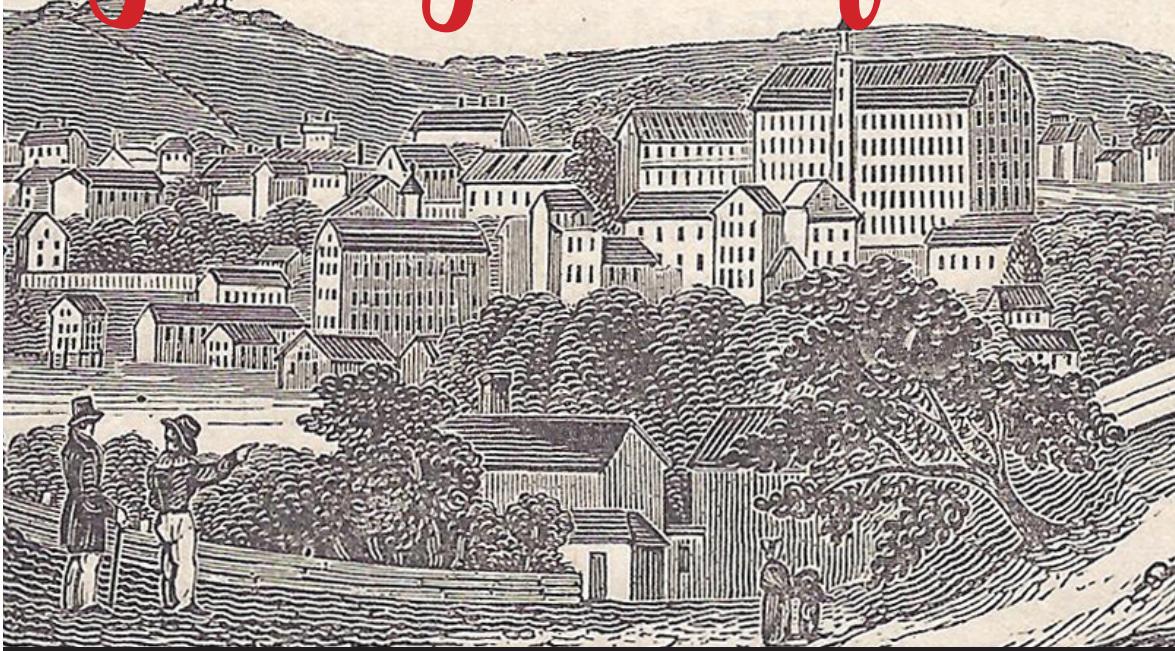


Going Deeper



AMESBURY MILLYARD WALKING TOUR

Activities Before and After the Tour

An educational resource developed by the Amesbury Carriage Museum,
February 2019

For more information about this tour and supporting materials contact:

John Mayer, Executive Director

Amesbury Carriage Museum

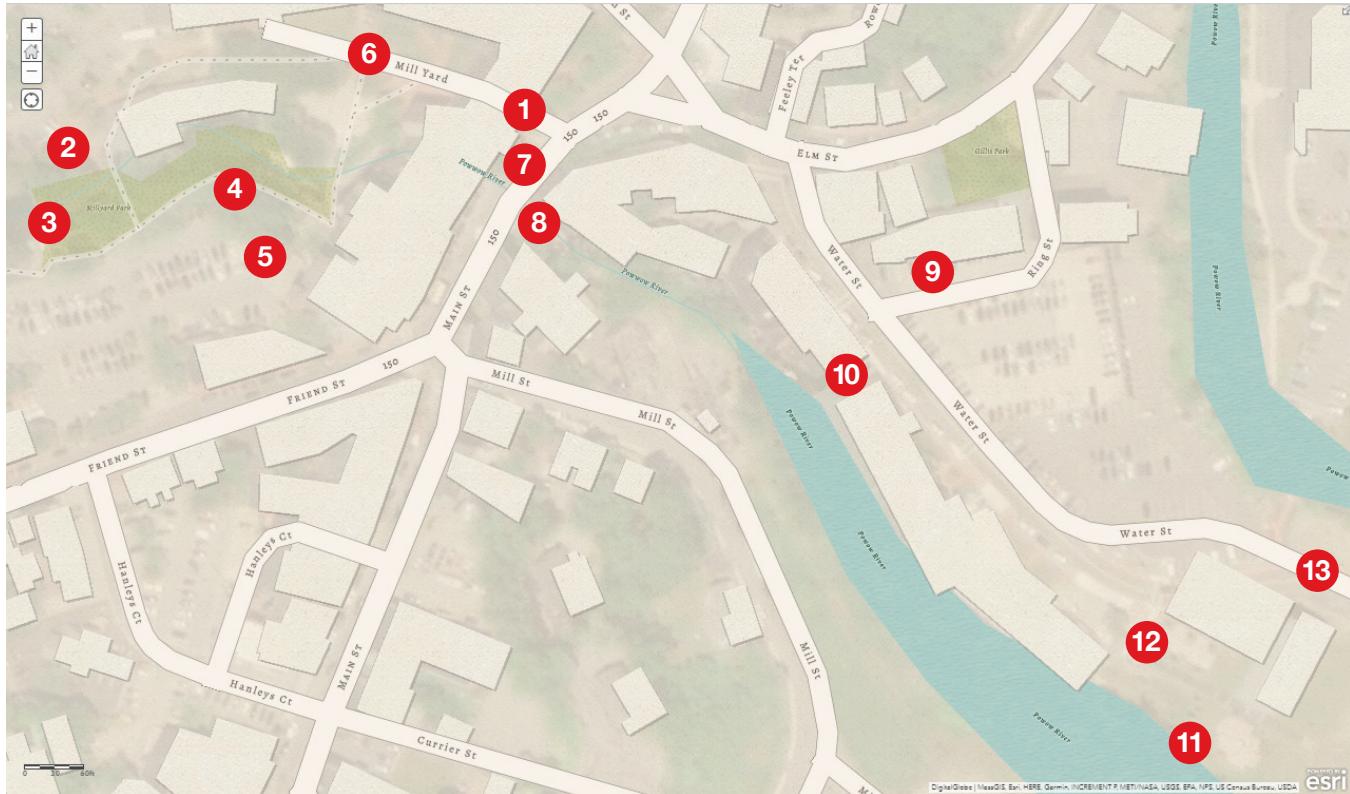
978.834.5058

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www.amesburycarriagemuseum.com

INTRODUCTION

This resource supports self-guided visits to the Amesbury Upper and Lower Millyard. We invite you to take the tour as if you were visiting an exhibit—think of the Amesbury Millyard as a gallery or “a museum without walls.”



MAP KEY

1. Counting House
2. Grist Mill Stone
3. Upper Dam
4. Middle Dam and Mill 12
5. Perkins Nail Factory
6. Mill 2
7. Counting House
8. Main Street Bridge
9. Amesbury Railroad Station
10. Between Mill 4 & Mill 17
11. Heritage Park
12. Salisbury Point RR Station
13. Biddle & Smart Factory

1. Gateway Arch



LET'S INVESTIGATE

What do you see here that catches your attention?
Any details stand out to you?

In 1849 the millyard was enclosed by a fence and walls of mill buildings. To get to work, employees entered the millyard through a gate. Why do you think the mill owners erected the gate and enclosed the millyard?

When do you think the gate to the millyard was open each day? Closed? Why?

DESIGN TIME

How may the gate have looked over 150 years ago?
Sketch your ideas.

If a gate were built today, what do you imagine it would look like? Sketch your ideas. Include symbol(s) to show how the millyard is used today.

BACK AT SCHOOL/HOME

Notice gates and doors in your home and neighborhood.
What different purposes do they serve?

