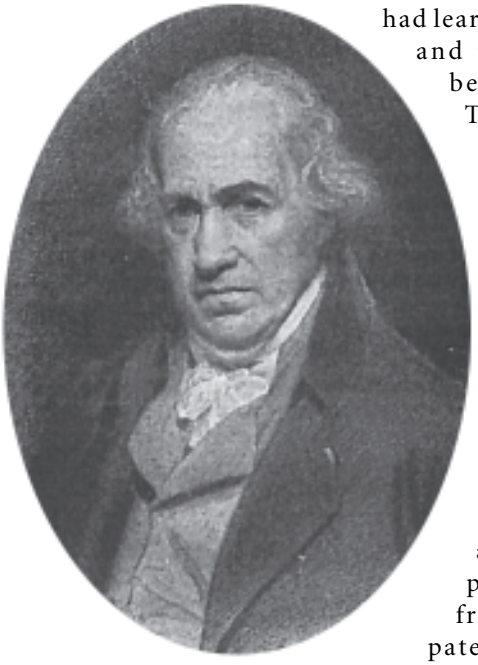
Phase 1: 1760–1880.
Western Europe and North America

Phase 2: 1880–1950
Russia, Japan, eastern and southern Europe, Canada, Australia, New Zealand, and South Africa

Phase 3: 1950s–1990s
The Pacific Rim countries of Asia, Israel, Mexico, Brazil, Turkey, and in some measure in several other countries

The Entrepreneurs

Early industrial entrepreneurs were usually active in family-owned business enterprises. They changed the traditional methods they had learned from their parents, however, and developed new inventions and forms of organization. These dynamic family businesses became the driving force behind the Industrial Revolution. The inventions of Thomas Newcomen, James Watt, and Abraham Darby helped introduce steam or other sources of power to the production process. Watt, a Scotsman, invented a way of using steam engines to power factory machines by improving on Newcomen's earlier steam machine. In 1787, Watt patented a rotary engine that burned coal to heat water and turn it into steam, which in turn drove a series of cogs that powered a driving belt. This innovation allowed for more efficiency in coal and iron mining. Cotton and textile factory owners liked steam-powered machines because they saved time and money and could turn out more goods.

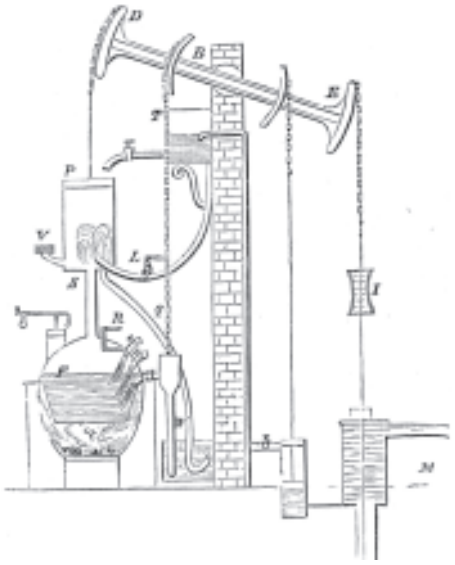


H.F. Helmolt, ed. *History of the World*. New York: Dodd, Mead and Company, 1902.

James Watt

In 1733, the Englishman James Kay invented the flying shuttle, a new kind of loom for weaving cloth. Activated by a foot pedal, it automatically moved thread horizontally through a frame, doing the work of two adults. In 1767, James Hargreaves patented a more efficient spinning machine that soon came into wide use. A rapid succession of inventions and patents included Richard Arkwright's water frame (which changed the methods of spinning cotton in textile manufacture) in 1769, Samuel Crompton's "mule" (for drawing out and twisting thread) in 1779, and Edmund Cartwright's power loom in 1785.

Abraham Darby, a Quaker ironmaster, founded a company in Coalbrookdale, England. There, in 1709, he successfully smelted iron ore using coke, a hot-burning fuel of nearly pure carbon derived by heating coal. The use of coke, which burned much more efficiently than charcoal derived from wood, made large-scale production of high quality iron possible. Charcoal only produced small quantities of poor, brittle quality iron. Other factors combined with his new iron production methods combined to make Darby's company a major force



Newcomen Steam Engine
D. Kinnear Clark, *An Elementary Treatise on Steam and the Steam-Engine* (London: Lockwood, 1875), 32.

in the new industrial age. Deposits of coal and iron ore were to be found in the region, providing an easy supply. Coalbrookdale was also near the Severn River, an ideal channel for transporting goods to markets and a nearby brook provided water power.

Early on, Darby produced domestic cooking vessels. In 1723 the company made the first cast iron cylinders for the Newcomen steam engine, which furthered its development. In 1750, Darby's son, also named Abraham (II), smelted pig iron with coke and produced wrought iron. In 1767, the company pioneered the use of iron rails. The first iron bridge in Europe was overseen by Abraham Darby III. (Chinese engineers had built them many centuries earlier.) Unfortunately, Abraham Darby I did not live to see its construction. The bridge still stands today.

Canals and rivers were the arteries of the Industrial Revolution. The Scotsman Thomas Telford consulted with the Coalbrookdale Company to develop his project to build a cast iron aqueduct to carry canal boats across valleys in Wales. Early canal builders achieved outstanding feats of civil engineering, all without the mechanical assistance available to engineers today.

Early in the nineteenth century, Richard Trevithick, who was from Cornwall in southwestern England, developed an engine that used steam at five times the pressure of Watt's machines. He went to Coalbrookdale to ask for cooperation in constructing a locomotive on rails. He thought that his first steam road carriage would work more efficiently on rails because of his direct piston-rod to crankshaft design. Trevithick ran his carriage in London in 1808 on a circular line with a radius of thirty meters (98.4 feet). The first fare-paying passengers traveled at a speed of 10 miles per hour. His technology was later applied to boats, and within a few decades both railroads and paddle steamers were carrying travelers and migrants across continents and oceans.

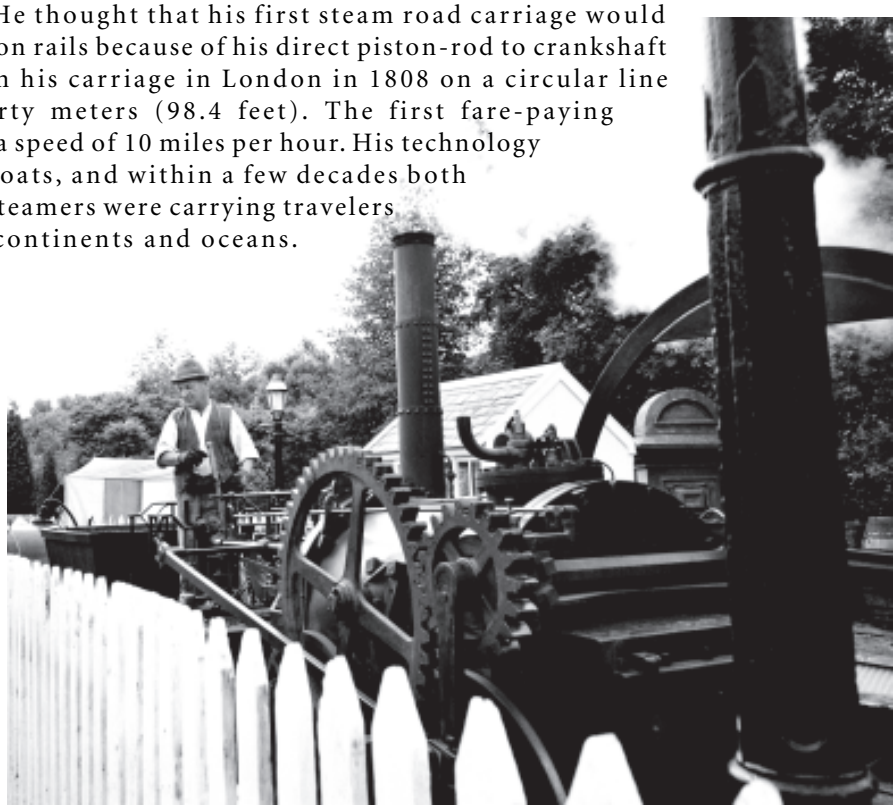


Photo by Linda Miller

Replica of early locomotive.
The steam-engine rail train was both a result of industrial changes and an instrument of further change.

Enterprises

By the 1730s, a series of new inventions was transforming the British cotton manufacturing business and giving rise to a new form of production, the factory system. The tremendous expansion of cotton manufacturing was of special significance. The cotton industry commanded the central role in Britain's early industry as world demand for cotton textiles was high, inviting new technologies to produce the cloth in quantity. The cotton industry eventually developed into a highly mechanized factory industry. Although some workers were displaced indirectly by the rise of cotton as traditional production declined, the following one hundred years would see the industry employ more than a half million people, twice as many as any other manufacturing industry. Cotton provided work for more than one tenth of the population in Manchester alone. That city in north central England became known as the "capital of cotton." It grew into a population of a million people, making Greater Manchester the largest urban region in Britain and the biggest manufacturing center in the world. Unfortunately, Britain's cotton industry was fueled with raw material grown and harvested partly by slaves working on plantations in the southern United States.

In his book *Sweetness and Power: The Place of Sugar in Modern History,* Stanley Minz discusses the impact of the sugar industry on industrialization. In the Middle Ages, a sugar industry thrived in the Mediterranean Sea region, in both Christian and Muslim lands. Europeans carried sugar plants, as well as the whole technology of growing and processing cane sugar, to the Americas at the end of the fifteenth century. African slaves became the main work force in the sugar fields and mills that boomed in Brazil and the Caribbean islands. In the seventeenth century, sugar became the cornerstone of African slavery in the British West Indies. In Europe, sugar consumption rose to the point where this product became a necessity rather than luxury, the first mass-produced exotic necessity of the working class. By 1800, sugar had become a necessity in the diet of every English man and woman. By 1900, it supplied nearly one-fifth of the calories in the English diet (Mintz, 6). The addition of sugar to the diet signaled the linkage between the consumption habits of every man, woman, and child in England and global patterns of trade especially between Britain and its colonies. Also, the basic clothing needs of hundreds of thousands of slaves in the Americas created a market there for cheap cotton textiles. When sugar prices decreased, higher consumption followed. Tea, imported from South and East Asia, was laced with sugar, and this beverage became popular with all classes in England. (Chinese tea drinkers used bowls without handles, but English consumers had to have tea cups with handles because the water had to be very hot to dissolve the sugar!)

Why Britain?

According to William McNeill, conditions necessary for industrialization in Britain included its internal deposits of coal and iron; the political climate after the Glorious Revolution of 1688, which favored private accumulation and investment of capital; the thickening of the web of roads and canals; and the worldwide growth of international trade and colonial exploitation. For the Industrial Revolution to occur, great investment of funds in machines was required. Government interest in supporting economic innovations was important, as was a sufficient population to provide an inexpensive labor force.

Several basic enabling factors also were present in other areas of Northwest Europe in the eighteenth century. A large seam of coal ran from Britain through Northern France and Belgium to the Ruhr Valley in Germany. Early industrialization in both Britain and the European continent developed along these seams. (In China, by contrast, the main urban and manufacturing region was the lower Yangtze River valley, which was hundreds of miles from rich sources of coal.) Iron ore deposits were also plentiful in Europe. Without them, early industrialization would have been impossible. Western Europe also had abundant wool to help clothe a growing work force, and its overseas trade provided access to cotton grown in the Americas and Old World countries such as Egypt.

Even with these key resources, however, the Industrial Revolution would not have been possible without the Scientific Revolution that occurred in western Europe in the seventeenth and eighteenth centuries and that was itself built on the longer-term borrowing and adaptation of mathematical and scientific ideas originating in China, India, and the Muslim lands. Research in Europe on gases and chemicals was especially relevant to industrialization. Well before 1750, England began to cultivate a scientific culture that involved increasing literacy and the spread of scientific societies, which encouraged investigation collective sharing of new knowledge. Other important factors included the establishment of the English national banking system; commercial experience, which included both growing trade and new technology related to shipbuilding; and an active slave trade between Africa and the Americas (until the early nineteenth century) to provide the forced labor necessary to grow large quantities of sugar and cotton cheaply. The British government had a policy encouraging cotton manufacture at home (partly by outlawing imports of finished textiles from India), concentrating the industry in the area. Also not to be forgotten is the rapid population growth after 1750 (linked partly to access in Britain to larger supplies of imported food). More people in Britain meant a more plentiful and cheaper supply of factory and farm labor.

Historians continue to debate whether these developments could really be called a "revolution." In his book *The Industrial Revolution, 1760–1830*, the historian, T. S. Ashton stated it this way:

> To the question of why the Industrial Revolution did not come earlier, many answers can be given. In the first half of the eighteenth century there was much ingenuity and contrivance, but time was needed for this to reach fruition. Some of the early inventions failed because of incomplete thought, others because the right material was not at hand, because of lack of skill or adaptability on the part of the workers, or because of social resistance to change. Industry had to await the coming of capital in quantities large enough and at a price low enough, to make possible the creation of the "infrastructure" of roads, bridges, harbors, docks, canals, waterworks and so on—which is a prerequisite of a large manufacturing community. . . . But such large considerations apart, in each of the major industries there was some obstacle—some bottle neck to use the current phrase—which had to be removed before expansion could go far. In agriculture it was the common rights and the lack of winter fodder; in mining the want of an efficient device to deal with flood water; in iron-making the shortage of suitable fuel; in the metal trades a consequent shortage of material and in textiles an inadequate supply of yarn. Transport, trade, and credit alike suffered from the dead hand of monopolistic organization, and the arrested development of these services had adverse effects on industry in general. Thus it was that, though there was growth in every field of human endeavor, change was never so rapid as to endanger the stability of existing institutions. In the period 1700–1760 Britain experienced no revolution, either in the technique of production, the structure of industry, or the economic and social life of the people. (Ashton, 47)

Exploitations: The Standard of Living Debate

Britain's early Industrial Revolution featured radically new technology and economic organization, which made possible a speed and volume of production unprecedented in world history. This development, however, came at a social and economic price.

For many years historians have argued over the question of standard of living in Britain in the early industrial period and whether the changes exploited or helped the poor. On one side is the contention that industrialization was a catastrophe for the laboring poor of England and other countries and that the standard of living declined. This pessimistic view was put forth in the nineteenth century by David Ricardo, Thomas Malthus, and Karl Marx. For example, Malthus wrote in 1798:

> The increasing wealth of the nation had little or no tendency to better the conditions of the laboring poor. They have not, I believe, a greater command of the necessities and conveniences of life; and a much greater proportion of them, than at the period of the Revolution, is employed in manufactories and crowded together in close and unwholesome rooms." (Thomas Malthus in Taylor, 37)

In his book *The Standard of Living Debate in Britain in the Industrial Revolution* Arthur J. Taylor has summarized arguments historians have made about the issue.

J. H. Clapham took an optimistic view on standard of living, relying on calculations of real wages that showed them rising from 1790–1850, in a period when historians thought that the poor were getting poorer. However, the figures for money wages are only for skilled artisans. Little is known about other workers or rates of unemployment. For unskilled laborers, almost no information is available.

According to Eric Hobsbaum, the evidence is too sketchy to prove that the laboring population whose conditions improved was larger than the population whose standard of living did not. About 40 per cent of the industrial working class lived at or below the poverty line. Hobsbaum argues that general mortality rates fell markedly from the 1780s to 1810 but rose again until the 1840s. Mortality rates did not improve drastically until the 1870s or 1880s. Unemployment in the 1840s made paupers of 10 per cent of the population. Vagrancy in England increased from the early nineteenth century to the 1830s. The standard of living improved in the 1780s but then declined in the following decade. The significant turning point did not come until the 1840s.

T. S. Ashton held the opposite view of the standard of living debate. He argued that conditions for laborers were becoming better at least after 1820 and that the spread of the factory played a part in this improvement. It offered significant employment and greater stability of consumption. Between 1790 and 1830, factory production increased rapidly, so a greater proportion of people benefited. The price of textiles fell, reducing the cost of clothing for ordinary people. After 1820 the prices of tea, coffee, and sugar also fell. The growth of trade unions, social organizations, savings banks, and schools all gave evidence of the existence of a larger class of people living at about the subsistence level.

Ashton does acknowledge that large groups of unskilled workers, such as seasonally employed agricultural workers and hand loom weavers, barely made a living. For them prices were high. He asserts, however, that the number of those sharing the benefits of economic progress was larger than the number of those who did not benefit. He believes that the pessimists focused too much on these unskilled or semi-skilled groups.

