

A Recipe for Lowell's Industrial Revolution

Introduction	For any recipe to succeed the proper “ingredients” must be included in the mix. Lowell’s textile industry was no exception. It relied upon six necessary “ingredients” to create America’s first large-scale textile industry.
Target Grade Level	4-6 grade
Time	one 45-minute class period
Lesson Preparation	<ul style="list-style-type: none"> • Print six copies of the worksheet – “Recipe for the Industrial Revolution in Lowell” • Print six copies of the worksheet – “Ingredients for Making Lowell’s Textile Industry” • Print one of each of the six images
Prior Knowledge Required	Students should know that during the early 19 th century the production of textiles shifted from handmade at home to manufacture in mills by power looms.
Background Information	<p>Francis Cabot Lowell envisioned an entire community working to produce textiles, in America. To raise the money needed for such a venture, he enlisted support from a group of investors. Lowell and his investors built a textile mill on the Charles River in Waltham, Massachusetts. By 1817, the factory was a financial success, and the investors began looking to expand beyond the limited power-producing capacity of the Charles River. Lowell died that year, but the investors recognized the potential of his vision and forged ahead with his ideas and plans. They set out to find a power source around which to build a large-scale textile industry.</p> <p>Excerpt from (http://www.uml.edu/docs/Overview_tcm18-88388.pdf)</p>
Vocabulary	<ul style="list-style-type: none"> • work force: a group of people that are paid to make a product • infrastructure: the roads, buildings, power source that serve a city or country • technology: machine and equipment invented to perform a task • raw materials: a basic substance, such as cotton, that is made into a finished product • Industrial Revolution: change in the way people work
Anticipated Student Preconceptions/ Misconceptions	That building the textile industry in Lowell/America was an easy task. That the American Industrial Revolution began in Lowell.
Frameworks	<p>Massachusetts Curriculum Frameworks</p> <p>Grade 4: History and Geography 3. Observe and describe national historic sites and describe their function and significance. (H,C)</p> <p>Grade 5: Concepts and Skills 3. Observe and identify details in cartoons, photographs, charts, and graphs relating to an historic narrative (H,E,C)</p>

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	<p>High School:</p> <p>U.S.II.1: Explain the causes of the Industrial Revolution. (H,E)</p>
Guiding Question	What “ingredients” were necessary for developing the textile industry in Lowell, Massachusetts?
Objectives	<p>At the conclusion of this lesson, students will be able to:</p> <ul style="list-style-type: none"> Identify the six main factors that contributed to the growth of Lowell as a large industrial city. Use evidence to support their thoughts, theories, and arguments
Activity	<p>Class Discussion:</p> <ol style="list-style-type: none"> Begin discussion by asking students to define the term <i>Industrial Revolution</i>. If necessary, have students break down the meaning of each word (Industrial = work, Revolution = change) and then create a definition for <i>Industrial Revolution</i>. Show students the image of New England farm life and ask them: <ul style="list-style-type: none"> “What is going on in this picture?” After they offer a thought about “What is going on”, ask them “What is it that you see that makes you say that?” This will allow students to explore what life was like before the Industrial Revolution and discover that almost everything was made-by-hand. Have students brainstorm by asking, “How do you think cloth was made on early American farms in New England? (From sheep’s wool, by hand, with a hand loom, etc. – see also “Farm to Factory Production: Making a Grilled Cheese Sandwich - Life on a Farm” Have students brainstorm “What was needed to go from making cloth on the farm to producing textiles in a factory in Lowell?” (money, factories, looms, cotton, waterpower, and workers) Introduce the idea that six basic “ingredients” were necessary to bring the Industrial Revolution to life in Lowell. <p>Activity:</p> <ol style="list-style-type: none"> Divide students into six small groups and give each group one of the historic images and a “Recipe for the Industrial Revolution in Lowell” worksheet. Have students discuss “What is going on in their image” and ask them to list the evidence they discover in the image that supports their ideas. Have them draw a conclusion as to what their “ingredient” is and why it was important to the development of Lowell’s textile industry. Give each group the “Ingredients for a Making Lowell’s Textile Industry” worksheet so they can take notes on each group’s presentation of their “ingredient”.