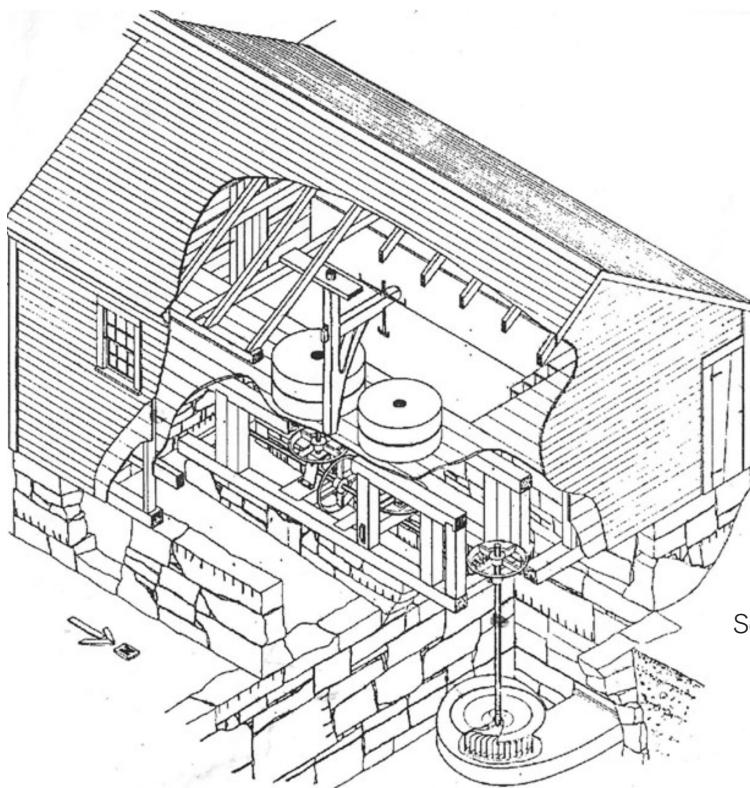
READ ABOUT IT

Topographical Sketches of the County of Essex
Published in 1792

This excerpt describes the amount of development along the Powow River:

"At this place the water falls about one hundred feet within the distance of fifty perches, and in its descent carries one bloomer, five saw mills, seven grist mills, two linseed oil mills, one fulling mill, and one snuff mill, besides several wheels, auxiliary to different labours. The rapid fall of the water, the dams at very short distance crossing the river, the various wheels and mills arising almost immediately one over another, and the very irregular and grotesque situation of the houses and other buildings on the adjoining grounds, give this place a romantick appearance, and afford in the whole one of the most singular views to be found in this country."

2. The Grist Mill Stone



Schematic view of a grist mill.

LET'S INVESTIGATE

Think about it. Does your family have any appliances in the kitchen that grind?

What method would you use to crush some foods without modern appliances?

BACK AT SCHOOL / HOME

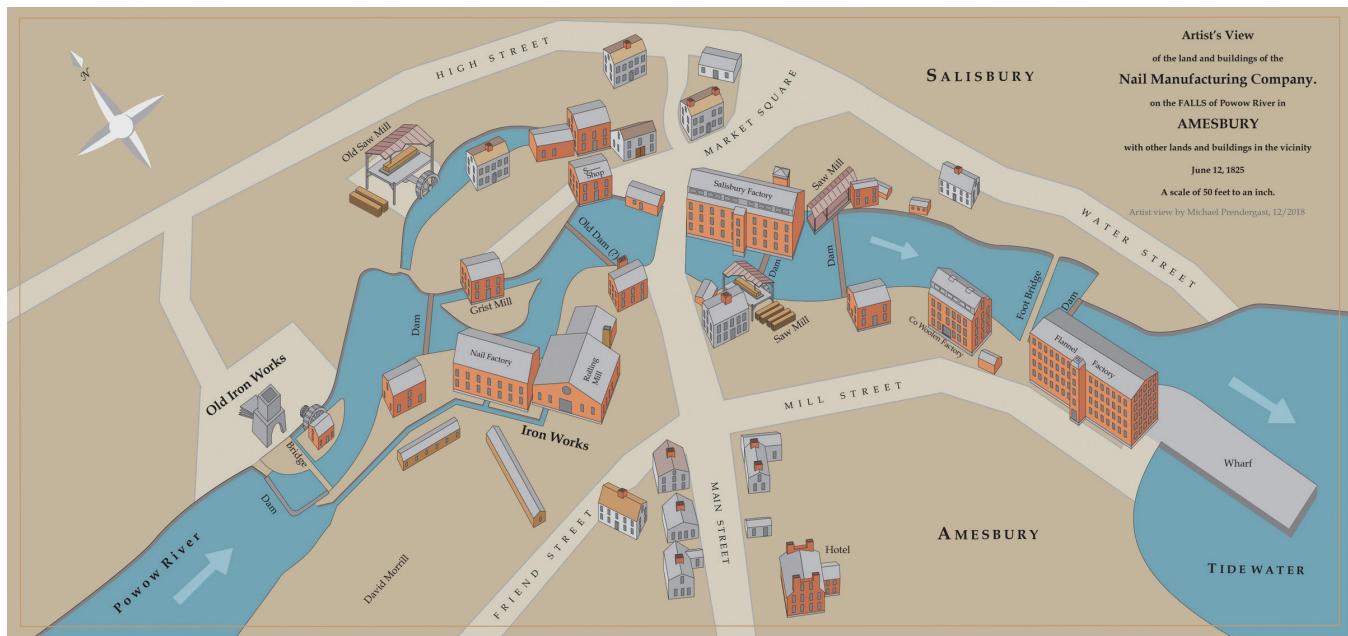
Brainstorm a list of different grains. Collect labels from foods you eat that are made out of various grains.