VI. Unit Lessons

Lesson One: People and Machines

Lesson Two: Working Women and Children in the Nineteenth Century

Lesson Three: Parliamentary Debates about Child Labor

Lesson Four: Consequences: Housing and Public Health

Dramatic Moment

The Industrial Revolution brought many new methods of production. The new technology awed and fascinated the British, but it could also confront them with great dangers. These two excerpts illustrate both sides of that story:

A Page from the Diary Of Amy Dunnill, Henry Dunnill's Daughter, Born in 1872

It was a fascinating sight to see the clay emerge from the presses, shaped in the form of titles of various shapes and sizes. Some of these, after preliminary hardening by heat, would be decorated by hand in the "painting room" before finally being placed with the plainer sort in huge kilns. The heat from the kilns was terrific. When "hell fire" was mentioned in sermons, I always thought of these furnaces. The head fireman was a very important person; it was his job to supervise the stoking. The great open furnaces were kept at the correct heat for five days and five nights; . . . Once I was thrilled to be taken to see a display of tiles and mosaics ordered by an African king for his palace. . . .

Photo by Linda Miller

The Bedlam furnace as it appears today

The parts for the first structure using cast iron, the Ironbridge (cover), were cast at the Bedlam furnace <http://www.bbc.co.uk/shropshire/content/articles/2005/04/08/history_ironbridge_mystery_feature.shtml>

Death of George Jones, A Getter at Kemberton Pit

An inquest on the body of George Jones, married man who died on Saturday from burns received when firing a hole in the Kemberton Pits, belonging to the Madeley Wood Company. . . .

The explosion took place about 12 o'clock, when (the) deceased was about firing the next hole. (A) witness heard a noise, and the deceased cried out, "Come lads, help. . . ." He was charging the hole and after he had just run the fuse through the charge, and was bending the end, it went off.

Dr. Webb was then called, and stated that he was sent to see the deceased . . . at his house, when he found him suffering from extensive burns on both arms, front of chest, face, neck and back. . . . He died last Saturday.

Text Source: Suzanne Spicer, *Victorians at Work* (Telford, England: Ironbridge Gorge Museum Trust, 1997).

Lesson One
People and Machines

I. Objectives

- To analyze the impact of inventors and their machines on the Industrial Revolution.
- To compare and evaluate the contributions of these individuals.

II. Historical Background

The driving force behind the Industrial Revolution was the creativity and entrepreneurship of people of various backgrounds. Their work changed the face of England and had a profound effect on the world. The success of their inventions resulted both from their genius as inventors and from the foresight and energy of capitalists.

The fifty years between 1775 and 1825 saw a dramatic change in the textile industry owing to the introduction of machinery that produced a better quality product at a faster speed. New machines, especially the steam engine, allowed the textile industry to move from the domestic spinning wheel to mills and factories that produced abundant amounts of power. Eventually, not only textile manufacturing but a whole range of industries were transformed by the harnessing of energy based on the revolution in the use of fossil fuels to drive engines.

Industrialization also gave impetus to a transformation in transportation. In the late eighteenth century, the main means of transportation were stagecoaches for travelers and the wagon and canals for the movement of goods. Over the next two hundred years the coming of the railway and the internal combustion engine would change this. Early in the nineteenth century, Manchester became an important center for canal communication, with waterways linking the town to all parts of the England and providing an inexpensive and efficient means of transport for raw materials, finished products, and food. The nineteenth century also saw the arrival of the railway network. The Liverpool-Manchester Railway in 1830 linked the two cities two hours travel time. Soon, a person could travel from Manchester to London in a day. In 1901, electric trams arrived on the streets of Manchester. Public transport also came in the nineteenth century with the first horse buses arriving in Manchester. In 1877 they were replaced by the horse trams and in 1901 by the electric tram.

III. Lesson Activities

1. Divide the class into groups and assign each group one of the inventors presented in **Student Handouts 1–6**. Using that information as well as the results of other research, write an application to have your inventor inducted as a Fellow, or member, of the Royal Society for their contributions to the Industrial Revolution. The Royal Society [www.royalsoc.ac.uk] was founded in Britain in 1660 to advance scientific research and achievement. Explain why your person should be invited to become a Fellow. Create and fill out a nomination form which contains the following information:

    a. Name of the inventor (try to find and include a picture)

    b. Background, economic status

    c. Inventions (try to find and include a picture or diagram of the invention)

    d. Economic and social impact of the inventions

Present the findings to the class. After all the candidates have been presented, have the class vote by secret ballot to determine which of the individuals should be admitted to the Royal Society.

2. Newspaper Headline Articles

Have students create, either individually or in groups, newspaper articles with the following headlines about the Industrial Revolution:

a. JOHN KAY INVENTS FLYING SHUTTLE

b. JAMES HARGREAVES INVENTS SPINNING JENNY

c. RICHARD ARKWRIGHT DEVELOPS THE WATER FRAME

d. SAMUEL CROMPTON INVENTS THE COTTON MULE

e. EDMUND CARTWRIGHT DEVELOPS THE POWER LOOM

f. JAMES WATT INVENTS THE STEAM ENGINE

g. SAMUEL SLATER LEAVES WITH MILL KNOWLEDGE

h. RICHARD ARKWRIGHT KNIGHTED BY GEORGE III

3. Art and the Industrial Revolution

Have students examine paintings by Joseph Mallord William Turner, John Constable, and Joseph Wright. Have students choose one or more painting to analyze using **Student Handout 7** (Image Analysis Worksheet). Use art books or Web sites:

Turner

http://www.ibiblio.org/wm/paint/auth/turner/

http://www.artcyclopedia.com/artists/turner_joseph_mallord_william.html

Constable

http://www.ibiblio.org/wm/paint/auth/constable/

http://www.artcyclopedia.com/artists/constable_john.html

Wright

http://www.ibiblio.org/wm/paint/auth/wright/

http://www.artcyclopedia.com/artists/wright_of_derby_joseph.html

Class Discussion

Have the students share their observations. How do these artists portray the Industrial Revolution with regards to people and machines?

James Hargreaves
1730(?)–1778

Before industrialization, spinning had always been done in houses and small workshops with spinning wheels worked by hand. This was a slow process and not enough yarn could be provided to keep pace with the knitters and weavers who made the yarn into garments and cloth. In 1767, James Hargreaves, an illiterate weaver from Lancaster, invented the "spinning jenny," a device that speeded up the production of yarn. This was a useful machine, but operating it was difficult and required skilled laborers. The spinning jenny allowed one person to turn eight spindles at once in order to spin eight threads. The threads were not strong enough, however, to make good yarn. Unfortunately, people who were left without work because of mechanization destroyed Hargreaves' original machine. He died in poverty in 1778.

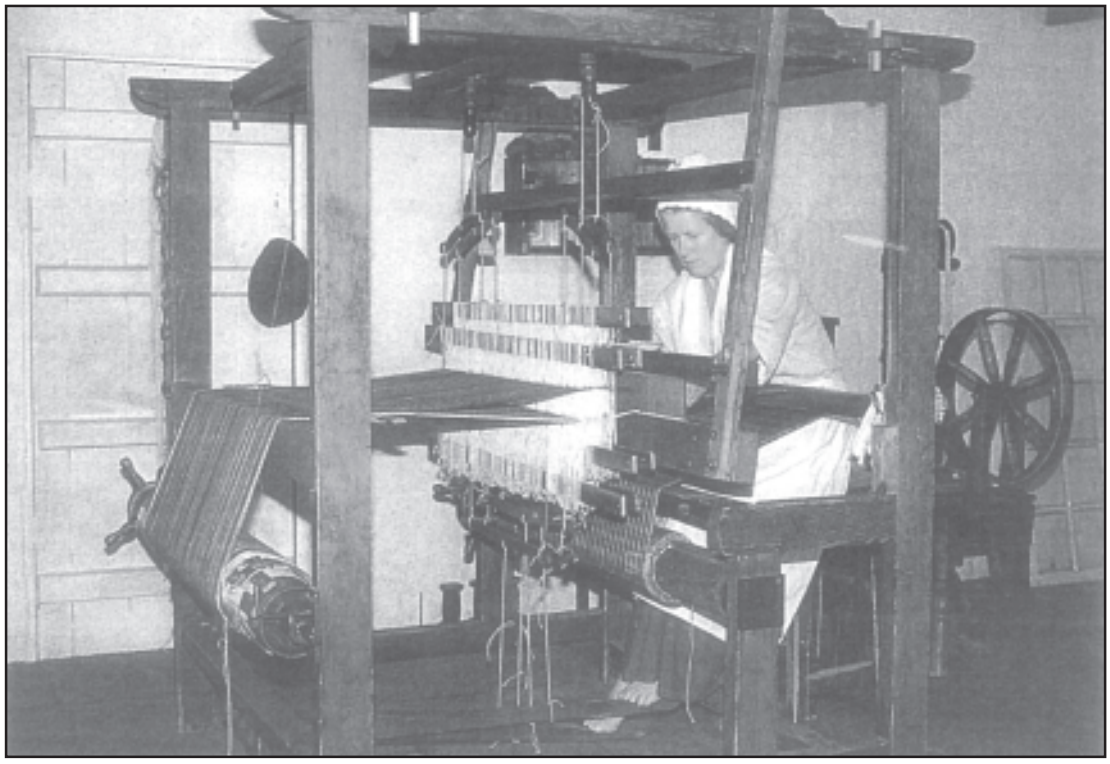


Photo by Linda Miller

Foot-powered spinning loom
The advent of a steam-powered spinning loom during the Industrial Revolution, greatly sped up weaving. The "spinning jenny" was a response to the resultant need for thread to be produced faster.

Abraham Darby
1678(?)–1717

In 1708, Abraham Darby I, whose family originally settled in the English Midlands, left Bristol to take up residence in Coalbrookdale. Originally a brass founder, he succeeded in 1709 in smelting iron with coke instead of expensive charcoal. He made cheap iron pots, which launched his family dynasty of iron founders. The introduction to Darby's patent in 1707 says:

> A new ways of casting iron bellied potts . . . in sand only, without loam or clay by which iron potts . . . may be cast fine . . . and with more ease and expedition and in regard to their cheapnesse may be of great advantage to the poore of this kingdome, who for the most part use such ware . . . and likewise may in time supply foreign markets with that manufacture of our own dominions.

For Darby, success came only after years of failure. He finally solved the method of utilizing coal for the production of iron. This was important because wood in England was becoming scarce. This scarcity drove up the price of wood, making iron smelting with charcoal too expensive. Darby's procedure made iron cheap. In the years following his death, the Coalbrookdale ironworks became well known. His son, Abraham II, worked on perfecting the forging of wrought-iron using coke, and he built more furnaces to cope with increasing demand.

Abraham III, grandson of Darby, built the iron bridge over the Severn River near the terminus of the Shropshire Canal. Darby's team of workmen raised the arches of the Iron Bridge in the summer of 1779 and opened it in 1781. Despite detailed records of the Darby family that survive, there is no detailed account of the bridge's actual construction. The bridge gave its name to the industrial town Ironbridge, and it is today a British national monument, one of the icons of the Industrial Revolution.

Coalport Factory
As appears in *Victorians at Work* (Coalbrookdale: Ironbridge Gorge Museum), 1997

Josiah Wedgwood
1730–1795

In 1765, Josiah Wedgwood founded a new manufacturing plant for pottery. He was the last born of twelve children in a family of four generations of potters. The outlook for a young master-potter might not have been promising, but steam power, turnpike roads, and canals began to make an impact on the industry. Demand grew for cheap, durable earthenware dishes, partly because polite society drank coffee and chocolate and most people drank tea. Prosperity was growing for most social classes. In 1759, Wedgwood opened a business in Staffordshire, and his most important product was cream-colored earthenware. A new standard of craftsmanship called "engine turning" was developed which made fluting and beading of ceramics easier to do. Wedgwood soon attained social prominence, and he was asked by his fellow potters to be their spokesman before Parliament in promoting construction of a new turnpike and the Grand Trunk Canal to their region to ship pottery to a larger market. Wedgwood married a distant cousin and was the master not only of a thriving business but a growing family.

In 1765, he received an unexpected order from Queen Charlotte for a tea service. After that, he added "potter to her majesty" to his bill heads. He later had several other royal clients, including Czarina Catherine of Russia. His growing business needed a new factory, so in 1769 he built one he called Etruria. This was a tribute to the widely held but mistaken belief that the pottery found around the excavations at Pompeii in Italy was Etruscan. He created a neo-classical style and reproduced ancient cameos. In 1770–72, he faced difficult times because his poorly managed factory suffered from workers embezzling funds. In 1772, he was faced with a labor strike. He now rethought his business and focused more on producing for the "middling class of people."

Library of Congress, LC-USZC4-5321

This image appeared on several medallions made by Josiah Wedgwood for the Society for the Suppression of the Slave Trade in England. In 1837, it subsequently appeared on a broadside publication of an antislavery poem by John Greenleaf Whittier.

In 1774, he invented Jasper ware. It did not need glazing and could be cut and polished on a wheel. He also invented a pyrometer, a thermometer capable of measuring high temperatures. In recognition of this achievement, he was elected a Fellow of the Royal Society in 1783. He was also instrumental in the formation of the General Chamber of Manufacturers, which helped maintain prices. In 1787, he became involved in the Society for the Suppression of the Slave Trade. In 1790, he turned his business over to his sons. He then devoted his time to reproducing the Portland Vase, an object that had been found near Rome in 1644 and that had belonged to a Roman killed in 235 CE. It took him four years to make a copy.

Wedgwood died in 1795 after having established not only a great firm but a great industry. His managerial efficiency, avoidance of waste, and use of cheap transport allowed him to undercut his competitors. He became a leader of popular tastes. He was also a sincere philanthropist and model employer. In 1863, William Ewart Gladstone, statesman and collector of Wedgewood Pottery, commended him for "uniting art with industry."

Richard Arkwright
1732–1792

In 1769, Richard Arkwright built a spinning machine that used water power. Called a water frame, it was too big to be used in cottages, so factories had to be built to house it. Arkwright and his partners signed a lease to land in Cromford, Derbyshire, where he built a cotton mill in 1771. This would become Europe's first successful water-powered cotton spinning mill. A second mill built in 1776–77 was powered by stream. Arkwright's mills are seen by historians as representing an essential first phase in the factory system. Derbyshire has even been described as the "cradle of the industrial revolution," and Arkwright's factories were copied by industrialists in England and abroad. His water frame made strong twisted yarn. Mill women operated it. He also had a carding engine, which cleaned raw cotton by brushing out all the bits of dirt. This machine was run by men. The advantage of Arkwright's machine over the spinning jenny was that young people with very little training could operate it. Arkwright's new process of roller spinning was also a major success because it enabled much larger quantities of cotton to be spun more quickly. Besides providing buildings, he had to find a labor force. Some came locally but other came from outside the region. Cromford village was built so that Arkwright could fulfill his commitment to provide housing for his workers. The mill at Cromford is currently being restored.

Photo by Linda Miller

Cromford Village
Many buildings still appear as they did when Arkwright lived there.

Samuel Greg
1758–1834

Samuel Greg was one of thirteen children. Unfortunately, his father's businesses often lost money. His uncle, however, ran a prosperous textile company in Manchester. This man had no children and offered to adopt Samuel. At the time Manchester was becoming a center of cotton production. Samuel's uncle imported cotton and sold finished cloth both in England and abroad. Samuel learned the business quickly. In 1780, he became a junior partner. When his uncle died, Samuel, at the young age of 24, owned one of the largest merchant-manufacturing businesses. After a few years, he built a mill at Styal. Many other entrepreneurs who started cotton spinning factories went bankrupt. But he succeeded because of technical expertise, contacts, and money. He started an Apprentice House for pauper children, who worked in the mill. Mrs. Greg wanted her children to share their knowledge and skills with less fortunate children, so on Sunday afternoons her daughter taught the apprentice girls to sew, read, and write. The Greg boys taught the apprentice lads reading, writing, and arithmetic. By 1834, Greg was worth 319,000 pounds. He died that year after being butted by a stag. His son took over the business, which had become one of the largest cotton firms in the country.

Photo by Linda Miller

The Apprentice House
Greg's Apprentice House still stands today and is open for tours.

Robert Owen
1771–1858

Robert Owen, socialist, entrepreneur, Utopian planner, trade unionist, and pioneer of the co-operative movement, became involved in manufacturing at the age of nineteen as a superintendent of a spinning mill. He was the first in England to use fine, long-fibred American sea-island cotton. He soon mastered the art of cotton spinning and earned a considerable reputation as a producer of fine textiles. His contacts eventually led him to Caroline Dale (daughter of his partner David Dale) and to partnership in mills at New Lanark in Lanarkshire, Scotland. Here he started a bold economic and social experiment for workers which became successful in New Lanark and was promoted abroad as a model. Owen's social reforms and organization extended to every aspect of village life in New Lanark. His single greatest legacy was his education institute. It was here in 1816 that the system of infant education in Britain began. Later, thousands of visitors from abroad passed through the village and their impressions home. He also established a "sick fund" to which the mill workers contributed a sixtieth part of their wages. The village shop was stocked with goods he bought wholesale and sold at almost cost. This benevolence prompted commercial efficiency. His employees made quality goods sold at reasonable prices. He also kept a check on the sale of whiskey and controlled drunkenness in the village. He said, "My intention was not merely to be a manager of cotton mills, but to change the conditions of the people who were surrounded by injurious influences upon the character of the entire population."

