

CURRICULUM GUIDE

Innovation and the *New Orleans*

by Jane Hedeem

for the Traveling Exhibition

*Steamboat A-Comin': The Legacy of
the New Orleans*

developed in partnership with the Rivers Institute at Hanover College



This is a publication of the Indiana Historical Society
Eugene and Marilyn Glick Indiana History Center
450 West Ohio Street
Indianapolis, IN 46202-3269 USA

www.indianahistory.org

Cover: Painting *The New Orleans Steaming Upstream by Moonlight, 1811* by Gary R. Lucy. Courtesy of the Gary R. Lucy Gallery, Washington, Missouri. <http://www.garylucy.com>

Copyright 2010
Indiana Historical Society
All rights reserved

Except for copying portions of the teacher resources by educators for classroom use, or for quoting of brief passages for reviews, no part of this publication may be reproduced, stored in or introduced into a retrieval system, or transmitted, in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), without written permission of the copyright owner. All inquiries should be addressed to the Public Programs Division, Indiana Historical Society.

Introduction

This lesson is designed as a complement to the traveling exhibition, *Steamboat A-Comin': The Legacy of the New Orleans*, developed by the Indiana Historical Society in partnership with the Rivers Institute at Hanover College. The exhibition celebrates the 2011 bicentennial of the *New Orleans*, the first successful steamboat to voyage down the Ohio River, and explores the ways this event effected the economy, technology, and culture of the Midwest and the country.

Steam technology and its innovative application to river navigation allowed the local, state, and national economy to grow exponentially. It also facilitated the westward migration of a large number of settlers, a trend that had a profound impact on Native American populations. While the river posed many dangers, it also offered thrilling adventures. For African Americans in particular, the river was both the scene of hard labor and a chance to experience freedom of movement. Those who worked, lived, and relaxed on the river became adherents to a culture that was expressed in poetry, literature, song, and legends.

The *Steamboat A-Comin': The Legacy of the New Orleans* traveling exhibition is available to organizations such as historical societies, museums, and schools. In some cases a nominal fee is charged for use of the exhibition. Lessons in the accompanying curriculum may be used to prepare students for a visit to the exhibition, as a follow-up to a visit, or as a stand-alone piece that provides historic context for this pivotal moment in history.

Overview/Description

In this lesson students will learn about the importance of the steamboat in American history, watch a video showing how a steamboat's engine works, examine images of inventors and their key developments in steam technology, and take on the role of one of these innovators to make a sales pitch for their invention.

Grade Level

Elementary (grades 4 and 5) and middle/intermediate school (grades 6, 7, and 8)

Academic Standards

- Indiana Standards
 - Grade 4
 - Social Studies 4.1.6—Explain how key individuals and events influenced the early growth of and changes in Indiana.
 - Social Studies 4.1.17—Using primary and secondary sources and online source materials, construct a brief narrative about an event in Indiana history.
 - Social Studies 4.3.9—Explain the importance of major transportation routes, including rivers, in the exploration, settlement and growth of Indiana and in the state's location as a crossroad of America.
 - Social Studies 4.4.2—Define productivity and provide examples of how productivity has changed Indiana during the past 100 years.
 - English/Language Arts 4.1.7—Use context to determine the meaning of unknown words.
 - English/ Language Arts 4.4.2—Select a focus, an organizational structure, and a point of view based upon purpose, audience, length, and format requirements for a piece of writing.
 - English/Language Arts 4.5.6—Write for different purposes (information, persuasion, description) and to a specific audience or person.
 - English/Language Arts 4.7.2—Summarize major ideas and supporting evidence presented in spoken presentations.