You might want to plan a trip to Plimoth Plantation where you can experience a reproduction of a 17th century grist mill, similar to Amesbury's grist mill..

See Web Links & Resources for
19th Century Technology at a Grist Mill.



3. The Upper Dam



1825 Map of the Millyard

LET'S INVESTIGATE

Changes in elevation impacts the rate water flows in a river. The larger the change in elevation, the faster water will flow. Notice how the pathway slopes and the elevation changes from the Gateway Arch to the Upper Dam site.

How might elevation impact the amount of energy produced with hydropower?

Listen. What do you hear today? What might a worker have heard when this was an active working millyard?

What does the dam do?

Can you name other dams in Amesbury? In Massachusetts? In the United States? How are their functions similar?

READ ABOUT IT

See 1825 map of millyard for an overview of how mill owners used the river. Notice the different names of the mills and the number of dams.

Why were the various functions of these mills important to the workers, families, and town?

BACK AT SCHOOL/HOME

See Web Links & Resources for *How to Site A Mill*.

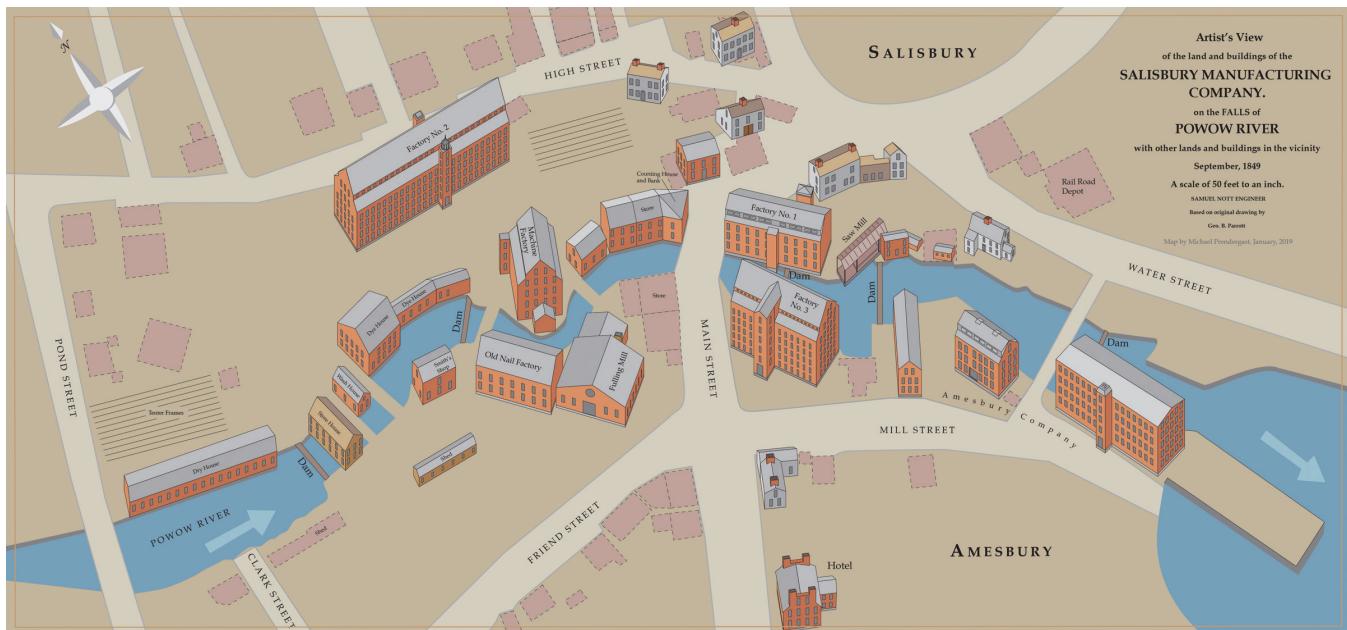
What are the elements needed for a water-powered mill?

Explore the layout of a mill site.



Illustration of a hollow frame dam

4. The Middle Dam Site & Dye House (Mill 12)



1849 Map of the Millvillage

LET'S INVESTIGATE

Listen to the rushing water. Look at the elevation change. Where do you think the mill owners chose to build the dam? Why?

The dye house which was here in 1849 did not need power. How do you imagine the water was used for the dye house?