Owen traveled throughout Britain and Western Europe lobbying Parliament and the church on his reforms. In 1824, he headed to New Harmony, Indiana to establish an experimental co-operative community. His ideas for social reform were well received at first, but the community did not last long. He left New Harmony in the care of his son, but the experiment ended in the late 1820s in disaster at the cost of much of Owen's personal fortune. In the following years he provided trade unions with a political philosophy and strived to organize them. His efforts culminated in the founding of the Grand National Consolidated Trades Union in 1834. This idea was ahead of its time, however, and it collapsed within in a year. This was the end of Owen as an influential force.

Photo by Linda Miller

Robert Owen Memorial Museum
The museum is on the ground floor of the Town Council building in Newton, Wales. Many of the exhibits can be seen on the museum's Web site:
http://robert-owen.midwales.com/rowen

Image Analysis Worksheet

Step 1: Observation

A. Study the image (painting, drawing, photograph, etc.) for 2 minutes. Form an overall impression of the image and then examine individual items. Next, divide the image into quadrants (four parts) and study each section to see what new details become visible.

B. Use the chart below to list people, objects, and activities in the image.

People	Objects	Activities

Step 2. Inference

Based on what you have observed above, list three things you might infer from this image:

1.

2.

3.

Step 3. Questions

A. What questions does this photograph raise in your mind?

B. Where could you find answers to them?

Adaptation of "Photograph Analysis Worksheet," designed and developed by the Education Staff, National Archives and Records Administration, Washington, DC 20408

Lesson Two
Working Women and Children in the Nineteenth Century

I. Objectives

- To analyze and interpret primary sources concerning women and children working in mines and factories.
- To assess the impact of early industrial labor on British society and family.

II. Historical Background

Conditions in the factories were poor and the new machines could be unsafe. Working hours were long, and factory owners often exploited their workers, including women and children. Nevertheless, they found workers because many people were desperate to find work in order to survive.

Before mills and factories were built, adults and children spun thread and wove cloth in their own homes. The employment of children was a universal feature of the domestic system. Under this system children were put to work as soon as they could perform some kind of service, depending on their parents' occupation. They fetched bobbins, wound spun yarn, and helped weavers prepare the loom. As they grew older, they took up spinning and weaving. The earnings of children were usually small. Those between the ages of four and eight earned 8–12 two pence coins a day at weaving.

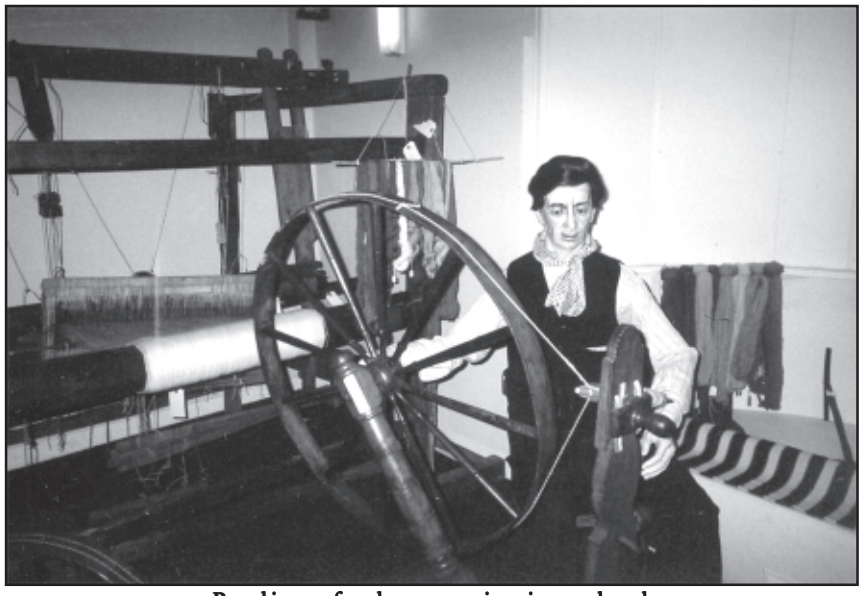


Photo by Linda Miller

Replica of a home spinning wheel
Ceredigion Museum, Aberystwyth Wales

In the nineteenth century, working class families continued to labor together to earn enough for the family to live on. The choice of work depended on the area in which they lived. Some work, like farming, was seasonal. Thus, it was not unusual for people to expect children to continue working when production was transferred to factories. However, employers gave little thought to the conditions that the women and children had to work under—often long hours in hot, humid, noisy rooms equipped with dangerous machinery. These conditions, particularly in coal mines, affected people's health and ability to work. Everyone felt the effects. Few children gained much education, while working mothers had to leave their young boys and girls with relatives or neighbors. Outside the woolen industry, children were employed in cotton, silk, lace-making, knitting, metal trades, and mining. They often went to work in the knitting industry at age four. The difference between cottage industries and the factory system was that in the former the unit of production was the family. In factories it was the individual. This did not mean, however, that parents in cottage industries necessarily treated their children humanely.

In the nineteenth century, woman worked mainly in domestic service, but some worked in various industries with their children. This could be on farms or in factories or mines. These jobs were all physically strenuous and often dangerous. Work, however, was essential for many families' survival. Working in mines usually paid better than jobs above ground. Woman and children were paid less than men for toiling in mines and had different tasks than men had. Men, called "colliers," hewed the coal from the rock, while the woman and children, named "hurriers," hauled the coal through the tunnels to the surface.

Photo by Linda Miller

Mine Entrance
Black Country Living Museum

Conditions for workers, especially in factories, gradually improved in the nineteenth century. Parliament passed many new laws that forced factory owners to change their ways. The Factory Act of 1832 restricted working hours of children in factories. In 1842, the Children's Employment Act prohibited women, as well as boys and girls under ten from working underground in coal mines. This had good effects, but the major problem of poor working conditions still held true for the older boys and men employed in the mines. In fact, mines remained largely unregulated for almost another thirty years. Reform moved at a faster pace for the factories. In 1847, another Factory Act changed the law so that woman and children under the age of eighteen could work only ten hours a day. Twenty years later another Factory Act reduced all factory work to ten hours.

Even so, child labor problems continued. Parents sent children out to work at an early age because families need the extra money that children could earn. Children were paid less than adults, and orphans were sold to mill owners as apprentices. In 1865, the British government sent James White to investigate children at work in Sheffield. He found that children aged six and upwards were working very long hours in dangerous and unhealthy jobs. They had little chance to attend school, and they had very poor housing. Children could do some jobs better because of their size, such chimney sweeping. Many boys were crippled or killed in chimneys before an 1875 law finally put an end to the practice.

In addition to legislative changes, workers also learned to help themselves by joining unions. At first, employers did not accept worker organizations. At the end of the nineteenth century many workers still did not have recognized rights.

III. Lesson Activities

1. Jigsaw

   Break the class into groups and give each group one of the documents from **Student Handout 8** on mine labor. Have each group summarize its document, discussing issues, view points, and bias. Then analyze the impact on society and the families of women and children working in mines. Each individual group should select a spokesperson and present findings to the whole class.

   After students have presented their findings, have the whole class discuss some or all of these questions:

   (a) Why were people upset by the conditions in the mines and chimneys?

   (b) Who objected to women working? To children working? Who did not object?

   (c) Were women who worked underground considered immoral? Why? What would we think today?

(d) What jobs did children do?

(e) Did the children have much education?

(f) Do you think that the information recorded is correct or accurate?

(g) What were common views of the time about children working?

(h) How were people limited by their choice of work? What effect did this have?

(i) Do you think that preventing women and children working underground improved their lives? If so how?

(j) How could life have been improved for older children still working underground?

(k) How might work have affected people's health?

(l) How much change has there been since the nineteenth century in attitudes towards working conditions and working hours? In many households today both parents work. How do you feel about this? Is the idea of woman working in mines today controversial?

2. Have students compare the two documents in **Student Handout 9**—an Employment Commission Account of "Climbing boys in Sweeping Chimneys" and the poem "The Little Chimney Sweep."

Possible Questions:

(a) Identify the author/speaker of each piece.

(b) How does each piece portray children who work as sweepers?

(c) What purpose does each author/speaker have?

3. Gathering information about labor conditions

In order to obtain information for the Parliamentary Commission on Children's Employment (1842), employers were presented with "queries" to be filled out and returned within a week after they were received. If an employer omitted a question, he had to explain why. The finished queries were to be returned to the Commissioners under cover to Her Majesty's Secretary of State for the Home Department. Have students read the queries (**Student Handout 10**). Then, working with the whole class or in groups, analyze and discuss the questions that the Parliamentary interviewers asked.

(a) Were the questions designed to obtain thorough answers, or not?

(b) Do the questions reveal bias? If so, what kind?

(c) From these questions, what picture do you get of labor conditions in mid-nineteenth century England?

(d) If you were designing a similar survey, what questions would you ask?

4. Assessment Activity: How the Other Half Lived

Using the background reading (**Student Handout 11**) as well as other information they have learned in this lesson, have students create skits to reflect the lifestyles of rich and poor children in early industrial England. Have students perform their skits.

Alternatively, have students write a short essay comparing the lifestyles of both rich and poor children in early industrial England with their own lives.

British Parliamentary Papers
Children's Employment (MINES), 1842

No. 16. Hannah Richardson, thirty-nine years of age. Examined at Intake, February 17—

I've one child that works in the pit; he's going on ten. He is down from 6 to 8; he is a trapper; he's not much tired with the work, it's only the confinement that tries him. He likes it pretty well, for he'd rather be in the pit than go to school. There is not much difference in his health since he went into the pit. He was at school before, and can read pretty well, but can't write. . . . I've another son in the pit, 17 years old; he's a hurrier and filler. He went into the pit at eight years old. It's not hurt his health nor his appetite, for he's a good size. It would hurt us if children were prevented from working till 11 or 12 years old, because we have no jobs to live now as it is.

No. 101. Benjamin Mellor, 46 years old. Examined March 18, 1841

I am under-ground steward to four of Mr. Clarke's pits and I have the superintendence of above 90 colliers. I have known children go as early as six, but the usual age would be nine or ten. They could trap first. They generally begin to hurry at 11 or 12. There are not quite so many girls go as boys. . . . I do not think that children suffer from the work. It is usual practice for girls to work in pits here. . . . If a man was to offer an insult to a girl in a pit she would first take her fist and give him a blow in his face.

No. 109. Mathew Lindley

I am nearly 52 years old. I am a collier in Messrs. Day and Twibell's pit. Children are sometimes brought to pits at the age of six years and are taken out of their beds at four o'clock and between that and five throughout the year. They leave the pits between four and five in the afternoon, making an average 12 hours' work. They have a little milk or a little coffee and a bit of bread in the morning before they go to the pit, and they will take nothing with them but a little bread and perhaps a little tea. . . .

It would be better for the health of the children, better for their morals, better for their education, better for the Government and for the country that children should be prevented from working till they were 11 years old; but I think it would be hard on many parents unless wages rose. . . .

No. 114. S.S. Scriven, Sub-Commissioner

The estimation of the sex has ever been held a test of the civilization of a people. Shall it then be said that in the very heart of our own country—from which missions are daily sent to teach God's law and millions upon millions have been generously poured forth for the manumission of hosts in a distant land—that there shall exist a state of society in which hundreds of young girls are sacrificed to such shameless indecencies, filthy abominations, and cruel slavery as is found to exist in our coal pits? Chained, belted, harnessed, like dogs in a go-cart—black saturated with wet, and more than half naked—crawling upon their hands and feet and dragging heavy loads behind them, they present an appearance indescribably disgusting and unnatural.

No. 171. Henry Briggs . Esq. One of the proprietors of the Messers. Stansfield and Briggs' coal mines, Flocton. Examined at Overton near Wakefield, May 3, 1841.

Think the morals of the colliers full as good, if not better, than in the neighboring districts. Gambling is one of their chief vices. . . . There is a great number of illegitimate children. . . . It is not more common among the females who work in pits than among those who work in the fields. The system has prevailed long of having girls in pits; more so formally than now; it is one decidedly better avoided if possible; it must injure the morality in some degree, and then it prevents their learning anything else. . . . I am decidedly of the opinion that they are more cleanly and less immoral than girls who work in factories.

No. 194. Mrs. Nancy Watson

I don't think it does the girls any good going in the pits, but some are well behaved that go. Girls go because they can get better wages than they can in the fields. The children get schooling here far better than most places. There are few places where people take such pains with the poor as Mrs. Stansfield does and all of them at the Manorhouse. They don't get such pains taken elsewhere.

No. 208. Mary Margerson, aged 16.

I work in a pit above the one where Fanny Drake works. We work from 6 in the morning till 5 at night. I don't stop for dinner. I get muck up generally all the time and I rest odd times. I hurry alone, to dip. I am quite sure I have nobody to help me. I work for Joseph Lister, who pays me. The pit is very wet. The water comes up nearly to my calves generally, till they let it off. It is often so for a week together. I find it very heavy work. I am very tired when I come home. I hurry both muck and coals. . . . I wear a petticoat and shift and stays. There is a cold wind in the pit. The man I work for wears nought, he is stark naked. I don't like being in the pit. . . .

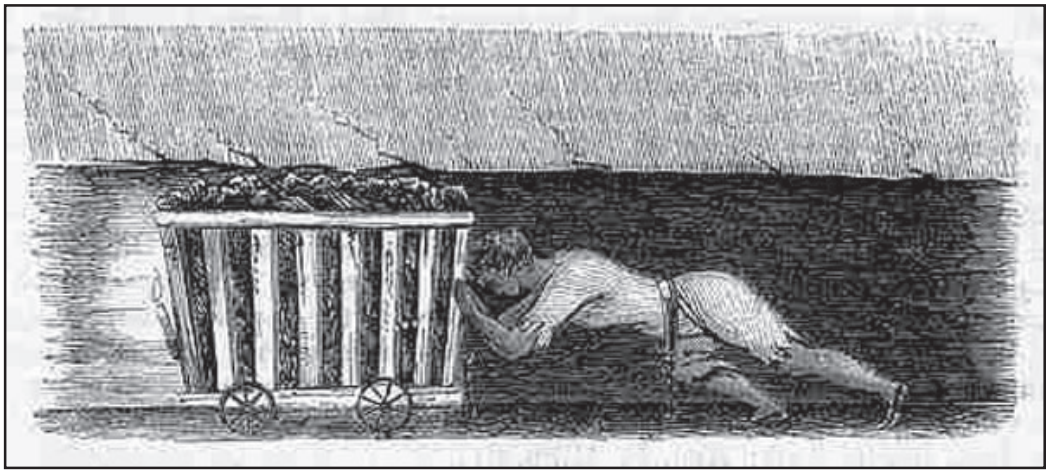
Speech by Lord Ashley, 1842

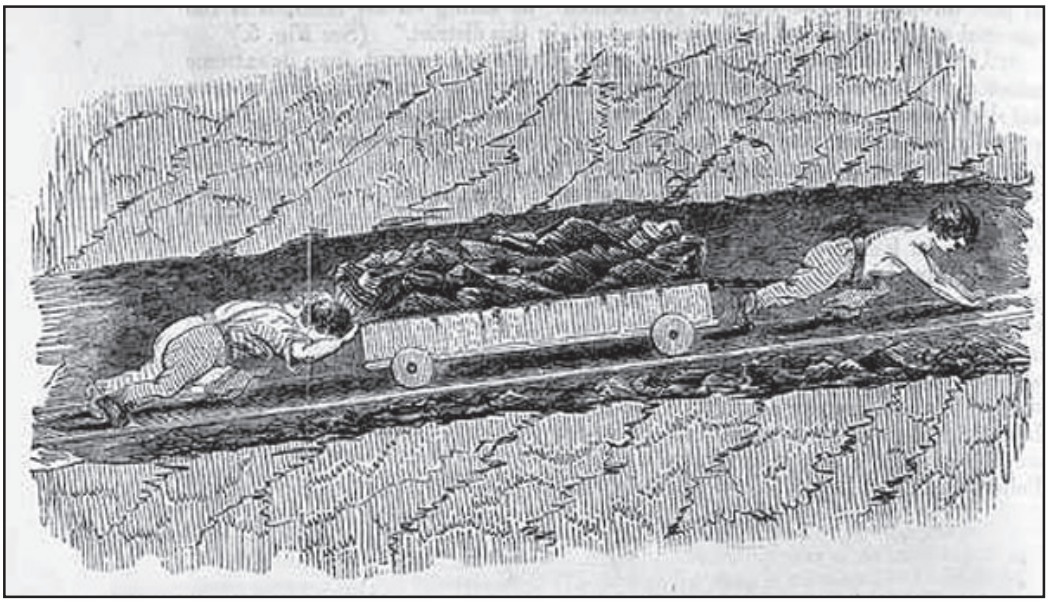
But now mark the effect of the system on women: it causes a total ignorance of all domestic duties; they know nothing that they ought to know; they are rendered unfit for the duties of women by overwork, and become utterly demoralized. In the male the moral effects of the system are very sad, but in the female they are infinitely worse, not alone upon themselves, but upon their families, upon society, and I may add upon the country itself. It is bad enough if you corrupt the man but if you corrupt the woman, you poison the waters of life at the very fountain. Sir, it appears that they are wholly disqualified from even learning how to discharge the duties of wife and mother.