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	<ol style="list-style-type: none">5. Have each group share with the class what they have discovered and why they think their “ingredient” was important to the development of Lowell.6. In their small groups, students should discuss which “ingredients” they think were important to creating Lowell’s textile industry and list the six “ingredients” by order of importance.7. Have students record their “thoughts and arguments” on their worksheet.8. Post all lists and have students discuss and support their decisions.9. Ask students, “Were all these “ingredients” necessary to creating Lowell’s textile industry?” “If yes, Why?” If no, then which could they have done without and why?”10. Ask students, “How do you think factories changed the process of how cloth was made?”
Assessment	worksheet – see attached rubric
Differentiation Suggestions	This lesson provides materials that address various learning styles. You can assign students individual tasks in the group work according to their strengths. The lesson includes images, reading, discussion, and writing. You can also assign students to groups with diverse learning styles to complement each other.
Adapting the Activity for Other Grades	<p>Younger Students: use the images only and process each image as a group. Ask students “What is going on?” and “What do you see that makes them say that?” in order to help them understand that it took several “ingredients” to make Lowell the first planned large-scale industrial city.</p> <p>Older Students: After processing the images and reading the primary sources have students write a short letter/email to Nathan Appleton about the importance of their “ingredient”, the impact it would have on the textile industry, and why Mr. Appleton should or should not consider building a mill in Lowell.</p>
Bibliography	<p>Nathan Appleton, <i>Introduction of the Power Loom and Origin of Lowell</i> (Google Book Search) http://books.google.com/</p> <p>Division of Publications National Park Service: Lowell, <i>The Story of an Industrial City</i> http://www.nps.gov/lowe/historyculture/park-handbook.htm</p>

Grading Rubric

CATEGORY	4	3	2	1
Identify “What is going on” in the image and supply supporting evidence.	Able to supply 4 or more pieces of evidence to support their theory	Able to supply at least 3 pieces of evidence to support their theory	Able to supply 1-2 pieces of evidence to support their theory	Unable to supply any evidence to support their theory
Identify evidence in the primary reading source to support or dispute their argument.	Gives all prime evidence to support/dispute argument	Gives some prime evidence to support/dispute argument	Gives secondary evidence to support/dispute argument	No evidence given to support/dispute argument
Offers and supports ideas about the value of the six “ingredients” which created Lowell as the first planned industrial city.	Excellent ideas	Good explanation	Satisfactory	No explanation given

Ingredients for Making Lowell's Textile Industry

Take notes on the six “ingredients” your classmates have identified as important to the development of Lowell's Industrial Revolution.

Ingredients	Notes

Discuss with your group which “ingredients” were most important (1 = most important to 6 = least important) for creating the successful textile industry in Lowell. See if you can generate a list that you all agree with. Please record your thoughts and arguments below.

Order of Importance (1 = most important)	Thoughts and Arguments to support your decisions
1.	
2.	
3.	
4.	
5.	
6.	



Farm House
Tsongas Industrial History Center

Tsongas Industrial History Center, Lowell, MA. 2015.