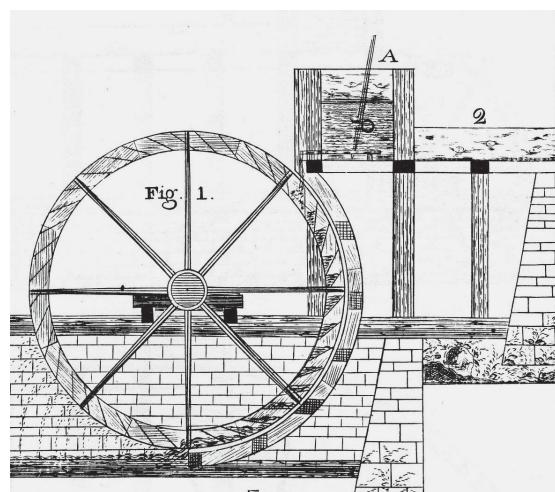
The river was not only used by the mills and dye house. What other purposes did the river serve for the community? How would flushing chemicals and dyes impact those utilizing the river?

READ ABOUT IT

See map of 1849 for a view of the millvillage, which conveys a feeling of an industrial village.

BACK AT SCHOOL/HOME

Build a model water wheel.
See Web Links & Resources for *How to Make a Water Wheel*.



Drawing of a water wheel

5. Site of Perkin's Nail Manufactury



Map showing the location of the nail factory in 1825

LET'S INVESTIGATE

Compare/contrast the two nails pictured below. The nails on the left were made by a blacksmith, and the nail on the right was made by a machine.



Speculate: How does the diameter of a water wheel impact the amount of energy harnessed by the nail manufacture?

DESIGN TIME

With your feet, map out the diameter of the water wheel. Take 30 adult steps to gain awareness of the width of the wheel.

BACK AT SCHOOL/HOME

Refer to the sketch on the previous page and the Weblinks and Resources about Water Wheels. Draw in the parts of a waterwheel needed to transform water power into energy.

READ ABOUT IT

Jacob Perkins was born in Newburyport in 1766. As a young man Perkins was involved in a number of engineering and industrial activities. (You might want to visit his engraving shop which has been preserved by the Old Newbury Historical Society).

Here in Amesbury, Perkins powered his mill with a water wheel that was 30 feet in diameter. Water flowed from the Upper Dam through a raceway and then passed into the mill where it powered a water wheel. As an engineer, Perkins was very concerned about efficient use of the waterpower: his wheel was designed to revolve backwards and with the flow of the river.

Further reading:

See Web Links & Resources for *Mill 8—Once a Dominant Part of Amesbury*

6. In the Amphitheatre, Looking at Mill 2



Spinning room in the textile mill, 1910
(Courtesy Amesbury Public Library
Local History Collection)

LET'S INVESTIGATE

Stand in the amphitheatre and note the differences in the exterior of Mill #2.

Look at all the buildings around you. Do you notice anything that could relate to creating, capturing, or moving power?

Where do we get energy from today?

What type of energy does your family use?

These mill buildings were erected to make textiles. What textiles do you use in your daily life? Can you tell what types of fibers textiles are made from?

READ ABOUT IT

Mill 2, which is now Amesbury Industrial Supply, was originally a textile mill built in 1826. It first made woolen cloth and then cotton. The mill was powered with water wheels that were located in the basement. Water was diverted from the upper dam to a raceway; the raceway wrapped around the High Street side of the building, and dropped into the wheel pits, and then exhausted out the back of the building. There is still evidence of the tailrace in the wall of the building.

The textile mills operated from 1825 to 1912, when the Hamilton Woolen Company closed its doors.

Other industries followed over the years, but these businesses did not use the Powow's energy.

Further reading:

Amesbury Industrial Supply: A River Once Ran Through It
from ACM website

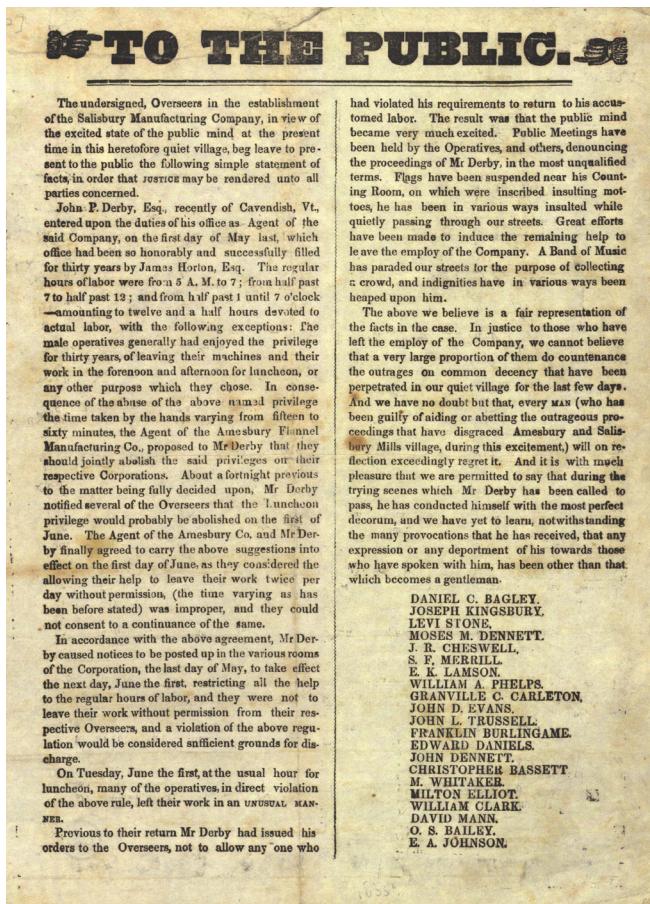
BACK AT SCHOOL/HOME

See Web Links & Resources for youtube videos that show the textile-making process.



An automobile that was finished in Mill 2, 1920

7. The Counting House



Broadside from the 1852 strike

LET'S INVESTIGATE

Why have a counting house at the gate to the Mill Yard? What clue does this give us about the control of money and people?

In the middle 19th century, many workers had 60 hour work-weeks. How would you react to having that schedule?

How would you renovate this building? What would you use it for? Why?

DESIGN TIME

Compare/contrast a mill worker's 60 hour work schedule with your typical weekly schedule.

What would you change about the mill schedule?

What device do you use to keep you on schedule? What do you think kept a schedule for workers 150 years ago?

BACK AT SCHOOL/HOME

The weekly earnings for factory workers in New England varied by industry, job, gender, and year. From 1850-1890, an average daily wage for a worker in a woolen factory ranged from \$.90- \$1.32. Over those years, a machinist salary ranged from \$1.60 to \$2.25 (according to National Bureau of Economic Research). Today, an average hourly rate in Amesbury is \$18.

Do some research. Find out what expenses a typical mill worker had in 1860.

What do you use today that would be used by mill workers? What do you use that was not available 150 years ago?

READ ABOUT IT

See Web Links & Resources for
George McNeill Organizes Workers.

8. Main Street Bridge



View of the Main Street bridge and mural

LET'S INVESTIGATE

How does the mural painted by Jon Mooers show the progression of Amesbury's history?

With the vast wealth of important historic events in Amesbury, why do you imagine Mooers chose these details to include in the mural?

What about this space makes this an ideal spot for a mural?

DESIGN TIME

What would you include in a mural of your life?

BACK AT SCHOOL/HOME

Create an outline for a mural to tell about your favorite places in Amesbury.

9. Amesbury Railroad Station



View of the Amesbury railroad station, 1890

LET'S INVESTIGATE

The railroad was important for the growth and prosperity of Amesbury and industries in the Millyard. Why was this?

What did businesses and people in Amesbury use for transportation before the railroad?

Why do you think the railroad no longer operates? Would a railway in Amesbury be useful today?

How do you imagine the rail schedule impacted the daily lives of those who lived and worked in Amesbury?

In your opinion, would Amesbury be an exciting place to live during the carriage heyday?

DESIGN TIME

If you were ordering your family a carriage, what would be important to include?

READ ABOUT IT

From the ACM website see:

The Amesbury Passenger Railroad Station, a Moving Story

The Forgotten Back River Railroad Trestle

BACK AT SCHOOL/HOME

Have you ever been on a train? What did you like/dislike about your trip?

If you could buy a train a ticket, where would you go? Where would you hope to stop along the way?

10. Between Mill 4 & Mill 17

LET'S INVESTIGATE

How did the landscape make power possible in the Lower Millyard?

Is the landscape on this portion of the river similar or different than the Upper Millyard?

Pretend you are a history detective – what do now notice that could be from different periods in Amesbury history?

DESIGN TIME

How could this area of the millyard, today, celebrate the carriage history and focus on sustainable power sources?

BACK AT SCHOOL/HOME

Write and illustrate a children's story about life in the year 2100. Your story should describe life without fossil fuels and should identify the energy sources used in everyday life as well as some type of conservation measures.