- English/Language Arts 4.7.7—Emphasize points in ways that help the listener or viewer follow important ideas and concepts.
 - English/Language Arts 4.7.8—Use details, examples, anecdotes (stories of a specific event), or experiences to explain or clarify information.
 - English/Language Arts 4.7.9—Engage the audience with appropriate words, facial expressions, and gestures.
 - English/Language Arts 4.7.11—Make narrative presentations that relate ideas, observations, or memories about an event or experience; provide a context that allows the listener to imagine the circumstances of the event or experience; and provide insight into why the selected event or experience should be of interest to the audience.
 - English/Language Arts 4.7.13—Deliver summaries of articles and books that contain the main ideas of the event or article and the most significant details.
 - Science 4.1.7—Discuss and give examples of how technology, such as computers and medicines, has improved the lives of many people, although the benefits are not equally available to all.
 - Science 4.1.8—Recognize and explain that any invention may lead to other inventions.
 - Science 4.4.7—Describe that human beings have made tools and machines, such as x-rays, microscopes, and computers, to sense and do things that they could not otherwise sense or do at all, or as quickly, or as well.
- Grade 5
 - Social Studies 5.3.12—Describe and analyze how specific physical features influenced historical events and movements.
- English/Language Arts 5.1.6—Understand unknown words by using word, sentence, and paragraph clues to determine meaning.
 - English/Language Arts 5.5.4—Write persuasive letters or compositions that state a clear position in support of a proposal; support a position with relevant evidence and effective emotional appeals; follow a simple organizational pattern, with the most appealing statements first and the least powerful ones last; and address reader concerns.
 - English/Language Arts 5.7.3—Make inferences or draw conclusions based on an oral report.
 - English/Language Arts 5.7.4—Select a focus, organizational structure, and point of view for an oral presentation.
 - English/Language arts 5.7.5—Clarify and support spoken ideas with evidence and examples.
 - English/Language Arts 5.7.13—Emphasize points in ways that help the listener or viewer follow important ideas and concepts.
 - Science 5.1.5—Explain that technology extends the ability of people to make positive and/or negative changes in the world.
 - Science 5.2.6—Write instructions that others can follow in carrying out a procedure.
 - Science 5.2.7—Read and follow step-by-step instructions when learning new procedures.
 - Science 5.3.8—Investigate, observe, and describe that heating and cooling cause changes in the properties of materials,

such as water turning into steam by boiling and water turning into ice by freezing. Notice that many kinds of change occur faster at higher temperatures.

◦ Grade 6

- Social Studies 6.1.15—Describe the impact of industrialization and urbanization on the lives of individuals and on trade and cultural exchange between Europe and the Americas and the rest of the world.
- Social Studies 6.1.20—Recognize historical perspectives in fiction and nonfiction by identifying the historical context in which events unfolded and by avoiding evaluation of the past solely in terms of present-day norms.
- Social Studies 6.1.22—Differentiate between fact and interpretation in historical accounts and explain the meaning of historical passages by identifying who was involved, what happened, where it happened, and relating them to outcomes that followed and gaps in the historical record.
- English/Language Arts 6.5.5—Write persuasive compositions that: state a clear position on a proposition or proposal; support the position with organized and relevant evidence and effective emotional appeals; and anticipate and address reader concerns and counterpoints.
- English/Language Arts 6.7.13—Deliver persuasive presentations that: provide a clear statement of the position; include relevant evidence; offer a logical sequence of information; and engage the listener and try to gain acceptance of the proposition or proposal.
- English/Language Arts 6.7.15—Ask questions that seek information not already discussed.

- Science 6.1.9—Explain how technologies can influence all living things.
- Grade 7
 - Social Studies 7.1.22—Distinguish between unsupported expressions of opinion and informed hypotheses grounded in historical evidence.
 - English/Language Arts 7.5.4—Write persuasive compositions that: state a clear position or perspective in support of a proposition or proposal; describe the points in support of the proposition, employing well-articulated evidence and effective emotional appeals; and anticipate and address reader concerns and counterarguments.
 - English/Language Arts 7.5.6—Use varied word choices to make writing interesting and more precise.
 - English/Language Arts 7.7.11—Deliver persuasive presentations that: state a clear position in support of an argument or proposal and describe the points in support of the proposal and include supporting evidence.
 - Science 7.1.7—Explain how engineers, architects, and others who engage in design and technology use scientific knowledge to solve practical problems.
 - Science 7.1.9—Explain how societies influence what types of technology are developed and used in fields such as agriculture, manufacturing, sanitation, medicine, warfare, transportation, information processing, and communication.
 - Science 7.1.10—Identify ways that technology has strongly influenced the course of history and continues to do so.