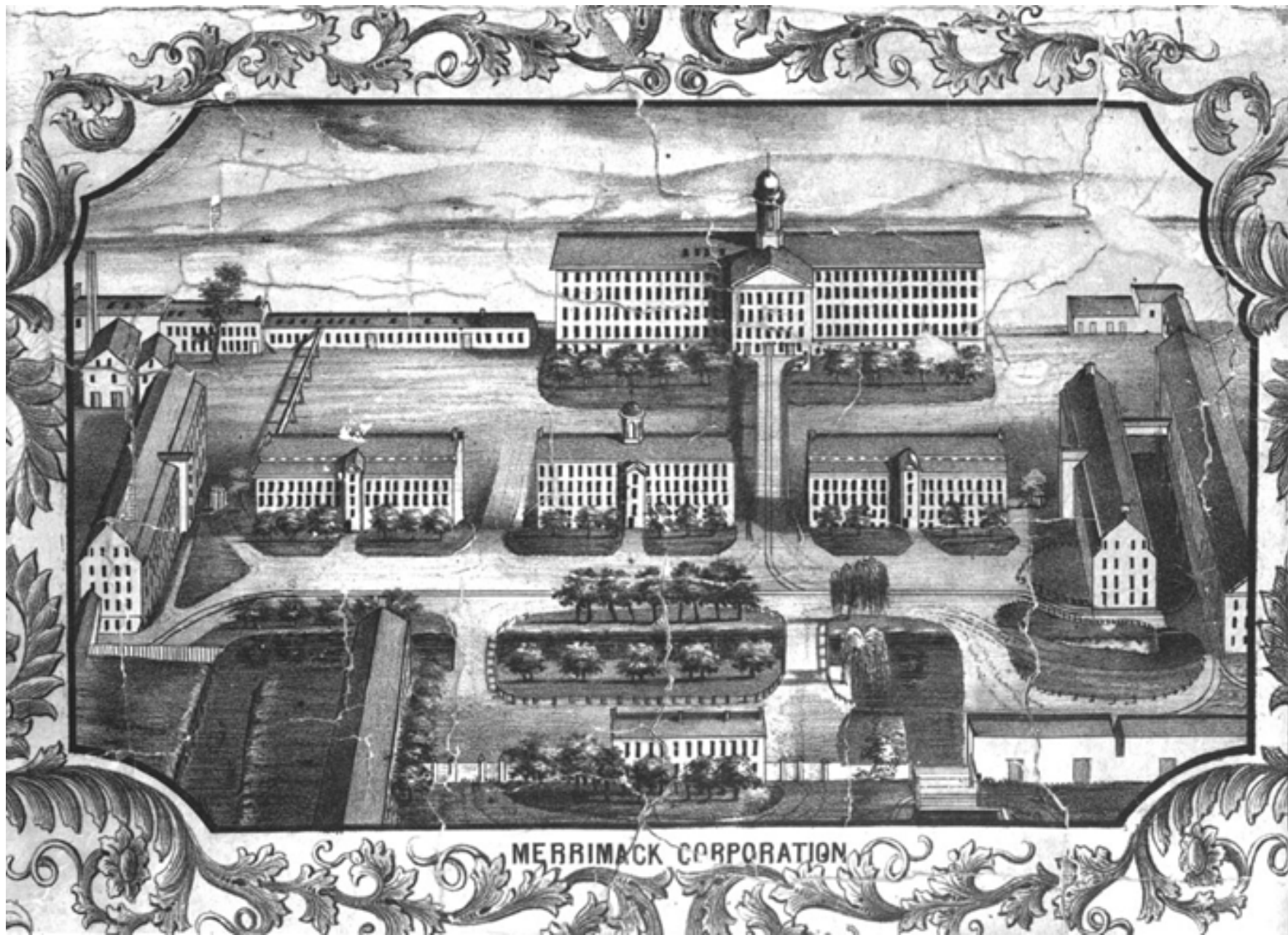
Manufacturer's Banknote
University of Massachusetts Lowell