See Web Links & Resources for
Renewable Energy Lesson



View of the Powow River in the Lower Millyard, ca. 1930
(Courtesy of the Amesbury Public Library Local History Collection)

READ ABOUT IT

What is renewable energy?

Renewable energy is energy from sources that are naturally replenishing. The major types of renewable energy sources are Biomass (which includes Wood and wood waste, Municipal solid waste, Landfill gas and biogas, Ethanol, and Biodiesel), Hydropower, Geothermal, Wind, and Solar.

What role does renewable energy play in the United States?

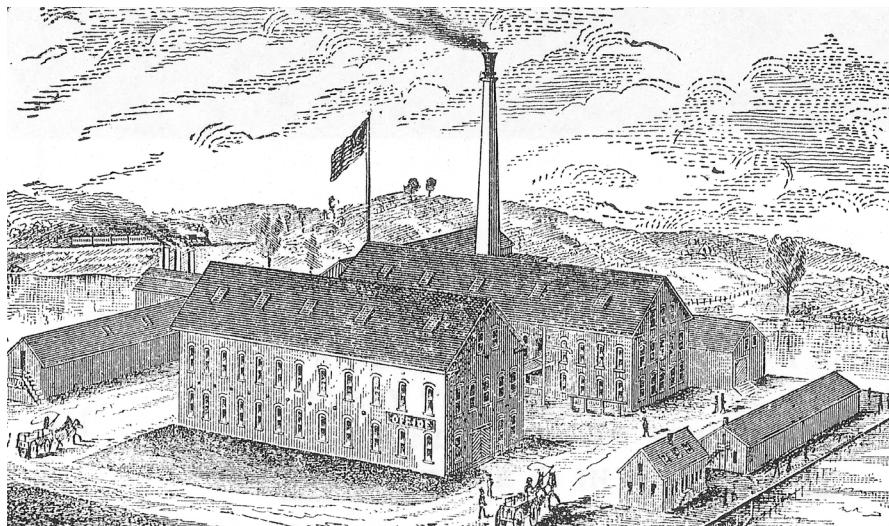
Until the mid-1800s, wood was the source of nearly all of the nation's energy needs for heating, cooking, and light. From the late 1800's until today, fossil fuels—coal, petroleum, and natural gas—have been the major sources of energy. Hydropower and solid biomass were the most used renewable energy resources until the 1990s. Since then, the shares of U.S. energy consumption from biofuels, solar, and wind energy have increased.

In 2017, renewable energy provided about 11% of total U.S. energy consumption. About 57% of U.S. renewable energy consumption was by the electric power sector, and about 17% of U.S. electricity generation was from renewable energy sources.

Renewable energy plays an important role in reducing greenhouse gas emissions. Using renewable energy can reduce the use of fossil fuels, which are major sources of U.S. carbon dioxide emissions.

The consumption of biofuels and other non hydroelectric renewable energy sources more than doubled from 2000 to 2017, mainly because of state and federal government requirements and incentives to use renewable energy. The U.S. Energy Information Administration projects that U.S. renewable energy consumption will continue to increase through 2050.

11. Heritage Park



An 1880 view of the Biddle & Smart factory, now the location of Heritage Park

LET'S INVESTIGATE

Listen. What do you hear today? What might a worker have heard when this was an active working area?

BACK AT SCHOOL/HOME

With a small group, do activity:
See Glossary for *Workers on the Line* and
Spinning Mill.

For an individual, research key people, organizations, and events in American Labor History, such as:

- The International Workers of the World
- George McNeill, Amesbury activist
- Sarah Bagley, Lowell Female
- The Ten Hour Movement Labor Reform Association
- Samuel Gompers, AFL-CIO
- Lowell turnouts of 1834
- The Lawrence Bread and Roses Strike 1836

READ ABOUT IT

"Before the Industrial Revolution, most goods were created by hand by craftsmen classified into three categories: apprentice, journeyman, and master craftsman. A master craftsman was a person who had mastered all the techniques and skills of a given craft. After many years of practice, he was regarded as an expert who then passed along his knowledge and skills to apprentices, young boys who spent many years under his direction. A journeyman was a craftsman who had completed apprenticeship but did not yet have the experience or skill to be designated a master. A craftsman knew the whole process of creating an object; for example, each woodcrafter knew how to create a chair from start to finish.