William Corbett, 1824

In the cotton spinning work, these creatures are kept in a heat of from 80-84 degrees. The door of the place wherein they work is locked. Except for half an hour at tea time, the people are not allowed to send for water to drink. In addition, there is the dust and what is called cotton-flyings or fuz, which the unfortunate creatures have to inhale. Men are rendered old and past labor at forty years of age, and the children made decrepit and deformed.

Source: National Coal Mining Museum for England, *Victorian Workers* (1997). [Teaching Materials]





Evidence to the Violation of the Law Relative to the Employment of Climbing Boys in Sweeping Chimneys Examined by Mr. J. E. White, October and November 1862

Mr. George Ruff, Upper Parliament Nottingham

I am a chimney sweeper, and also own a shop here. Twenty-five years ago I was the first agent in this town of an association formed to prevent the use of climbing boys.

At one time soon after the Act (3 & 4 Vic. C. 85, 1840) their number in this town was brought very low. But lately they have very much increased. A few months ago I made out a list of 14 men here employing between 21 boys; one employed 3. I have since found that I had omitted some. The boys are, I should say, between the ages of 8 and 14 with few perhaps of 6 and 7. I am certain that unless something is done things will soon be as bad as ever. There is a competition here between those who use boys and those who will not, and an association of those masters who object to their use has been formed to stop it. I have nothing to do with it.

The law against climbing boys is a dead letter here. At first a paid agent was employed by some gentlemen and ladies in the town to watch the sweeps, but he has given up, as he came to neglect the duty.

No prosecutions were brought till, as nearly as I remember, about 12 years ago when Mr. Peter Hall visited this town, amongst other places for the purpose and he came at intervals afterwards but has of late discontinued his visits. Some sweeps and one householder were convicted and punished but several got off. The magistrate required evidence which it was almost impossible to procure, such as seeing the boy actually in or just leaving the chimney. Mr. Hall complained that after all his cost and trouble he failed here, in many cases on evidence clear enough to convict anywhere else as seeing a boy enter a house without a machine and leave it with soot. He was however much dreaded by the sweeps and as soon as his arrival became known by the railway policemen or any one seeing him at the stations the sweeps were all on their guard and he had to employ a person unknown to watch the sweeps for him.

The use of boys is much encouraged by the fact that many householders will have their chimneys swept by boys instead of by machines. I have myself lost a great amount of custom which I should otherwise have, and some which I formerly had at large houses and public establishments because I will not use boys. That reason was not given. But I was not employed after I refused. I have been sent away even from magistrates' houses and in some cases even by ladies who have professed to pity the boys for refusing to use them.

However, to satisfy particular customers and in order to be able to do jobs where perhaps one chimney out of a lot would need a boy, I did for a time try to bring up one of my own children to it, but my wife and I felt that we could not stand it any longer and that we would sooner go to the workhouse than suffer what we did from it.

No one knows the cruelty which a boy has to undergo in learning. The flesh must be hardened. This is done by rubbing it, chiefly on the elbows and knees with the strongest brine as that got from a pork shop close by a hot fire. You must stand over them with a cane or coax them by a promise of a half-penny &c if they will stand a few more rubs.

At first they will come back from their work with their arms and knees streaming with blood and the knees looking as if the caps had been pulled off.

Children's Employment Commission, 1862: First Report of Commissioners Presented to Both Houses of Parliament, 1863.

Chimney Sweeps
Oncology's Arrival in the 'Age of Reason,'
"Cancer among chimney sweeps,"
U.S. National Library of Medicine

The best age for teaching boys is about 6. That is thought a nice trainable age. But I have known 2 at least of my neighbor's children begin at the age of 5. I once saw a child of only 4½ years in the market place in his sooty clothes and with his scraper in his hand. I know that was his age. Some said "look at that little fellow, he is not 4? But one man standing by said "he's 4 ½ his father (naming him) told me his birthday, and said that he began when he was 4 and that he would make a nice little climber."

Nottingham is famous for climbing boys. This is on account of the chimneys being so narrow. A Nottingham boy is or was worth more to sell.

A boy of about 7 or 8 was stolen from me once. As he was in the street a man seized him from behind in his arms, carried him off straight to a lodging house and stupefied him with drugged tea. After the tea the child fell into deep sleep and lost all his appetite. An inspector and I raced him to Hull. The boy was so glad to find that "master" had come. The man had said that if they had got him to France, they should have had 10 pounds for him. There was another boy found with him.

Seven or eight years ago a boy was smothered in a chimney here. The doctor who opened his body said that they had pulled his heart and liver out of place in dragging him down. . . .

"The Little Chimney Sweep"
by Mr. Urron (put to music by Mr. W. T. Park)

'Twas a keen frosty morn, and the snow heavy falling,
When a child of misfortune was thus sadly calling, "Sweep! Sweep! I am cold and the
Snow is very deep,
"O, pray take compassion on poor little sweep!
Sweep! Sweep!"
The tears down his checks in large drops were fast rolling,
Unnotic'd, unpity'd by those by him strolling,
Who frequently warn'd him, at distance to keep
While he cried, "Take compassion on poor little sweep!"

In vain he implor'd passing strangers for pity,
This smil'd at his plaints and that banter'd his ditty:
Humanity's offspring as yet lay asleep.
Nor heard the sad wailing of poor little sweep.

At the step of a door, half froze and dejected,
He sat down and griev'd, to be shun'd and neglected;
When a kind-hearted damsel by chance saw him weep,
And resolv'd to befriend him, the distress'd little sweep.
"Sweep! Sweep!'

In rapture she gaz'd on each black sooty feature,
And hugg'd to her bosom the foul-smelling creature!
Who sav'd by a sister no longer need creep
Thro'lanes, courts and alleys, a poor little sweep.

Source: Quoted in Richard Iliffe and Baquley, *Victorian Nottingham: A Story in Pictures* Vol. 16, Nottingham Historical Files (Derby and Sons, n.d.).

Gathering Information about Labor Conditions

Name of person carrying on the works: _____

Description of work carried on: _____

Number of persons employed:

_____Adults above 21 (male and female)
_____Young persons between 13-21 (male and female)
_____Children under 13 (male and female)

Moving power employed to drive machinery

_____Hand
_____Animal
_____Wind
_____Steam
_____Water

Town and street in which situated _____

Queries

Workplace and Machinery

1. Is there any special provision in your works for ventilation? If so describe its nature and effects.
2. Are all the dangerous parts of the machinery fenced off? If not, why not?
3. Have you any accommodations in your works to enable the workpeople to change their clothes on entering the works, or for washing or putting on additional clothing or leaving them; or any arrangements to ensure their personal cleanliness, or any conveniences for cooking or warming their food? If you have specify those arrangements.
4. What is the usual temperature in the different parts of your works in which children are employed?
5. What is the highest degree of heat required for any processes in your works in which children are employed?
6. How are the works lighted?

Employment of Children

7. Do any of the processes carried on in your works necessarily require the employment of very young children and why? What is the youngest age required?
8. Have any recent alternations in machinery rendered necessary the employment of a greater or less proportion of children in your works?

Hours of Employment

9. What is the usual number of hours each day during which your works are carried on?
10. What is the greatest number of hours that your works or any of them, have been carried on in any one day during the last year?
11. At what times and under what circumstances were the usual or regular hours of work exceeded?

12. Do you consider this or any excess beyond the regular hours of work avoidable? If not avoidable state why not.
13. What is the greatest number of hours that the same set of children in your employment have been kept at work during any one day of the last year?
14. Have you at any former time usually carried on your works for a greater number of hours daily than you do at present?
15. Has a system of relays or change of hands in the employment of children been tired? If so describe in what manner and how the plan has answered.
16. What is your opinion as to the probable effects of a reduction of the working hours of children, and the grounds of such opinion?

Night Work That Is after Nine O'clock at Night and before Five O'clock In the Morning

17. Do you work at night, that is after nine o'clock at night and before five o'clock in the morning? If so state for how many hours and under what circumstances.
18. Have you employed a night set of children as well as a day set? If so explain how you arrange their hours of work.
19. Do the same set of hands work uniformly by night or do they change periodically with the day set?
20. How many times have any of your works in which children have been employed at night during the last year?
21. What is the greatest number of children who have been employed at night work at any one time during the last twelve months; and what is the greatest number of hours during which any children have been employed on any one night?
22. Would a prohibition of night work for children affect you and in what way?

Continuous Process

23. Do any processes in your works indispensably require the labor of children to be continuous during twenty-four hours; and what they are?
24. If not necessarily continuous for the whole twenty-four hours, what is the maximum of the time during which it is indispensable for such processes to be continuous?
25. What are the ages of children usually employed in such practices?

Meal-Times

26. What are the times allowed for meals during the day?
27. Do all, or how many of the persons employed at your works leave them at meal times? State the reasons
28. If you work at night, is there any and what cessation for rest and meals?

Treatment

29. Have you any system of rewards or punishments for inducing attention on part of children employed in your works and if so by whom?
30. Are corporal punishments inflicted on any children employed in your works; and if so by whom?
31. Have you forbidden corporal punishment or taken any steps for their prevention, when you were informed of any instance of their infliction?
32. Have any instructions been given by you to your foreman or your overlooker with relation to the punishment of children? State those instructions. If in print append a copy to these returns.
33. Is there a marked difference in skill and general character between the older hands who have been employed in the works from infancy, and those who have been taken into such employment at later periods?

34. Is there in connection with your works any school, reading room, lending library or sick fund? If so, state the particulars respecting each as fully as you can.

35. If you have any further observations to make with reference to the present inquiry, have the goodness to tell them.

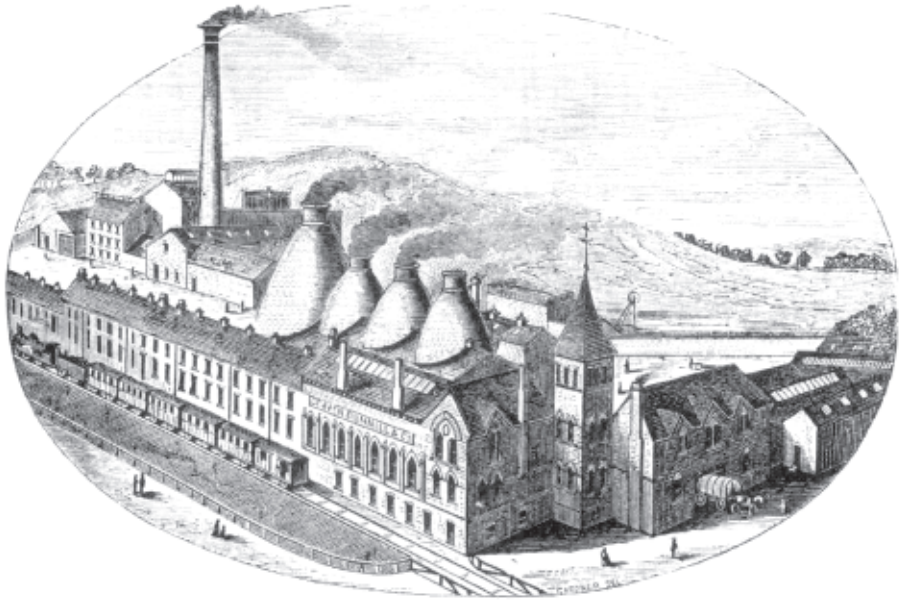
Signature of Person making answers _____

Whether principal or agent _____

Day of answers the _____ day of 184_____

_____

Source: Children's Employment Commission, "Appendix: Second Report on Employment of Children," November 16, 1840, 214–16.



Craven Dunnill & Co. Works

One of many factories in the Ironbridge Gorge, now known as the "birthplace of industry"

Source: *Victorians at Work* (Coalbrookdale: Ironbridge Gorge Museum), 1997

How the Other Half Lived

The children of the poor were not the only children who lived during the Industrial Revolution. Factory owners, bankers, merchants, and landowners also had offspring. Their children, however, usually lived very differently from the poor.

While the children of the poor might work alongside their parents, relations between rich people and their children were often strained, as they only saw each other briefly throughout the day. Many affluent Victorian parents considered it inappropriate to coddle their children, believing too much affection would leave them unprepared for the rigors of adult life. In a wealthy Victorian household parents usually employed a nanny to care for the children. She lived with the children in their own nursery, which was separate from the rest of the house. It was here that the children ate and slept. Children were often more fond of their servants, who cared for them, than of their parents, whom they rarely saw. Often a nanny would stay with one family her whole working life and care for more than one generation of children.

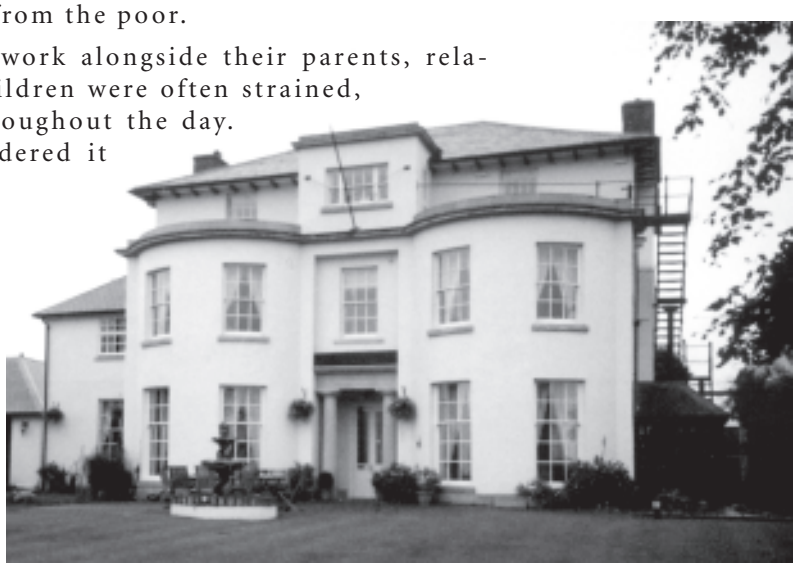


Photo by Linda Miller

Edderton Hall
Now a bed and breakfast, this was typical of homes for well-to-do Victorian families.

Victorian children of affluent families dressed as miniature versions of their parents. Up to the age of three or four boys wore dresses. They then wore breeches and suits. Tweed suits and sailor suits were very popular for young gentlemen. Girls wore corsets and full skirts with lots of frills. They had to move carefully to avoid knocking anything over. Children had no special play clothes and so were expected to play properly and not get dirty.

Wealthy children typically had nursery filled with toys. Older children often owned a toy theater. Games played outside changed according to the season. Reading was a favorite pastime. Books well-loved by children included *Oliver Twist* and *A Christmas Carol* by Charles Dickens, *Alice's Adventures in Wonderland* by Lewis Carroll, Anna Sewell's *Black Beauty*. and Robert Louis Stevenson's *Treasure Island*.

For well-to-do young gentlemen, an education either meant being taught at home by a private tutor or attending a public boarding school such as Eton or Rugby. At school boys were taught Classics (Latin and Greek) as well as reading, writing, and arithmetic. After attending public school it was important that a young man go to the right university so that he could make contacts for his future. The best universities were Oxford and Cambridge.

A girl's education was not considered to be as important as she was normally destined to become wife and mother. Girls were taught at home by a governess and lessons

Photo by Linda Miller

Replica of a more affluent home
This replica is in a room behind the "Victorian School of the 3rs," Llangollen, North Wales.

included sketching, singing, and embroidery. Victorian girls also practiced deportment which was the art of sitting and moving properly. For many wealthy young ladies life was an endless round of social gatherings—attending balls, the opera, or the theater, so as to be seen by prospective suitors.

Despite suffering hardships such as cold houses, lack of parental contact, and susceptibility to serious childhood diseases, it seems that the lives of wealthy Victorian children were typically happy. They were in the care of their nanny and had a constant supply of toys and activities.