- Grade 8
 - Social Studies 8.1.27—Give examples of scientific and technological developments that changed cultural life in the nineteenth-century United States, such as the use of photography, growth in the use of the telegraph, the completion of the transcontinental railroad, and the invention of the telephone.
 - Social Studies 8.1.28—Recognize historical perspective and evaluate alternative courses of action by describing the historical context in which events unfolded and by avoiding evaluation of the past solely in terms of present-day norms.
 - Social Studies 8.1.30—Formulate historical questions by analyzing primary and secondary sources about an issue confronting the United States during the period from 1754 to 1877.
 - Social Studies 8.3.8—Gather information on the ways people changed the physical environment of the United States in the nineteenth century, using primary and secondary sources including digitized photo collections and historic maps.
 - Social Studies 8.3.9—Analyze human and physical factors that have influenced migration and settlement patterns and relate them to the economic development of the United States.
 - Social Studies 8.4.5—Analyze contributions of entrepreneurs and inventors in the development of the United States economy.
 - English/Language Arts 8.5.4—Write persuasive compositions that: include a well-defined thesis that makes a clear and knowledgeable appeal; present detailed evidence, examples, and reasoning to support effective arguments and emotional appeals; and provide details, reasons, and examples, arranging them effectively by anticipating and answering reader concerns and counterarguments.
- English/Language Arts 8.7.13—Deliver persuasive presentations that: include a well-defined thesis (position on the topic); differentiate fact from opinion and support arguments with detailed evidence, examples, reasoning and persuasive language; anticipate and effectively answer listed concerns and counterarguments through the inclusion and arrangement of details, reasons, examples, and other elements; and maintain a reasonable tone.
- National Standards (National Council for the Social Studies)
 - III. People, Places, and Environments
 - Examine the interaction of human beings and their physical environment, the use of land, building of cities, and ecosystem changes in selected locales and regions.
 - VIII. Science, Technology, and Society
 - Identify and describe examples in which science and technology have changed the lives of people, such as in homemaking, childcare, work, transportation, and communication.

Social Studies/Historical Concepts

Technology, transportation, invention, and inventors

Learning/Instructional Objectives

Students will:

- Hold a discussion about the importance of the steamboat in facilitating the movement of people and goods to the western areas of the United States, thus expanding the nation's land area and economy.

- Use primary sources to differentiate between human-powered boat technologies and steamboats.
- Examine images of individuals integral in steamboat innovation as well as images of the advances for which they are responsible.
- Be able to name at least two key individuals whose work progressed steamboat technology.
- Make a case for why a particular innovation is important.
- Be able to offer a verbal explanation of how a steamboat’s engine functions.
- Copies of the following images found on pages 14, 17, and 19 of this lesson:
 - “John Fitch” (Fresco by Constantino Brumidi, c. 1876, from The Architect of the Capitol Web site at http://www.aoc.gov/cc/photo-gallery/brumidi_corridors.cfm Courtesy Architect of the Capitol. (accessed September 3, 2010).
 - “Snag boat.” Courtesy “Life on the Ohio River” Museum, Switzerland County [Indiana] Historical Society.
- Internet access to watch the Kentucky Educational Television’s animated video in the “Electronic field Trips to the *Belle of Louisville*” which explains how the engine of a steamboat works:
 - Click on the link in “See an animated explanation of how the *Belle’s* steam system propels her” at <http://www.ket.org/trips/belle/> (accessed September 8, 2010)

Time Required

One to two class periods

Materials Required

- Copies of the following images shown on pages 12, 13, 15, 17, 18, and 19 of this lesson. from the Indiana Historical Society collections:
 - “Flatboat, Emigrant Boat” (Indiana Historical Society Digital Image Collections, Item ID folder135_doc6.jpg)
 - “Encampment of the Travellers on the Missouri,” 1841 (Indiana Historical Society Digital Image Collections, Item ID BODMER_FF29-b_025)
 - “Robert Fulton,” ca. 1800 (Indiana Historical Society Digital Image Collections, Item ID P0211_SERIESII_GRAPHICS_BOX1_FULTON)
 - “Captain Henry M. Shreve” (Indiana Historical Society Digital Image Collections, Item ID VM623_E78_1929_HENRY_SHREVE)
 - “Clermont, 1807” (Indiana Historical Society Digital Image Collections, Item ID F0353_L79_1856_029)
 - “John Fitch’s Philadelphia Boat” (Indiana Historical Society Digital Image Collections, Item ID F353_L79_1856_021_BOAT)
- Copies of these student handouts:
 - “About John Fitch” on page 17 of this lesson
 - “About Robert Fulton” on page 18 of this lesson
 - “About Henry Miller Shreve” on page 19 of this lesson
- Paper and pencils or pens

Background/Historical Context

Historians widely credit the steam engine as the fundamental invention that powered the Industrial Revolution of the nineteenth century. The use of steam power dates back to ancient Alexandria, Egypt, and the writings of Hero of Alexandria; however, the importance of this technology lies in improvements made by others to Hero’s initial ideas.

In 1706 inventor Thomas Newcomen was the first to create an “atmospheric steam engine,” effectively harnessing the power of steam to move pistons that would then power machines.

Newcomen's steam engines were used primarily to pump water out of mines.¹

James Watt, a Scottish instrument maker, made the next important improvement on the steam engine. In 1765 he greatly improved the efficiency of the engine by adding a separate condenser unit to cool the steam. The condenser eliminated the need to alternately heat and cool the engine's main cylinder, therefore saving on fuel. Watt's steam engine was the first really practical and efficient application of steam technology to power machinery.² With Watt's modification, the possible uses of the steam engine increased exponentially. One of those uses was to power boats.