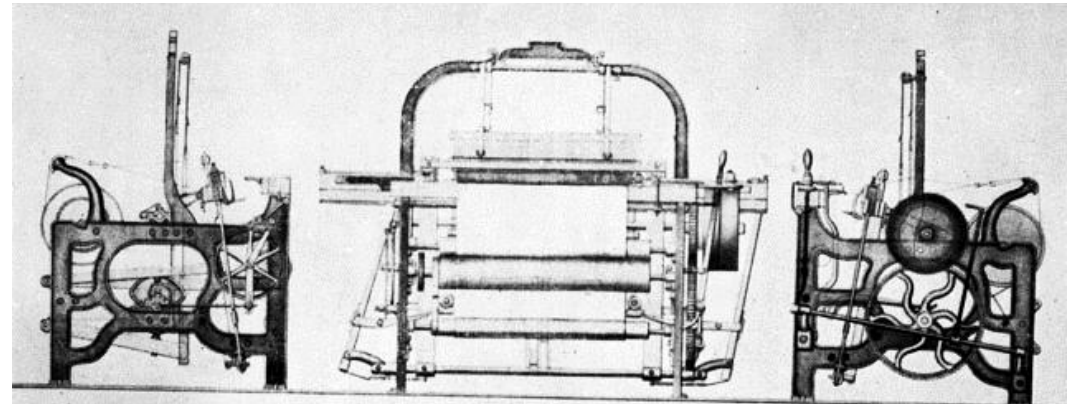
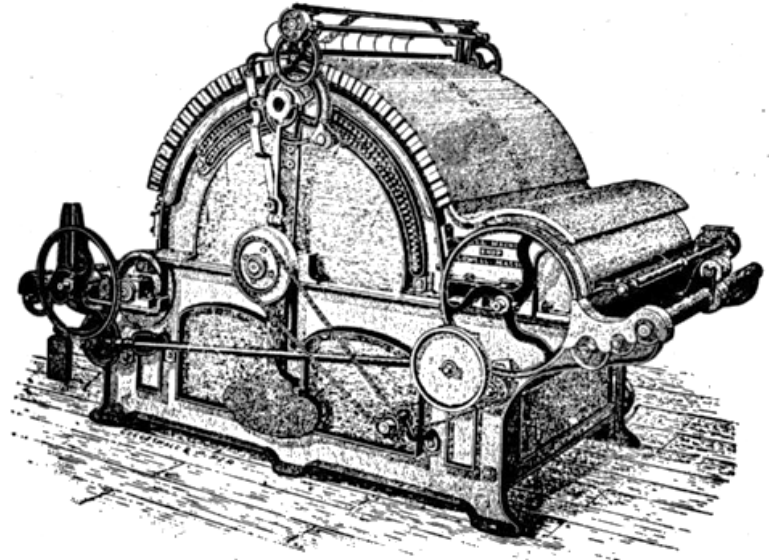
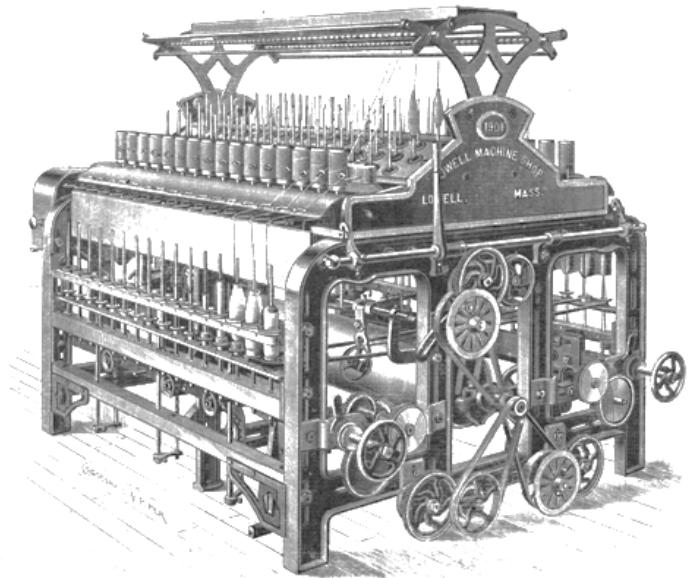
Falls of the Merrimack
Collection