Source: Marie Clare Peiuy, Victorian *Newstead "A Victorian Childhood at Newstead Abbey"* City of Nottingham.

Photo: Linda Miller

Lesson Three
Reform: Parliamentary Debates About Child Labor

I. Objectives

- To examine and analyze parliamentary debates about child labor.
- To evaluate evidence about the impact of children working in factories and mines.

II. Historical Background

Child labor did not go unquestioned. Some mill owners tried to take care of the workers who made them wealthy. Samuel Greg and Robert Peel were among them. Peel owned several cotton mills in Lancashire. In the 1780s, he employed most of the workers in the town of Bury, including more than 1,000 children. It seemed that if real change was to come it would have to come through parliamentary action, so in 1802, he helped pass a law which prohibited apprentices from working more than twelve hours a day. Richard Oastler (1789–1861), son of a clothing merchant, led a campaign to get a ten hour working day for all textile workers. He wrote a series of letters titled "Yorkshire Slavery" to a newspaper in the city of Leeds. These letters ignited tempers over whether or not mill owners had the right to employ their workers freely without the interference of Parliament. Oastler contended that many children led lives as cruel as those of African slaves in the Caribbean because these boys and girls were compelled to work day and night for fourteen hours or more a day. He called these children the little white slaves of factories.

A committee was set up in the House of Commons to inquire into the facts about a shorter working week. The reformers turned to a member of parliament, Michael Thomas Sadler (1780–1835), a Leeds linen merchant, High Tory, and devout Christian to be their champion. Sadler condemned Thomas Malthus, the English economist who argued that poverty was unavoidable, accused the poor of being the cause of their own poverty, and thought that wars and famine might be beneficial as checks on population growth. Decrying an industrial society "in which a man counted from his birth the gain he should make of his children by their labor in the accursed manufactories," he presided over an investigation by a Select Committee on child labor in factories. The findings of the committee shocked Parliament. The 682-page report contained testimony from 87 witnesses. However, Parliament was dissolved before the Committee concluded its deliberations, and Sadler lost his seat in Parliament in 1832 to an opponent of factory reforms.

Some members of Parliament were unhappy with the committee's findings because it presented only workers' views. Sadler's investigation brought many protests from employers. Masters in each textile industry denied the allegations brought against them and agreed that abuses occurred elsewhere. They insisted that their work was healthy and light and made the point that child labor was essential to the economy of the family and the factory. Subsequently, a Royal Commission was set up to hear both sides.

The Commission worked quickly and within two months it finished its report. It contained evidence of long working hours and harsh conditions that damaged children and young people. Critics represented the proceedings as inquisitions because witnesses were heard behind closed doors. Everyone regarded the commission as a mere device to shelve the question and postpone indefinitely a reform that the workingmen regarded as urgent. In reality the commission accomplished its task with extraordinary speed. Members of Parliament were convinced that action needed to be taken.

The report, however, was less than successful in providing for protection of children. For example, the commissioners proposed that every child employed in a factory should be compelled to attend a school, but it provided for no funds for children's education. The provision of the schools was left to manufacturers, who were to recover the cost out of the wages paid to the children in their employment.

III. Lesson Activities

1. Distribute "Testimony about Child Labor," **Student Handout 12**. Using a reader's theater setting, students will assume the roles of workers, manufacturers, and investigators during Michael Sadler's House of Commons' Committee hearing as well as an 1833 Royal Commission on child labor. One to four students can play the role of Michael Sadler, who questions witnesses A–D. The witness testimonies A and B are quite long—so you may also want to divide the roles between two students. In addition to the examiners and witness, have 6–12 students play the role of "history's jury," using the "Jury Guidelines" (**Student Handout 13**).

   After all the testimony is concluded, have the jury take turns sharing their impressions of the testimonies.

   Roles

   Jury: 6-12 students

   Commission Chair: Michael Sadler (1-4 students)

   Witness A: Matthew Crabtree

   Witness B: Elizabeth Bentley

   Witness C: Samuel Downe

   Witness D: Reverend Abercrombie Lockhart Gordon

   Examiner: Dr. Hawkins

   Witness E: Robert Blincoe

   Witness F: Joseph Birley

   Witness G: Vernon Royles

2. Assessment Activity: Factories Regulation Act (1833)

   Reviewing what students have learned in so far, have the class suggest what legislation they think should be passed as well as what problem they think that would solve. List the suggestions on the board.

   Have students read **Student Handout 14**, "Factories Regulation Act (1833)." After they have read the article, instruct them to refer to the class list on the board. As an individual writing assignment or a class discussion, answer the question:

   What problems did the Act of 1833 address? Which problems went unaddressed?

Testimony About Child Labor

May 18, 1832
Chair: Michael Thomas Sadler
Witness A: Mr. Matthew Crabtree (called in and examined)

2481.	Chair:	What age are you?
	Witness A:	Twenty-two
2482.	Chair:	What is your occupation?
	Witness A:	a blanket manufacturer
2483.	Chair:	Have you ever been employed in a factory?
	Witness A:	Yes
2484.	Chair:	At what age did you first go to work in one?
	Witness A:	Eight
2485.	Chair:	How long did you continue in that occupation?
	Witness A:	Four years
2486.	Chair:	Will you state the hours of labor at the period when you first went to the factory in ordinary times?
	Witness A:	From 6 in the morning until 8 at night.
2487.	Chair:	Fourteen hours?
	Witness A:	yes
2488.	Chair:	With what intervals for refreshment and rest?
	Witness A:	An hour at noon.
2489.	Chair:	Then you had no resting time allowed in which to take your breakfast, or what is in Yorkshire called your “drinking”?
	Witness A:	No
2490.	Chair:	When trade was brisk what were your hours?
	Witness A:	From 5 in the morning to 9 in the evening.
2491.	Chair:	Sixteen hours?
	Witness A:	Yes
2492.	Chair:	With what intervals at dinner?
	Witness A:	An hour
2493.	Chair:	How far did you live from the mill?
	Witness A:	About two miles.
2494.	Chair:	Was there any time allowed for you to get your breakfast at the mill?
	Witness A:	No
2495.	Chair:	Did you take it before you left your home?
	Witness A:	Generally
2496.	Chair:	During those long hours of labor could you be punctual; how did you awake?
	Witness A:	I seldom did awake spontaneously; I was most generally awoke or lifted out of bed, sometimes asleep by my parents.
2497.	Chair:	Were you always on time?
	Witness A:	No.

2498. Chair: What was the consequence if you had been late?
Witness A: I was most commonly beaten.

2499. Chair: Severely?
Witness A: Very severely, I thought.

2500. Chair: In whose factory was this?
Witness A: Messrs. Hague and Cook's of Dewsbury.

2501. Chair: Will you state the effect that those long hours had upon the state of your health and feelings?
Witness A: I was, when working those long hours, commonly very fatigued at night, when I left my work; so much so that I sometimes should have slept as I walked if I had not stumbled and started awake again; and so sick often that I could not eat, and what I did eat I vomited.

2502. Chair: Did the labor destroy your appetite?
Witness A: It did.

2503. Chair: In what situation were you in that mill?
Witness A: I was a piecener.

2504. Chair: Will you state to this Committee whether piecening is a very laborious employment for children or not?
Witness A: It is a very laborious employment. Pieceners are continually running to and fro and on their feet the whole day.

2505. Chair: The duty of the piecener is to take the cardings from one part of the machinery and to place them on another?
Witness A: Yes

2506. Chair: So that the labor is not only continual, but it is unabated to the last?
Witness A: It is unabated to the last.

2507. Chair: Do you think, from your own experience, that the speed of the machinery is so calculated as to demand the utmost exertions of a child, supposing the hours were moderate?
Witness A: It is as much as they could do at the best; they are always upon the stretch, and it is commonly very difficult to keep up with their work.

2508. Chair: State the condition of the children towards the latter part of the day, who have thus to keep up with the machinery?
Witness A: It is as much as they can do when they are not very much fatigued to keep up with their work, and towards the close of the day, when they come to be more fatigued, they cannot keep up with it very well, and the consequence is that they are beaten to spur them on.

2509. Chair: Were you beaten under those circumstances?
Witness A: Yes

2510. Chair: Frequently?
Witness A: Very frequently

2511. Chair: And principally at the latter end of the day?
Witness A: Yes

2512. Chair: And is it your belief that if you had not been so beaten, you should not have got through the work?
Witness A: I should not if I had not been kept up to it by some means.

2513. Chair: Does beating them principally occur at the latter end of the day, when the children are exceedingly fatigued?
Witness A: It does at the latter end of the day, and in the morning sometimes, when they are very drowsy, and have not got rid of the fatigue of the day before.

2514. Chair: What were you beaten with principally?
Witness A: A strap

2515. Chair: Any thing else?
Witness A: Yes, a stick sometimes; and there is a kind of roller which runs on the top of the machine called a billy, perhaps two or three yards in length and perhaps an inch and a half, or more in diameter; the circumference would be four or five inches; I cannot speak exactly.

2516. Chair: Were you beaten with that instrument?
Witness A: Yes

2517. Chair: Have you yourself been beaten and have you seen other children struck severely with that roller?
Witness A: I have been struck very severely with it myself, so much as to knock me down, and I have seen other children have their heads broken with it.

2518. Chair: You think that it is a general practice to beat the children with the roller?
Witness A: It is.

2519. Chair: You do not think then that you were worse treated than other children in the mill?
Witness A: No I was not, perhaps not so bad as some were.

2520. Chair: In those mills is chastisement towards the latter part of the day going on perpetually?
Witness A: Perpetually.

2521. Chair: So that you can hardly be in a mill without constant crying?
Witness A: Never an hour, I believe...

2523. Chair: At the time when you were beaten for not keeping up with your work were you anxious to have done it if you possibly could?
Witness A: Yes: the dread of being beaten if we could not keep up with our work was a sufficient impulse to keep us to it if we could.

2524. Chair: When you got home at night after this labor did you feel much fatigued?
Witness A: Very much so.

2525. Chair: Had you any time to be with your parents, and to receive instruction from them?
Witness A: No

2526. Chair: What did you do?
Witness A: All that we did when we got home was to get the little bit of supper that was provided for us and go to bed immediately. If the supper had not been directly, we should have gone to sleep while it was preparing.

2527. Chair: Did you not as a child, feel it very grievous hardship to be roused so soon in the morning?
Witness A: I did.

2574.	Chair:	At what age did you leave that employment?
	Witness A:	I was about 12 years old.
2575.	Chair:	Why did you leave that place?
	Witness A:	I went very late one morning, about seven o'clock and I got severely beaten by the spinner and he turned me out of the mill and I went home, and never went any more.

June 4, 1832
Chair: Michael Thomas Sadler
Witness B: Elizabeth Bentley

5127.	Chair:	What age are you?
	Witness B:	Twenty-three
5128.	Chair:	Where do you live?
	Witness B:	At Leeds.
5129.	Chair:	What time did you begin to work at a factory?
	Witness B:	When I was six years old.
5130.	Chair:	At whose factory did you work?
	Witness B:	Mr. Busk's
5131.	Chair:	What kind of mill is it?
	Witness B:	Flax mill
5132.	Chair:	What was your business in that mill?
	Witness B:	I was a little doffer.
5133.	Chair:	What were your hours of labor in that mill?
	Witness B:	From five in the morning until nine at night, when they were thronged.
5134.	Chair:	For how long a time together have you worked that excessive length of time?
	Witness B:	For about half a year.
5135.	Chair:	What were your usual hours of labor when you were not so thronged?
	Witness B:	From 6 in the morning until 7 at night.
5136.	Chair:	What time was allowed for your meals?
	Witness B:	Forty minutes at noon.
5137.	Chair:	Had you any time to get your breakfast or drinking?
	Witness B:	No we got it as we could.
5138.	Chair:	And when your work was bad, you had hardly any time to eat it at all?
	Witness B:	No we were obliged to leave it or take it home, and when we did not take it, the overlooker took it, and gave it to his pigs.
5139.	Chair:	Do you consider doffing a laborious employment?
	Witness B:	Yes
5140.	Chair:	Explain what it is you had to do?
	Witness B:	When the frames are full, they have to stop the frames and take the flyers off, and take the bobbins off, and carry them to the roller; and then put empty ones on, and set the frame going again.

5141. Chair: Does that keep you constantly on your feet?
Witness B: Yes there are so many frames and they run so quick.

5142. Chair: Your labor is very excessive?
Witness B: Yes; you have not time for anything.

5143. Chair: Suppose you flagged a little or were too late, what would they do?
Witness B: Strap us.

5144. Chair: Are they in the habit of strapping those who are last in doffing?
Witness B: Yes

5145. Chair: Constantly?
Witness B: Yes

5146. Chair: Girls as well as boys?
Witness B: Yes

5147. Chair: Have you ever been strapped?
Witness B: Yes

5148. Chair: Severely?
Witness B: Yes

5149. Chair: Is the strap used so as to hurt you excessively?
Witness B: Yes it is. . . .

5218. Chair: Have you been attended to by any medical gentleman at Leeds or the neighborhood?
Witness B: Yes I have been under Mr. Hares.

5219. Chair: To what did he attribute it?
Witness B: He said it was owing to hard labor, and working in the factories.

5220. Chair: He told you that?
Witness B: Yes

5221. Chair: Did he tell your mother also?
Witness B: No she was not alive; Mr. Hares told me that it would be a year before I should be straight again.

5222. Chair: You were obliged to return to your work?
Witness B: Yes

5223. Chair: Did he tell you that this misfortune had come upon you from over-working in the factories?
Witness B: Yes, he did; he said it was nothing else that brought it on.

5224. Chair: Where did you go then?
Witness B: I went to Mr. Walker's

5225. Chair: How old were you when Mr. Hare saw you?
Witness B: About 21 years old.

5226. Chair: About two years ago?
Witness B: yes

5227. Chair: Did the deformity come upon you with much pain and weariness?
Witness B: Yes; I cannot express the pain I had all the time it was coming.

5228. Chair: You went to Futham and Walker's afterwards?
Witness B: Yes

5229. Chair: Is that a flax mill?
Witness B: Yes

5230. Chair: In what situation did you got there?
Witness B: I went into the spinning room.

5231. Chair: What were the hours of labor there when they were busy?
Witness B: From half-past 5 in the morning to 8 and half-past 8.

5232. Chair: Is it found necessary in that mill to strap the children up to their work?
Witness B: Yes the doffers; I have seen them strap them as well as others.

5233. Chair: So that as far as you have experience in those factories, these poor children are beaten when so much labor is exacted from them?
Witness B: There is nothing else for them.

5234. Chair: You do not think they could be kept up to their work unless they were so abused?
Witness B: No they could not.

5235. Chair: In that mill also did they strap the children?
Witness B: Yes they did.

5236. Chair: Perpetually?
Witness B: Yes

5237. Chair: What were the hours for refreshment at that mill at the time to which we are alluding?
Witness B: Forty minutes at noon.

5238. Chair: There was no time allowed for drinking or breakfast at that mill?
Witness B: Yes they have at present.

5239. Chair: Had they before the present measure was in agitation?
Witness B: No, only forty minutes in winter, and half an hour in summer.

5240. Chair: Was that time abridged?
Witness B: Yes it was

5241. Chair: What time did you work in winter?
Witness B: From 6 in the morning till 7 or 8 if they were much thronged.

5242. Chair: The children in all cases did not have that time allowed them for their dinner?
Witness B: No

5243. Chair: Was it the general impression among the children that the time allowed for their noon meal was improperly abridged?
Witness B: Yes it was

5244. Chair: What do you call the short hours, or common hours, in the flax business?
Witness B: From 6 in the morning till 7 at night.

5245. Chair: What time for meals?
Witness B: Forty minutes

5246. Chair: Are the children brought in occasionally from their meals before their time?
Witness B: Yes

5247. Chair: By what means?
Witness B: By the clock: sometimes the hand would have slipped down two or three minutes.

5248. Chair: Were the children whipped in sometimes at their work?
Witness B: Yes, out of the mill-yard, the boys after they have gone out to play, the overlooker has got a strap and gone out and strapped them in before their time, that they might come in and get on with their work.

5249. Chair: You have had the misfortune, from being a straight and healthful girl to becoming very much otherwise in your person; do you know of any other girls that have become weak and deformed in like manner?
Witness B: No

5225. Chair: Do you know of any body that has been similarly injured in their health?
Witness B: Yes in their health, but not many deformed as I am.

5250. Chair: You are deformed in the shoulders?
Witness B: Yes

5251. Chair: It is very common to have weak ankles and crooked knees?
Witness B: Yes very common indeed.

5252. Chair: That is brought on by stopping the spindle?
Witness B: yes

5253. Chair: Do you know anything of wet-spinning?
Witness B: Yes it is very uncomfortable; I have stood before the frames till I have been wet through to my skin; and in winter time, when we have gone home, our clothes have been frozen and we have nearly caught our death of cold.