As is the case with the steam engine, the steamboat does not really have just one inventor. It is the product of the ingenuity of many individuals. John Fitch developed the first practical American steamer, but was unable to get enough inventors to make his passenger steamboat successful. Fitch's steamboat made many short trips, but was really only seen as a public curiosity, not a viable method for transporting people or goods long distances. Fitch was devastated, and in 1798, seven years after patenting America's first steamboat, he committed suicide.³

Robert Fulton, the man most often credited with inventing the steamboat, is really responsible for taking Fitch's invention and making it an economically sustainable and socially acceptable form of transportation. In 1802 Fulton partnered with Robert Livingston, a wealthy New Yorker, to build the *Clermont*, which made a successful test run on the Hudson River in 1807.

Fulton and Livingston next turned their attention to building a steamboat to travel on the Ohio and Mississippi rivers, facilitating river trade with

New Orleans. They knew that bringing steamboat technology to this major trade route would have significant economic rewards. Fulton and Livingston hired Nicholas Roosevelt, an inventor and architect, to build a steamboat that could not only steam down the Ohio and Mississippi rivers, but would also be able to power back upstream against the current.

In October of 1811, the *New Orleans*, captained by Roosevelt, set out from Pittsburgh on its maiden voyage. On board were an engineer named Baker, pilot Andrew Jack, six crewmen, two female servants, a male waiter, a cook, Roosevelt's pregnant wife Lydia, their two-year-old daughter Rosetta, and a Newfoundland dog named Tiger.

The *New Orleans* steamed past Cincinnati, Ohio, and Madison, Indiana. It continued on to Louisville, Kentucky, where the crew discovered that the river level was too low to allow them to cross the Falls of the Ohio. While waiting for the water to rise, the *New Orleans* powered upstream to return to Cincinnati—a remarkable achievement for the time.

The *New Orleans* reached its destination namesake city on January 10, 1812, thus ending the first voyage of a steamboat down the Ohio and Mississippi rivers. The success of the *New Orleans's* journey altered American life forever by hastening the opening of the West and transforming the landscape, economy, and culture of the United States.

Prior to 1811 most river traffic between the eastern and western United States consisted of keelboats or flatboats down the Ohio and Mississippi rivers. Depending on the time of year, the voyage could take four to six weeks. The return voyage upriver was physically grueling and limited the effectiveness of river traffic and trade.

Following the success of the *New Orleans*, inventors continued to work to improve the steamboat. Daniel French was one such inventor. French was Connecticut born, but had moved to Indiana in 1829. He patented a steam engine with an oscillating cylinder and built steamboats in New York, Philadelphia, and Brownsville, Pennsylvania,

¹ Kendra Bolon, "The Steam Engine," at <http://campus.udayton.edu/~hume/Steam/steam.htm> (accessed August 29, 2010).

² Ibid.

³ Public Broadcasting Service, "John Fitch," in *Who Made America?* at http://www.pbs.org/wgby/theymadeamerica/whomade/fitch_hi.html (accessed August 6, 2010).

before coming to Indiana. French and his sons William, George, and Henry, built about twenty steamboats in Jeffersonville, Indiana.

Henry Miller Shreve built the *Washington* in 1816. His design for the *Washington* included a flat bottom and shallow draft that made it easier to navigate shallow sections of the river. The boat had three decks, with the top for the pilot. Most future steamboats followed this prototype. Shreve also developed a steam-powered snag boat, the *Heliopolis*, in 1829. The *Heliopolis* removed debris from the Ohio and Mississippi rivers by ramming embedded trees or hoisting large snags from the riverbed onto an upper-deck sawmill.⁴

Teacher’s Instructional Plan

Introduction

Introduce the lesson by showing students the images of the flatboat and the keelboat. (Images are found on pages 12 and 13 of this lesson.) In a think-aloud discussion, ask students to identify the method by which these types of boats would be powered. You might ask leading questions such as:

- What do you see in the flatboat image that might be used to make it move?
- Do you see a motor or engine on either of these boats?
- What provided the power to make these boats move?

Encourage students to consider the disadvantages of powering a boat by human strength.

- Would it be easy or difficult to row a boat upstream against the current?
- Do you think a boat can move quicker if powered by humans or by an engine?
- Do you think a boat powered by an engine might be able to carry more passengers or freight? Why or why not?