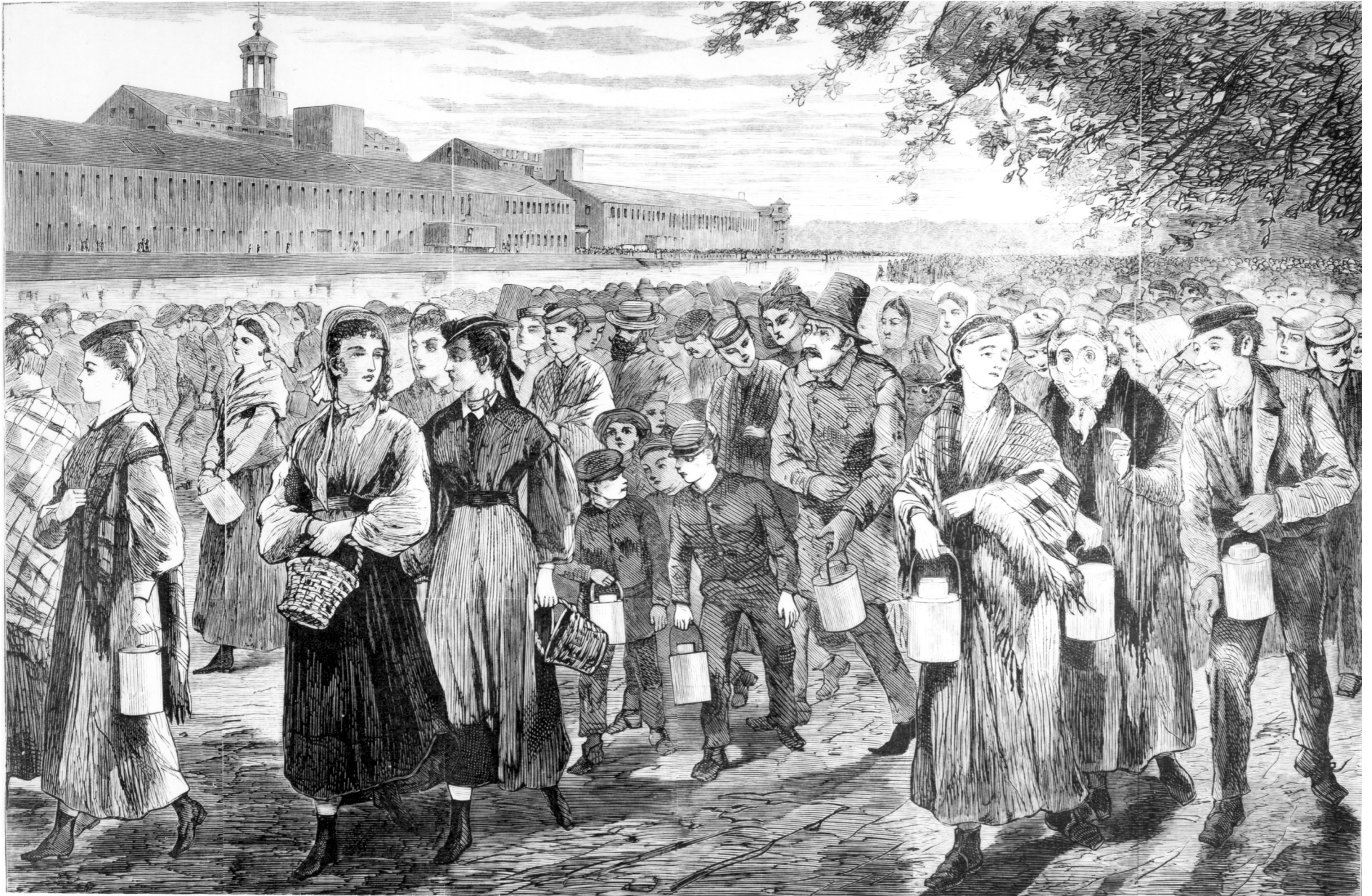
Picking Cotton
Collection



Merrimack Corporation
University of Massachusetts, Lowell



Spinning Frame, Carding Machine, Loom
University of Massachusetts, Lowell



Bell Time, by Winslow Homer
Collection

Recipe for the Industrial Revolution in Lowell

1. What is going on in this picture?	What do you see that makes you say that?
A.	A.
B.	B.
C.	C.
D.	D.
2. What “ingredient” does this picture represent?	
Answer:	
3. Why do you think this ingredient was important to the Industrial Revolution in Lowell?	
Answer:	