5254. Chair: Were you permitted to give up your labor at any time to suit your convenience and your health, and resume it again when you were more capable of it?
Witness B: Yes we have stopped at home one day or two days, just as we were situated in our health.

5255. Chair: If you had stopped away any length of time, should you have found a difficulty to keep your situation?
Witness B: Yes, we should.

5256. Chair: Were the children constantly beaten to their labor, as you have described?
Witness B: yes

5257. Chair: Where are you now?
Witness B: In the poorhouse.

5258. Chair: Where?
Witness B: At Hunslet.

5259. Chair: Do any of your former employers come to see you?
Witness B: No

5260. Chair: Did you ever receive any thing from them when you became afflicted?
Witness B: When I was at home, Mr. Walker made me a present of 1s or 2s but since I have left my work and gone to the poorhouse, they have not come nigh me.

5261.	Chair:	You are supported by the parish?
	Witness B:	Yes
5262.	Chair:	You are utterly incapable now of any exertion of that sort?
	Witness B:	Yes
5263.	Chair:	You were very willing to have worked as long as you were able from your earliest age?
	Witness B:	Yes
5264.	Chair:	And to have supported your widowed mother as long as you could?
	Witness B:	Yes
5265.	Chair:	State what you think as to the circumstances in which you have been placed during all this time of labor and what you have considered about it as the hardship and cruelty of it.
5266.	Chair:	*The witness is too much affected to answer the question.*

June 4, 1832
Chair: Michael Thomas Sadler
Witness C: Samuel Downe

5267.	Chair:	Where do you live?
	Witness C:	At Hunslet car, near Leeds.
5268.	Chair:	What age are you?
	Witness C:	Twenty-nine
5269.	Chair:	Are you a Leeds man?
	Witness C:	No a native of Shrewsbury.
5270.	Chair:	Have you been acquainted with factories?
	Witness C:	From my youth.
5271.	Chair:	At what time did you begin to work at one?
	Witness C:	At about ten years of age.
5272.	Chair:	In whose mill did you work?
	Witness C:	In Mr. Marshall's
5273.	Chair:	At Shrewsbury?
	Witness C:	Yes
5274.	Chair:	What were the customary hours of labor in that mill; state first what the hours were when they were brisk?
	Witness C:	When they were brisk we used generally to begin at 5 o'clock in the morning, and they ran on till 8 at night; sometimes from half-past 5 to 8 and sometimes 9.
5275.	Chair:	What time had you allowed you for meals and refreshment?
	Witness C:	The engine never stopped, except 40 minutes at dinner time.
5276.	Chair:	Were those long hours found to be fatiguing?
	Witness C:	Yes
5277.	Chair:	What means were taken to keep the children awake and vigilant, especially at the termination of such a day's labor as you have described?
	Witness C:	There was generally a blow or a box, or a tap with a strap or sometimes with the hand.

5278. Chair: Was very considerable severity used in that mill when you were there?
Witness C: Yes

5279. Chair: Have you yourself been subjected to it?
Witness C: Yes

5280. Chair: Strapped?
Witness C: Yes, I was strapped most severely, till I could not bear to sit upon a chair without having pillows, and I was forced to lie upon my face in the night-time at one time, and through that I left; I was strapped both on my own legs and then I was put upon a man's back and then strapped and buckled with two straps on an iron pillar, and flogged, and all by one overlooker; after that he took a piece of tow, and twisted it in the shape of a cord, and put it in my mouth and tied it behind my head.

June 8, 1832
Chair: Michael Thomas Sadler
Witness D: The Reverend Abercrombie Lockhart Gordon

5577. Chair: Are you a minister of the established church of Scotland?
Witness D: Yes

5578. Chair: Residing where?
Witness D: In Aberdeen.

5579. Chair: You have the care of one of the parishes of that city?
Witness D: Yes the Grey friars parish.

5580. Chair: Is that a populous district?
Witness D: There are about 4,000 souls in my parish.

5581. Chair: Your parishioners are surrounded by and mingled up with those engaged in the manufacturing pursuits of the city?
Witness D: Yes

5582. Chair: Have you remarked as to the length of the hours of labor in the manufactories of that city, that they interfere with the health, the education and the morals of the parishioners and others?
Witness D: With respect to health we think that young persons employed at the age of 8, 9, or 10 years, from 6 in the morning til 8 at night must be very much injured in this respect, even in the view of the most inexperienced person; but when I consider what medical men have said and written upon the subject, it is decisive upon that point. To myself, although unacquainted with the details submitted to medical men, it is quite apparent, from looking at these children that they suffer from long hours of labor and confinement in those places. Their wan and sickly appearance is sufficient to prove that, in my view; of the clergymen in Dundee, who states that one of the physicians that had sent up a certificate to the Select Committee to the effect that the children had suffered materially from standing so many hours.

5583. Chair: Does it consist with you observation that children become very unhealthy by this long-continued confinement?
Witness D: I have a large school in my own parish, which children attend after the hours of working in the manufactories and judging from their appearance, the effect is most prejudicial; they have not the healthy and lively look which characterizes children at their time of life;

and I wrote to a person who has the charge of one of the most extensive manufactories in Aberdeen and he said that the respiration of the same air, the immense number of persons employed the friction of the brass machinery, and the rancidity of the oil, and the small particles of flax floating through the room, had a very pernicious effect upon the lungs, which was evident from the hoarseness of the voice,....

5588. Chair: You have stated that you have the superintendence of a school, in which the poorer classes of society are mainly taught?

Witness D: Yes

5589. Chair: You consider that to be one part of your duty, as a minister of religion?

Witness D: A most important duty. The school is one established solely with the view to the young persons employed in the factories; there are other schools, particularly Sunday schools in the parish; but this is one I set up with a view to these persons. They come in at 8 o'clock and there are 115 chiefly from the factory.

5590. Chair: You have given considerable attention to that important subject the Education of the poor that are thus employed?

Witness D: Yes

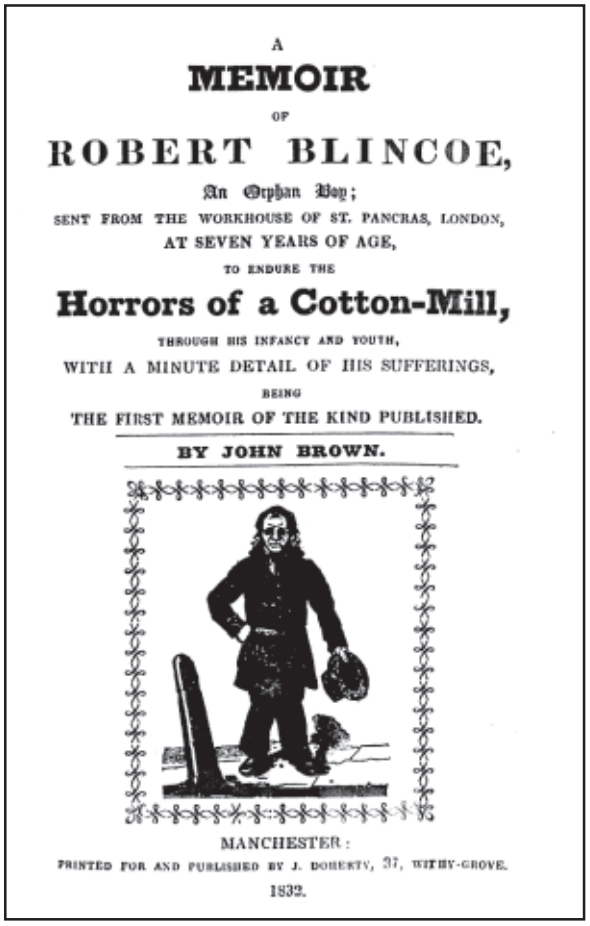
5591. Chair: You have written upon that subject?

Witness D: Yes I have.

5596 Chair: You find that your endeavors in the evening school are frustrated by the over labor of these children, in the first instance producing fatigue, and next abridging the time that it is necessary to have in order to their obtaining any essential improvement?

Witness D: I am very favorably situated. . . . I may state that a colleague of my own, now dead, who carried on a school of this kind, found his exertions almost useless, in consequence of the hours being so late and so irregular.

May 18, 1833
Examiner: Dr. Hawkins


A
MEMOIR
OF
ROBERT BLINCOE,
An Orphan Boy;
SENT FROM THE WORKHOUSE OF ST. PANCRAS, LONDON,
AT SEVEN YEARS OF AGE,
TO ENDURE THE
Horrors of a Cotton-Mill,
THROUGH HIS INFANCY AND YOUTH,
WITH A MINUTE DETAIL OF HIS SUFFERINGS,
BEING
THE FIRST MEMOIR OF THE KIND PUBLISHED.
BY JOHN BROWN.
MANCHESTER:
PRINTED FOR AND PUBLISHED BY J. DOHERTY, 37, WITHY-GROVE.
1832.

Frontispiece, *A Memoir of Robert Blincoe, An Orphan Boy, Sent from the Workhouse at St. Pancras, London at 7 Years of Age to Endure the Horrors of a Cotton Mill* (Manchester: J. Doherty, 1832).

Witness E: Robert Blincoe (Small manufacturer, once an Apprentice to a Cotton mill)

Examiner: Do you know where you were born?
Witness E: No; I only know that I came out of St. Pancreas parish, London

Examiner: Do you know the name of your parents with certainty?
Witness E: No, I used to be called when young Robert Saint; but when I received my Indentures I was called in them Robert Blincoe, and I have gone by that name ever since.

Examiner: What age are you?
Witness E: Near upon forty, according to my indentures.

Examiner: Have you no other means of knowing your age but what you find in your indentures?
Witness E: No; I go by that.

Examiner: Do you work at a cotton mill?
Witness E: Not now. I was bound apprentice to a cotton mill for fourteen years from St. Pancreas parish; then I got my indentures. I worked five or six years after at different mills, but now I have got a work of my own. I rent power from a mill in Stockport, and have room to myself; my business is a sheet wadding manufacturer.

Examiner: Why did you leave off working at the cotton mills?
Witness E: I got tired of it, the system is so bad; and I have had saved a few pounds. I got deformed there; my knees began to bend in when I was fifteen—you see how they are. There are many, many far worse than me at Manchester.

1833
Witness F: Joseph Birley (Manchester cotton manufacturer)

Witness F: My name is Joseph Birley. I own a great cotton factory in Manchester. Every station in life has, more or less it abuses and workers in Cotton factories are not exempt. Isolated cases, some true, some colored, some entirely false, some of old date, are no proof of general suffering. It neither is the practice nor can be the interest of the owners of Factories to enervate or otherwise injure the persons whom they employ-on the contrary, it is necessary that they be alert and attentive, for attention, and not hard labor, is their constant duty...Tales of sorrow, got up for a Parliamentary Committee cannot establish the justices of a sweeping accusation...If the master manufacturers be vilified and fettered as ignorant meddling enthusiasts and philanthropists are now attempting, but not at their own expense, establishments for spinning and weaving will still flourish, but not in Great Britain.

1833
Witness G: Vernon Royle (Clothing factory master from Manchester).

Witness G: My name is Vernon Royle. I am a clothing factory master from Manchester.

So . . . I believe that you have imposed upon the exaggerations and misstatements of parties who conceive it is their interest to procure the passing of the bill and that your fears and imagination have been more than ordinarily excited. . . .

The silk, worsted and woolen mills are the most healthy, and the flax and tow and cotton, the most unhealthy . . . but the factory is to many of its inmates, frequently a palace, in point of everything which contributes to salubrity. . . .

The first and immediate consequence of limiting the ages of children employed to "under 9 years" will be to throw out of employment all that class of hands. This is perhaps the most cruel stroke to the poor man which could have been inflicted... this threatened invasion of the rights of the parent over the child is an infringement of the liberty of the subject, and a direct violation of the homes of Englishmen. . . . The prostitution of this vaunted "measure of humanity" to selfish and sinister purposes, is not an imaginary or conjectural degradation. It is disgustingly notorious . . . the quantum of goods produced in mills and factories will be diminished in direct proportion to the curtailment of the hours of labor.

Sources
Witnesses A–D:
Irish University Press, *Series of British Parliamentary Papers Children's Employment Commission Appendix to First Report Commissioners Mines* Part I: "Reports and Evidence from Commissioners Industrial Revolution Children's Employment," 7 (Shannon Ireland); *Factories Inquiry Commission Second Report Together With Supplementary Report,* Part I: "Employment of Children in Factories With Minutes of Evidence and Reports of Medical and District Commissioners Industrial Revolution Children's Employment," 4; and *Children's Employment Commission Second Report on the Commissioners of Trade and Manufacturers together with an Index to the Second Report and the Appendices Industrial Revolution Children's Employment,* 9. [The numbers have been provided in case students would like to pursue further information on these hearings.]
Witness E:
Joseph Birley, *Sadler's Bill Cotton Branch* (Manchester 1832), 6, 7, in J.T. Ward, The Factory System (New York: Barnes and Noble, 1970), II: 140-41.
Witness F: "A Letter to Sir John Cam Hobhouse Bart, MP on 'The Factories Bill' by a manufacturer," 1882, in Ward, 142.

Jury Guidelines

Witness: _____

1. Is the testimony firsthand or secondhand (if a combination, specify)?

2. Can the information that the witness gives be verified? If yes, how?

3. Are there inconsistencies, contradictions, or gaps in the testimony? If yes, identify.

4. Are the questions fair? If yes, support your answer. If no, why?

5. Which parts of the testimony are facts and which are opinions?

6. What can be concluded reliably from this testimony?

Factories Regulation Act 1833
Statutes of the Realm 3 & 4 WM. IV c. 103

1. Whereas it is necessary that the Hours of Labor Of Children and Young persons employed in Mills and Factories should be regulated, inasmuch as there are great numbers of children and young persons now employed in Mills and Factories, and their hours of labor are longer than is desirable, due Regard being had to their Health and means of education; be it therefore enacted by the King's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons in this present parliament assembled and by the authority of the same, that from and after the first day of January one thousand eight hundred and thirty-four no person under eighteen years of age shall be allowed to work in the night between the hours of half past eight o'clock in the evening and half past five o'clock in the morning, except herein provided in or about any cotton, worsted, hemp, flax, tow, or silk mill or factory wherein steam or water or any other mechanical power is or shall be used to propel or work the machinery in such mill or factory, either in scratching, carding, roving, spinning, piecing, twisting, winding, throwing, doubling, netting, making thread, dressing or weaving of cotton, wool, worsted, hemp, flax, tow or silk either separately or mixed in any such mill or factory situate in any part of the United Kingdom of Great Britain and Ireland: Provided always, that nothing in this act shall apply or extend to the working of any other steam engine, water wheel or other power in or belonging to any mill or building or machinery when used in part of the process or work commonly called fulling, roughing or boiling of woolens, nor to any apprentices or other persons employed therein nor to the labor of young persons above the age of thirteen years when employed in packing goods in any warehouse or place attached to any mill and not used for any manufacturing process; provided also, that nothing in this act shall apply or extend to any mill or factory used solely for the manufacture of lace. . . .

6 . . . and it be further enacted that there shall be allowed in the course of every day not less than one and a half hours for the meals to every such person restricted as herein-before provided to the performance of twelve hours daily work.

7. And be it enacted that from and after the first day of January one thousand eight hundred and thirty-four it shall not be lawful for any person whatsoever to employ in any factory or mill as aforesaid, except in mills for the manufacture of silk, any child who shall not have completed his or her ninth year of age.

8. And be it further enacted, that from and after the expiration of six months after-the passing of this act it shall not be lawful for any person whatsoever to employ, keep or allow to remain in any factory or mill as aforesaid for a longer time than forty-eight hours in any one week, nor for a longer time than nine hours in any one day, except as herein provided, any child who shall not have completed his or her eleventh year of age, or after the expiration of eighteen months from the passing of this act any child who shall not have completed his or her twelfth year of age or after the expiration of thirty months from the passing of this act any child who shall not have completed his or her thirteenth year of age: provided nevertheless, that in mills for the manufacture of silk, children under the age of thirteen years shall be allowed to work ten hours in any one day. . . .

11. And be it further enacted, that from and after the expiration of six months after the passing of this act is shall not be lawful for any person to employ, keep or allow to remain in any factory or mill any child who shall not have completed his or her eleventh year of age without such certificate as is herein-after mentioned, certifying such child to be of the ordinary strength and appearances of a child of the age of nine years, nor from and after the expiration of eighteen months after the passing of this act any child who shall not have completed his or her twelfth year of age without a certificate of the same form, nor from and after the expiration of thirty months after the passing of this act any child

shall not have completed his or her thirteenth year of age, without a certificate of the same form which certificate shall be taken to be sufficient evidence of the ages respectively certified therein.