With the advent of the Industrial Revolution, the job of creating an object became broken down into many steps, each of which was done by a different person. In the case of the wooden chair, one person might make the legs, another would create the seat, another would make the arms and back, and all the parts would then go to yet other people who would assemble them. The advantages [to the business owner] were that single tasks could usually be done over and over faster than when one person did everything start to finish."

Source: *Cottage Industries to Factory Production*
The Tsongas Industrial History Center

Most scholars agree that the Industrial Revolution in the United States started in the late 18th century and continued into the early 20th century.

12. Salisbury Point Railroad Station 13. Biddle & Smart Warehouse



Salisbury Point Railroad Station on
Rocky Hill Road in 1914

LET'S INVESTIGATE

Notice the windows and doorways of the building. What does this reveal about how the buildings were used?

Do you imagine it would have been better to use rail for some supplies and boat for other supplies? What supplies would have been better suited for water travel than rail travel?

A single fire wiped out the majority of this area of town. How would one use the water supply to avoid fires?

Today, how do we protect our houses and our community from fire?

READ ABOUT IT

See Web Links & Resources for *Amesbury Fires* and *Introduction to Amesbury Industries*.

DESIGN TIME

Thinking about the access to the river, where would be a good spot to use boat traffic to bring supplies up the river?

Weblinks & Resources

The following list of web links complement the stops along the walking tour.

To view each activity, visit the web site and then search for the title listed.

Web links visited April, 2019.

Stop 2 The Grist Mill Stone

[youtube.com – 19th Century Technology at a Grist Mill](https://www.youtube.com/watch?v=19th Century Technology at a Grist Mill)

Stop 3 The Upper Dam

[google.com – Historically-How to Site a Mill](https://www.google.com/search?q=Historically-How+to+Site+a+Mill)

Stop 4 Middle Dam

[wikihow.com – How to Make a Water Wheel](https://www.wikihow.com/Make-a-Water-Wheel)

Stop 5 Nail Factory

[amesburycarriagemuseum.com – Mill 8-Once A Dominant Part of Amesbury](https://www.amesburycarriagemuseum.com/mill-8-once-a-dominant-part-of-amesbury)

[millsarchive.org – Water Wheels](https://millsarchive.org/water-wheels)

Stop 6 Mill 2

[youtube.com – 19th Century Daily Living-Making Linen from Flax](https://www.youtube.com/watch?v=19th Century Daily Living-Making Linen from Flax)

[youtube.com – Marvelous Machines-from fibre to fabric-Queen Street Mill](https://www.youtube.com/watch?v=Marvelous+Machines-from+fibre+to+fabric+-Queen+Street+Mill)

[youtube.com – 1924 footage-Oakland \(CA\) Cotton Mills](https://www.youtube.com/watch?v=1924+footage-Oakland+(CA)+Cotton+Mills)

Stop 7 Counting House

[massmoments.org – George McNeill Organizes Workers](https://massmoments.org/george-mcneill-organizes-workers)

Stop 10 Between Mill 4 and Mill 17

[teachengineering.org – Renewable Energy – lesson](https://teachengineering.org/renewable-energy-lesson)

Stop 11 Heritage Park

[uml.edu/tsongas – Workers on the Line](https://uml.edu/tsongas/workers-on-the-line)

[youtube.com – Mill Times With David Macaulay – Industrial Revolution – Spinning Mill](https://www.youtube.com/watch?v=Mill+Times+With+David+Macaulay+-+Industrial+Revolution+-+Spinning+Mill)

Stop 12

and 13 Buildings in Heritage Park

[newburyportnews.com – “Two of the most destructive fires in Amesbury’s history](https://newburyportnews.com/two-of-the-most-destructive-fires-in-amesburys-history)

occurred within 11 years of one another over 125 years ago.”

[amesburycarriagemuseum.com – Introduction to Amesbury Industries](https://www.amesburycarriagemuseum.com/introduction-to-amesbury-industries)

A WALKING TOUR OF THE AMESBURY MILLYARD

Developed by the Amesbury Carriage Museum in February, 2019

Funds for this project were received from:

Amesbury Education Foundation, Inc.—Jordan Shay Grant 2017

Society for Industrial Archaeology

Institution for Savings

Supporters of the Amesbury Carriage Museum 2017 GoFundMe Campaign

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Visit the Amesbury Carriage Museum website to view additional information and an on-line version of this tour. Join us—become a member!
www.amesburycarriagemuseum.com

Cover Engraving:

“Southeast view of Mills Village, in Salisbury and Amesbury”
John Warner Barber, 1839