17 . . . And whereas it appears that the provisions of the said act with relation to the appointment of inspectors were not duly carried into execution, and that the Laws for the Regulation of the Labor of Children in factories have been evaded, partly in consequence of the want of appointment of proper visitors or officers whose special duty it was to enforce their execution; be it therefore enacted that upon the gassing of this act it shall be lawful for his Majesty by Warrant under His Sign Manual to appoint during his majesty's pleasure four persons to be Inspectors of Factories and Places where the Labor of Children and young persons under eighteen years of age is employed and in the case of the death or dismissal of any of them to appoint another in the place of such deceased inspector, which said several inspectors shall carry into effect the powers, authorities and provisions of the present act; and such inspectors or any of them are hereby empowered to enter any factory or mill and any school attached or belonging therein, and to make inquiry such persons as they may choose and to summon and require any person upon the Sport or elsewhere to give evidence upon such examinations and inquiry and to administer to such person an oath.

18. And be it further enacted, that the said inspectors or any of them shall have power and are hereby required to make all such rules, regulations and orders as may be necessary for the due execution of this act, which rules, regulations and orders shall be binding on all persons subject to the provisions of this act; and such inspectors are also hereby authorized and required to enforce the attendance at school of children employed in factories according to the provisions of this act and to order tickets or such other means as they may think fit for the Vouchers of attendance at such schools; . . .

19. And be it further enacted, that from and after the expiration of six months from the passing of this act every child herein-before restricted to the performance of forty-eight hours of labor in any one week shall, so long as such child shall be within the said restricted age, attend some school to be chosen by the parents or guardians of such child, or such school as may be appointed by any inspector in case the parents or guardians of such child shall omit to appoint to any school, or in case such child shall be without parents or guardians; and it shall and may be lawful in such last mentioned case for any inspector to order the employer of any such child to make a deduction from the weekly wages of such child as the same shall become due, not exceeding the rate of one penny in every shilling to pay for the schooling of such child; and such employer is hereby required to pay the sum so deducted according to the order and direction of such inspector.

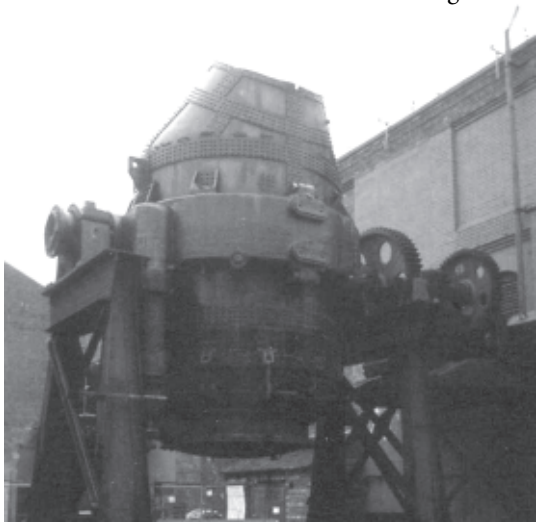
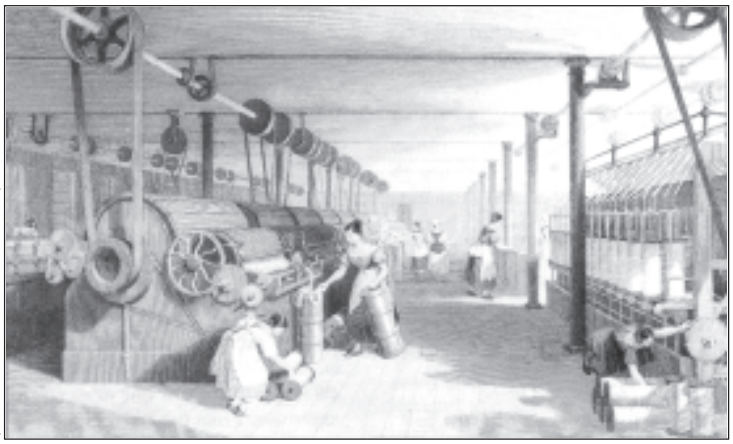


Photo: Linda Miller

Bessemer Converter
Kelham Island Museum
The Bessemer process converted iron into steel.



(Rees and Robinson, 15)

Carding room
Engraving, 1842

Lesson Four
Consequences: Housing and Public Health

I. Objectives

- To analyze primary source accounts on the social consequences of the Industrial Revolution.
- To evaluate the impact of the Industrial Revolution on families.

II. Historical Background

The Industrial Revolution seemed to be an immediate benefit to the upper class, but for most of the people who lived through it, success was not so sure. Workers spent long, monotonous, repetitive hours operating unsafe machinery. This resulted in numerous accidents and health problems. Closely connected with industrial development was the poverty and general distress of people. Industrialization altered the nature of work and changed the fortunes of ordinary folk. Safe drinking water was scarce. Crowded housing engendered disease.

The Industrial Revolution generated inequalities in wealth and power. The less efficient industries were ruined by the new efficiency of British industry. The new manufacturers produced so much, so cheaply. On the world stage industrialization also created a growing gap between modern industrial countries and those whose economies remained mainly agricultural.

The factory took spinning out of the village. Nottingham was one of those towns transformed from a "cottage industry" into a factory town. The increase in lace manufacturing in Nottingham between 1812 and 1830 brought prosperity to the owners of the lace factories and their employees, which allowed workers to move into satellite communities. However, disease spread quickly in congested conditions. After 1820, worker neighborhoods quickly became overpopulated. Homes were built in narrow streets, alleys, and courts, and lacked paving, lighting, and adequate water supply and sewage. Over a hundred year period Nottingham's population increased more than 40,000, all packed into the same community. With the resulting grievances and sharp differences between upper and lower classes, it is not surprising that the period from 1800 to 1850 saw many outbreaks of violence.

Despite the difficulties, there were plenty of people to take these new jobs created by industrialization. Most of these jobs were in the cities, while some were in the coal fields. As agricultural areas declined, more people moved into industrial areas. Consequently, thousands of new homes were built quickly and cheaply. Most employers cared little how their workforce lived.

During the first half of the nineteenth century, environmental conditions, especially in Manchester, deteriorated rapidly. Epidemics of contagious diseases were commonplace, and pollution reached unacceptable levels. Most of the houses where working people lived were not connected to water, drains, or sewers. Privies were outside and several families used one. There was no running water to flush the waste away. The stench was unbearable. Poor people bought water from companies, or they took water from polluted rivers.

The result of the overcrowding and poor living conditions was the recurrence of epidemics such as typhus and cholera. Smallpox, tuberculosis, and scarlet fever were also killers. In 1832 in Manchester there were 1,146 cases of cholera and 492 people died from the disease. The idea of isolating sick people in fever hospitals was usually opposed by the victims' families, who believed that they would inevitably die owing to the deplorable conditions in those institutions. The knowledge that diseases were caused by germs did not become well known until later in the century. Overcrowding, poor ventilation, common privies, contaminated water, filth, stench, and grinding poverty brought disaster. Tuberculosis killed many infant children.

Cholera hit all social classes. The 1832 cholera epidemic stirred the government into action, but national health reform did not come until 1848.

It took another royal commission in 1869 investigating problems of public health to declare that the amenities "necessary for civilized social life" included good water supplies and proper drainage, healthy houses, clean streets, the inspection of food, and adequate burial grounds. This report showed that although strides were being made, more still needed to be done to ensure the population a healthy lifestyle.

In the latter half of the century, conditions began to improve as government made advances in water and sanitary engineering. For example, the construction of reservoirs made it possible to bring pure water to Manchester. The sewage system, however, was not organized until the 1890s. Most sewage ran directly into the rivers without treatment.

By 1900, there were six times more people living in Great Britain than there had been in 1750. There were many reasons for this:

- Changes in farming resulted in more food being produced.
- New transport systems meant that this extra food got shipped more efficiently to the growing towns.
- People started marrying younger, so wives had longer fertility years.
- Factories and mills wanted to employ more and more children.
- People were healthier because plentiful supplies of coal meant that houses were warmer; cotton clothes could be washed easier than woolen ones; cheap soap meant that people could keep cleaner; and medical advances meant that fewer women and their babies died during childbirth. Thus more children survived to have children of their own.

III. Lesson Activities

1. Part One

   Give each student the set of documents in **Student Handout 15**. Divide the class into groups and assign each group one of the documents. Instruct the groups to read and discuss their document, evaluating what the document reveals about the social consequences of the Industrial Revolution for families. Have the groups present their findings to the class. After all documents have been presented, have the class discuss the following questions:

   a. Discuss why the people moved from the countryside to towns.

   b. Why were conditions in towns so bad at this time?

   c. If conditions were so bad, why did so many people move to towns?

   d. Explain why towns were unhealthy places.

Part Two

After discussing the documents from **Student Handout 15**, have each student complete the organizer (page 60), consulting the documents to identify social, educational, legal/criminal, and economic factors that contributed to poor health and housing conditions. In the left column, list causes. In the right column, suggest solutions. After completing this handout, present your findings to develop a plan to reduce the housing problem and improve health conditions using a variety of solutions.

2. Have students in turn read the stanzas of the poem "The Cry of the Children" in **Student Handout 16** aloud and have the class discuss the following questions, citing phrases in the poem to support their answers. Alternatively, this can be an individual reading and writing assignment.

   a. What is the tone of the poem?

   b. How does it reflect the consequences of industrialization?

   c. How do the children feel?

   After reading and discussing the poem, have students write their own poems reflecting on the consequences of industrialization.

3. Photo Analysis. Distribute copies of **Student Handout 17** or access similar images online.

   a. What does the picture tell you about the houses poor people lived in?

   b. Write down what you think living here would have been like.

   c. Why do you think disease might have spread in these conditions?

4. Assessment Activity: "Royal Letters"

   Monarchs write many letters during their reigns. Give the students the following scenario:

   A box of letters belonging to Queen Victoria has been found at a flea market in England. Apparently they had been in the belongings of her royal butler's family. They include a collection of memos, letters, and notes from a variety of people, including court functionaries, family members, foreign investors, Members of Parliament, entrepreneurs, inventors, and ordinary citizens. The correspondence concerns life in Victorian times.

   Have students work as individuals or groups. Each individual or group should recreate one of those letters. Their letters should contain information about life and work conditions of the period. Students should rely on information from the lessons in this unit for their letters. (Optionally, you can extend this into a research activity and have the groups or individuals do outside research to compose their letters.)

   After the letters are completed, have students (or group representatives) share them with the class. Decide whether the letters represent a personal, economic, cultural, or political issue. Summarize what kind of issues the letters address and what, if anything, the author is asking the Queen to do about them.

Report on the Sanitary Conditions by J. R. Martin Esq.

The manufacturing occupations of the population are principally connected with the production of cotton and silk stockings, lace and bobbin-net, which are said to afford employment to upwards of 40,000 inhabitants. The work is carried on in rooms usually overcrowded and ill-ventilated, and in prosperous times during the greatest number of hours that men can be got to work; at other times, with much uncertainty and irregularity, but at all times under moral and physical conditions that tend to the deterioration of health of all who are engaged in these occupations-of the father, mother, and of the child.

"Children," says Mr. Butler, "are confined in number (proportional to space). Their work is stooping, unhealthy employment; they work far more hours than the factory children and appear to have been forgotten by the philanthropy of the day. . . ."

Speaking of the females, the same gentleman observes that "Taken to work at the tenderest age, when they marry they are uneducated for wives and mothers as if they had brought from the Sandwich Islands and expected to manage an English Establishment in Regent street. To this unhappy condition is referred some of the excessive mortality of infants and much of the dissolute and reckless habits of the husbands.

The diet of a considerable portion of the working classes in Nottingham is universally stated to be very poor, owing to the "low and irregular earnings" and they are unable to purchase butchers meat except "in the smallest quantities", the popular diet consisting principally of bread, potatoes, milk. . . . The want of fuel in winter is common: all witnesses speak to this fact. . . ."

The mortality in Nottingham during the years 1840–41 and 1842 was 2.8% while the average mortality of all England is but 2.2%. Mr. Hawksley states the annual mortality at 2.8% and adds that the average age at death amongst males is only 20.5 years and amongst female only 23.9 years. . . .

The circumstances under which children are made to work in Nottingham must unavoidably confine the natural action of the chest, and limit through the great reduction in the quantity of oxygen admitted, the decarbonization of the blood and the due production of animal heat. It may well be anticipated therefore, that diseases of the respiratory and digestive organs are found, in large proportion of instances, to say the foundation of health, and mar the development of a naturally sound constitution; and such is the actual case.

I have been furnished with tables exhibiting the amount of medical relief afforded by the hospitals and dispensaries of Nottingham. These tables show that the patients treated at the dispensary, a very large proportion of the admissions and deaths are from those diseases which are produced and aggravated by crowding, destitution and the other evils described. . . . that the fevers of Nottingham, can in general be traced to houses and rooms in a locality tainted from privies, defective drainage and by the custom of keeping live animals, such as pigs and rabbits in the cellars of inhabited houses; that the rich are rightly served when contagious diseases invade their dwellings of the working classes . . . that the unhealthy compulsory abodes of thousands is bad economy in the towns and state; that if thousands and tens of thousands languish out a brief existence in scrofulous and other forms of disease, almost entirely owing to their miserable and unhealthy houses how great must be the amount of private suffering. . . . It will be sufficient to state in conclusion that, upon the most careful examination, the average age at death of the inhabitants of several of the Nottingham districts is only 14 or 15 years, a lower rate than has as yet been ascertained to exist in any other city or town within the British empire.

J. R. Martin, "Report on the Sanitary Conditions," in University of Nottingham, *Public Health and Housing in Early Victorian Nottingham* (University of Nottingham: Manuscripts Department, 1975), Teaching Unit 3.

Disease and Death Rate from Cholera

The cholera germ enters the body via the mouth, usually in contaminated water or food and sets up an infection in the small intestine. The incubation period is short, never longer than 5 days and sometimes less than one.

The disease usually developed in three relatively well defined stages; the stage of evacuation, the stage of collapse and the stage of reaction. The onset was invariably abrupt and characterized by a purging diarrhoea and copious vomiting which emptied the stomach and was followed by exhausting retching and hiccupping. As the body became dehydrated, agonizing cramps afflicted legs, arms, abdomen and back.

As the patient passed into the stage of collapse his physical appearance changed completely-his skin became lax, wrinkled, cold and clammy to touch, his eyes sunken, his cheeks hallow, and there was blueness about the eyes and lips. The voice became husky, the expression anxious and apathetic. His blood pressure fell and he was unable to urinate. At this stage death could occur from circulatory failure or failure of bodily functions.

If the patient was lucky, he survived the second stage; his blood pressure was restored, his urine flow was restored and he slowly recovered, though heart failure could still follow the slightest exertion.

Painting depicting the London cholera epidemic
U.S. National Library of Medicine
photographic archive

[1832] Mr. John Kale, basket maker of South Street, aged 23 years and his wife, aged 21 years died on the 12th of October. They were both in perfect health when they arose in the morning, but soon after the wife complained of being unwell; not suspecting anything materially amiss, he went on his business to Hucknall and on returning through Bulwell in the afternoon, was taken ill, and was so bad that he died on the road and so rapid was the decomposition of the body that it was obliged to be buried the same evening at Basford. In the meantime the wife sickened and died the same night of cholera at South Street in Nottingham.

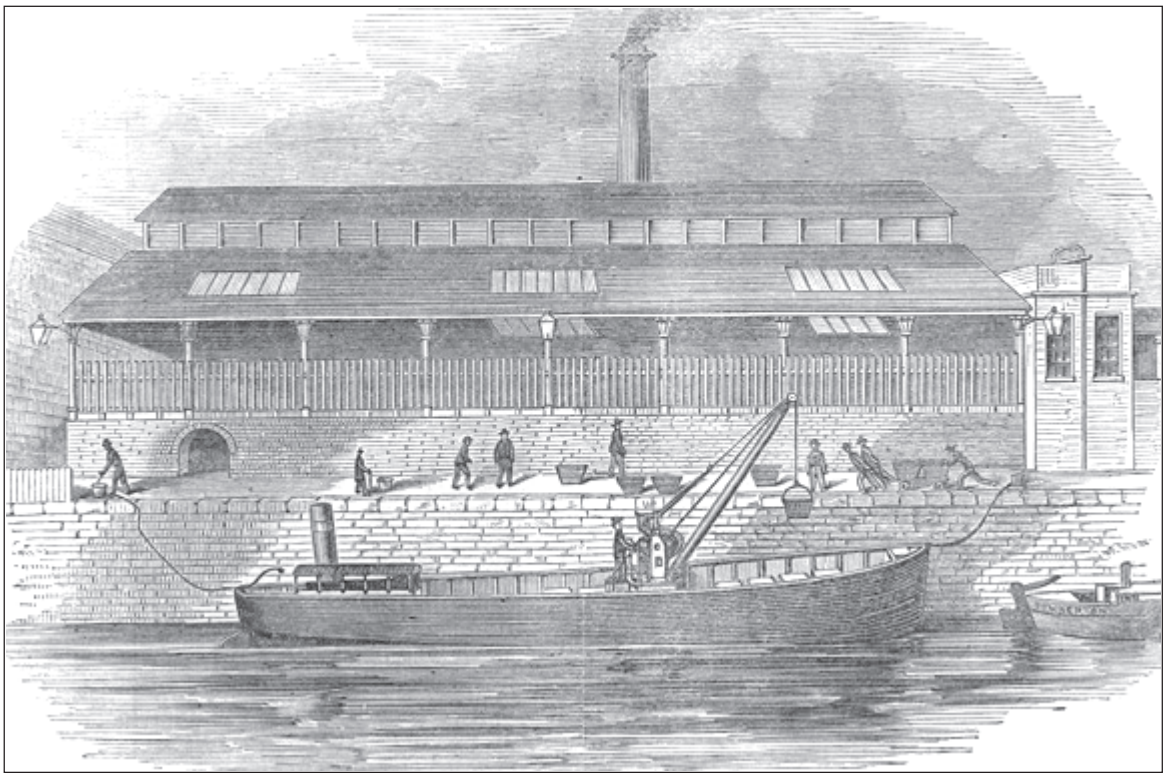
Source: John F. Sutton, *The Date-Book of Remarkable and Memorable Events Connected with Nottingham and Its Neighbourhood. 1750-1850* (Nottingham: Simpkin & Marshall, 1852).

Sewerage: Nottingham's Labyrinth

In all the parishes there are numbers of streets to be found of the worst construction as regards ventilation, construction of habitation, sewerage, supply of water, paving, and lighting; but as might be expected these defects are most conspicuous in the older quarters, and in the lower levels, as under the Castile and down to the Narrow Marsh, Canal Street, Leenside and in the greater part of St. Ann's and Byron wards.

I believe that nowhere else shall we find so large a mass of inhabitants crowded into courts, alleys and lanes as in Nottingham, and those too of the worst possible construction. . . . The courts are almost always approached through a low-arched tunnel of some 30 or 36 inches wide, about 8 feet high, and from 20–30 feet long. . . . They are noisome, narrow, unprovided with adequate means for the removal of refuse, ill-ventilated, and wretched in the extreme, with a gutter or surface drain, running down the center, they have no back yards and no privies are common to the whole court: altogether they present scenes of a deplorable character, and of surpassing filth and discomfort. It is just the same with lanes and alleys. . . . In all these confined quarters, too, the refuse is allowed to accumulate until, by its mass and its advanced putrefaction, it shall have acquired value as manure; and thus it is sold and carted away by the "much majors" as the collectors of manure are called in Nottingham.

Source: J. R. Martin, Report on the State of Nottingham and Other Towns (1845), 3–4



Sewage disposal: Steam barge collection in Manchester
Illustrated London News, 1877. Available: <http://www.victoriantimes.org>

Housing Problems

Commissioners Inquiring into Municipal Corporations

Mr. A. Barnett was then sworn and said, I am assistant overseer in the large parish of St. Mary . . .

Commissioner [Mr. Fox]: Has [housing] not a tendency to crowd several families into one habitation?

Mr. Barnett: It has. . . . In an area of not quite nine acres . . . are 883 houses, containing 947 families, consisting of 4,283 persons. To these are fifty-two sets of privies, thirty-six of them having habitation over them, and the number of privies, on hundred and fifty or one to every twenty persons.

Mr. Fox: What is the size of the houses?

Mr. Barnett: The average is about from ten to fifteen feet square . . . in Lee's Yard, where the cholera was so fatal there are 130 yards by 18, comprising 103 houses and 431 personas, being one person to every five square yards and a half.

New houses are always occupied sooner than old ones, and weekly tenants in low circumstances are frequently shifting about. . . . The rents of new houses are higher than for old ones. . . . [New houses] cannot be occupied by the lowest classes because the rents are high.

Source: First report of the Commissioners Appointed to Inquire into the Municipal Corporations in England and Wales (London: C. Knight, 1835–1840).

Photo by Linda Miller

Replica of a worker's apartment
This replica is behind the "Victorian School of the 3rs," Llangollen, North Wales.

Booth Eddison Esq
February 26, 1841

[Booth Eddison, Esq.] is a surgeon in practice at Nottingham and have been 10 years resident at the General Hospital, has had great experience as to the diseases of the laboring classes.

The effects of long-continued labor in lace-running, mending, drawing &c, are to impair the general health and especially to derange the uterine functions. Indigestion is the most common derangement of the general health, and chlorosis the most frequent in the uterine action. It is very usual for children and young persons to sit together in considerable numbers, and in small rooms; the air thus becomes deteriorated and to this cause witness attributes a considerable part of the derangement of the general health. . . .The sudden change from high temperature to the common atmosphere causes pulmonary diseases and predisposes to consumption.

The whole class of lace workers becomes after a time permanently short-sighted, a change which is indicated by a particular prominence of the cornea. Is quite satisfied that this effect on the sight is much more prone to take place in consequence of these persons beginning to work at a very early age, six, seven and eight when the eye is in the progress of growth.

Deformity of the spine, lateral curvature is very frequently produced, caused by the constrained and unchanged position of the body. From his experience is certain that the use of the various forms of opium for quieting infants whilst the mothers are at work is very prevalent in this town. In two instances has had occasion to use the stomach pump in consequence of mothers having administered laudanum, for the above purpose, in too large doses. Is convinced that a large portion of the deaths of children under three years of ages arises from the administration of laudanum by the mothers.

Signed
Booth Eddison

Source: Richard Iliffe and Wilfred Baguley, *Victorian Nottingham: A Story in Pictures* (Nottingham: Nottingham Historical Film Unit), 17: 44.

Factors Contributing to Poor Health and Housing Conditions

Category	Causes of Poor Health & Housing Conditions	Suggested Solutions
Social		
Educational		
Legal/Criminal		
Economic		

The Cry of the Children

Elizabeth Barrett Browning

Alas, alas, my children, why do you look upon me—*the Medea of Euripedes*

I.
Do ye hear the children weeping, O my brothers,
Ere the sorrow comes with years?
They are leaning their young heads against their mothers,
And *that* cannot stop their tears.
The young lambs are bleating in the meadows,
The young birds are chirping in the nest,
The young fawns are playing with the shadows,
The young flowers are blowing toward the west—
But the young, young children, O my brothers,
They are weeping bitterly!
They are weeping in the playtime of the others,
In the country of the free.

II.
Do you question the young children in the sorrow
Why their tears are falling so?
The old man may weep for his tomorrow
Which is lost in Long Ago;
The old tree is leafless in the forest,
The old year is ending in the frost,
The old wound, if stricken, is the sorest,
The old hope is hardest to be lost;
But the young, young children, O my brothers,
Do you ask them why they stand
Weeping sore before the bosoms of their mothers,
In our happy Fatherland?

III.
They look up with their pale and sunken faces,
And their looks are sad to see,
For the man's hoary anguish draws and presses
Down the cheeks of infancy;
"Your old earth," they say, "is very dreary,
Our young feet," they say, "are very weak!
Few paces have we taken, yet are weary—
Our grave-rest is very far to seek;
Ask the aged why they weep, and not the children,
For the outside earth is cold,
And we young ones stand without, in our bewildering,
And the graves are for the old."

IV.
"True," say the children, "it may happen
That we die before our time;
Little Alice died last year; her grave is shapen
Like a snowball, in the rime.
We looked into the pit prepared to take her;
Was no room for any work in the close clay!
From the sleep wherein she lieth none will wake her,
Crying, 'Get up, little Alice! it is day.'
If you listen by that grave, in sun and shower,
With your ear down, little Alice never cries;
Could we see her face, be sure we should not know her,
For the smile has time for growing in her eyes;
And merry go her moments, lulled and stilled in
The shroud by the kirk-chime.
It is good when it happens," say the children,
"That we die before our time."

V.
Alas, alas, the children! they are seeking
Death in life, as best to have!
They are binding up their hearts away from breaking,
With a cerement from the grave.
Go out, children, from the mine and from the city,
Sing out, children, as the little thrushes do;
Pluck your handfuls of the meadow-cowslips pretty.
Laugh aloud, to feel your fingers let them through!
But they answer, "Are your cowslips of the meadows
Like our weeds anear the mine?
Leave us quiet in the dark of the coal-shadows,
From your pleasures fair and fine!

VI.
"For oh," say the children, "we are weary,
And we cannot run or leap;
If we cared for any meadows, it were merely
To drop down in them and sleep.
Our knees tremble sorely in the stooping,
We fall upon our faces, trying to go;
And, underneath our heavy eyelids drooping
The reddest flower would look as pale as snow,
For, all day, we drag our burden tiring
Through the coal-dark, underground;
Or, all day, we drive the wheels of iron
In the factories, round and round.

VII.
"For all day the wheels are droning, turning;
Their wind comes in our faces,
Till our hearts turn, our heads with pulses burning,
And the walls turn in their places;
Turns the sky in the high window, blank and reeling,
Turns the long light that drops adown the wall,
Turn the black flies that crawl along the ceiling—
All are turning, all the day, and we with all.
And all day the iron wheels are droning,
And sometimes we could pray,
'O ye wheels' (breaking out in a mad moaning),
'Stop! be silent for today!'"

VIII.
Aye, be silent! Let them hear each other breathing
For a moment, mouth to mouth!
Let them touch each other's hands, in a fresh wreathing
Of their tender human youth!
Let them feel that this cold metallic motion
Is not all the life God fashions or reveals;
Let them prove their living souls against the notion
That they live in you, or under you, O wheels!
Still, all day, the iron wheels go onward,
Grinding life down from its mark;
And the children's souls, which God is calling sunward,
Spin on blindly in the dark.

IX.
Now tell the poor young children, O my brothers,
To look up to Him and pray;
So the blessed One who blesseth all the others,
Will bless them another day.
They answer, "Who is God that He should hear us,
While the rushing of the iron wheels is stirred?
When we sob aloud, the human creatures near us
Pass by, hearing not, or answer not a word.
And *we* hear not (for the wheels in their resounding)
Strangers speaking at the door—
Is it likely God with angels shining round Him,
Hears our weeping any more?

X.
"Two words, indeed, of praying we remember,
And at midnight's hour of harm,
'Our Father,' looking upward in the chamber,
We say softly for a charm.
We know no other words except 'Our Father,'
And we think that, in some pause of angels' song,
God may pluck them with the silence sweet to gather,
And hold both within His right hand which is strong.
'Our Father!' If He heard us, He would surely
(For they call Him good and mild)
Answer, smiling down the steep world very purely,
'Come and rest with me, my child.'

XI.
"But, no!" say the children, weeping faster,
"He is speechless as a stone;
And they tell us, of His image is the master
Who commands us to work on.
Go to!" say the children—"up in Heaven,
Dark, wheellike, turning clouds are all we find.
Do not mock us; grief has made us unbelieving—
We look up for God, but tears have made us blind."
Do you hear the children weeping and disproving,
O my brothers, what ye preach?
For God's possible is taught by His world's loving,
And the children doubt of each.

XII.
And well may the children weep before you!
They are weary ere they run;
They have never seen the sunshine, nor the glory
Which is brighter than the sun.
They know the grief of man, without its wisdom;
They sing in man's despair, without its calm;
Are slaves, with the liberty of Christdom,
Are martyrs, by the pang without the palm;
Are worn as if with age, yet unretrievingly
The harvest of its memories cannot reap—
Are orphans of the earthly love and heavenly.
Let them weep! let them weep!

XIII.
They look up with their pale and sunken faces,
And their look is dread to see,
For they mind you of their angels in high places,
With eyes turned on Deity.
"How long," they say, "how long, O cruel nation,
Will you stand, to move the world, on a child's heart—
Stifle down with a mailed heel its palpitation,
And tread onward to your throne amid the mart?
Our blood splashes upward, O gold-heaper,
And your purple shows your path!
But the child's sob in the silence curses deeper
Than the strong man in his wrath."

Public Housing
Lewis Square off Sussex Street, Nottingham
Courtesy of Nottingham City Council Leisure and Community Services. Local Studies Library

Source: University of Nottingham Manuscripts Department, "Public Health and Housing in Early Victorian Nottingham," Archive Teaching Unit No. 3, 1975.

Public Housing
Parr's Yard off Finkill Street, Nottingham
Courtesy of Nottingham City Council Leisure and Community Services. Local Studies Library

Image Analysis Worksheet

Step 1: Observation

A. Study the image (painting, drawing, photograph, etc.) for 2 minutes. Form an overall impression of the image and then examine individual items. Next, divide the image into quadrants (four parts) and study each section to see what new details become visible.

B. Use the chart below to list people, objects, and activities in the image.

People	Objects	Activities

Step 2. Inference

Based on what you have observed above, list three things you might infer from this image:

1.

2.

3.

Step 3. Questions

A. What questions does this photograph raise in your mind?

B. Where could you find answers to them?

Adaptation of "Photograph Analysis Worksheet," designed and developed by the Education Staff, National Archives and Records Administration, Washington, DC 20408

Culminating Activity—Standard of Living

In the 1960s historical discussion about the social impact of the Industrial Revolution was dominated by the controversy over the role that standard of living played in the period. There were two separate views: optimistic and pessimistic.

According to the classical or pessimistic view, early industrialization was a catastrophe for the laboring poor and their standards of living declined. Thomas Malthus, an economist, economist and philosopher Karl Marx, economic historian Arnold Toynbee, and social historian John Lawrence (J.L.) Hammond held this view. They based their beliefs on mortality and health, unemployment, and consumption.

Those who held the modern or optimistic view, based their beliefs on calculations which showed that real wages rose in the period 1790–1850. The founder of this view was John Clapham. It was also held by historian Thomas Southcliffe (T.S.) Ashton, economist Friedrich Hayek, and Ronald (R.M.) Hartwell, historian.

Your assignment is to enter this debate. Did early industrialization help or hurt the poorer classes? Research one of these individuals and present evidence from the documents in this packet and other primary sources to support their view. In addition to the documents in this packet, you may wish to refer to the following books in the bibliography as a starting point for your research: Hudson, *Industrial Revolution;* Ashton, *Industrial Revolution 1760-1830*; and Taylor, *Standard of Living in Britain in the Industrial Revolution.*

Follow the debate with a general discussion of some or all of these questions:

1. How did steam transform the role of workers in Britain?

2. How did these inventions revolutionize manufacturing?

3. How did "industrialization alter the balance of power" around the world?

4. List some of the inventions of the nineteenth century and explain how they transformed the lives of people.

5. What were the short and long term consequences of James Watt's invention of the steam engine? And what other new inventions resulted from the steam engine's success?

6. How did transportation and communication change in the nineteenth century, and how did that affect Europe, America, and non-Western countries?

Glossary

apprentice person who was bound to work for an employer for a set number of years and who learned a trade or craft from that employer

bobbin winder child who wound spun thread onto bobbins

calico a plain weave fabric made from cotton, usually printed with a small repeating design; derived from Calicut, a cotton-producing center in India

cooper a barrel maker

cottage industry business such as spinning or weaving undertaken at home

doffer child who took cotton from one machine to another

drawer man or woman who drew the warp threads through the "eyes" of a loom according to a pattern, making the threads evenly spaced and ready for weaving

forge shape metal by beating and hammering it

indenture an contractual agreement between an employer and an apprentice or laborer

loom machine for weaving thread into textile material

nanny woman employed by a family to look after young children

overseer of the poor a person appointed each year to take charge of helping poor people in a parish

parish local area or territory administered by one church

pauper poor person who received help from the local parish and who may have lived in a workhouse

piecer a child who twisted threads together whenever they snapped during spinning

poor rate a tax levied by each parish on well-off people to help the poor

privy a lavatory, usually outside, that was not connected to a sewer or to a water supply

rover a woman or a child in charge of a machine that drew out cotton thread and put a twist in it

spindle a thin rod in a spinning machine used for twisting and winding thread

stoppages ledger a large book in which deductions from mill workers' pay were listed

throstle spinner a woman or child who worked on spinning machines that produced a strong warp thread

trade union an organization that looked after the rights and interests of a group of workers

workhouse a building, usually specially built, where the paupers received food and shelter and performed labor

Source: Adapted from Rosemary Rees, *Sarah Cross: the Apprentice*. Quarry Bank Mill. Documentary Teaching Unit; and Neil Morris, *Work and Industry* (London: Belitha Press, 2000)

Photo: Linda Miller

Modern-day children, dressed in Victorian-style caps and aprons, get a flavor for the period while touring Cromford Village.

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