⁴Indiana Historical Society in partnership with the Rivers Institute at Hanover College, *Steamboat A-Comin’: The Legacy of the New Orleans* traveling exhibition (Indianapolis: Indiana Historical Society, 2010), section 2.

Explain to students that before 1811, human-powered flatboats and keelboats were used to transport people and goods to the West. But in 1811, an important event—the voyage of the *New Orleans*, the first steamboat on the Ohio and Mississippi rivers—ushered in a new era. Continue the discussion by urging students to consider what kind of an impact this event might have had on commerce and settlement of western lands. Here are some suggestions you might use to get the discussion started:

- Steamboats made the transportation of large amounts of goods and large numbers of people easier. As steamboats began traveling the western rivers, such as the Ohio, Mississippi, and Missouri, do you think trade and commerce in these areas increased? Explain your answer.
- As steamboats improved access to Western cities, what might the effect have been on the movement of settlers to these places?
- If commerce, trade, and settlement all increased with steamboat traffic, what happened to Western cities as a result? Might these cities have grown, or might there have been new settlements started?

Wrap up the introduction to the lesson by telling students that the steamboat is a very important invention because it allowed this country to grow both in terms of land area and economic power. In this lesson, students will learn about the technology that made this possible.

Procedure

- Access the Kentucky Educational Television’s “Electronic field Trips to the *Belle of Louisville*” Web site at <http://www.ket.org/trips/belle/> (accessed September 8, 2010) and click on the link in “See an animated explanation of how the *Belle’s* steam system propels her” to view a brief video that explains how a steamboat’s engine works. The video is about one minute and forty seconds long. You will probably want to use the full screen mode to show the video

and have the computer connected to a projector so that the video is visible for all students. Allow the students to view the video once without taking notes; then replay the video a second time, asking students to write down the “steps” the engine takes to convert steam to movement of the paddle wheel. After showing the video a second time, ask students to help you create a visual explanation of the process on the board. Ask students to list each step of the process so that you may note them on the board. Refer to page 11 of this lesson for a sample diagram.

- Show the portraits of Fitch, Fulton, and Shreve found on pages 14, 15, and 16 in this lesson. Tell students that these men had ideas for improving transportation on the river by creating boats powered by steam that could move people and goods up and down rivers such as the Ohio and Mississippi much faster than flatboats and keelboats.
- Show the picture of Fitch (page 14 of this lesson). You might pass this picture around so that students can see it better. Tell students that Fitch was the first inventor to develop a practical steamboat. His boat had several oars on the boat’s stern. These oars were moved with power generated from a steam boiler. In 1788 Fitch’s boat made short trips between Philadelphia, Pennsylvania, and Burlington, New Jersey, but he never received the support of funders and his invention was not a commercial success. In despair, Fitch committed suicide in 1798.
- Next, pass around the picture of Fulton (page 15 of this lesson). Tell students that Fulton did not invent the steamboat, but he did make the invention successful. Fulton changed Fitch’s design to one that included a paddle wheel rather than several oars on the boat’s side. He also was able to secure the backing of funders, giving his project the support it needed to become a success. Fulton and his business partner, Robert Livingston, first built the *Clermont*, which sailed on the Hudson

River. They then hired Nicholas Roosevelt to build the *New Orleans*, which sailed from Pittsburgh, Pennsylvania, to New Orleans, Louisiana, in 1811–1812. The *New Orleans* was the first steamboat on the Ohio and Mississippi rivers. It paved the way for steamboats to bring many people west and to carry many trade goods. The voyage of the *New Orleans* helped to open the West to settlement and also helped the economy to grow by making it easier to ship goods between the East, West, North, and South.

- Finally, pass around the image of Shreve (page 16 of this lesson). Tell students that Shreve is responsible for two important innovations related to steamboats. First, he improved on Fulton’s design by using a high-pressure steam engine in his boats. This made the boats smaller, lighter, and cheaper to operate. Shreve also designed a snag boat—a steamboat with a device on its bow that picked up and removed snags (sunken, fallen trees) from the rivers and processed them into lumber using a sawmill on the boat. The snag boat cleared rivers of debris, opening them for westward navigation.
- Assign each student to take on the role of Fitch, Fulton, or Shreve. Give students the appropriate handout for their role (“About John Fitch,” “About Robert Fulton,” or “About Henry Miller Shreve”). The handouts are found on pages 17, 18, and 19 of this lesson. Students will use biographical information, a description of that person’s innovations/inventions, and images of the innovations/inventions to make a sales pitch about their role in inventing/innovating steamboat technology. After everyone has made their pitch, the class will vote for the person who played the most important role in developing the steamboat. In their sales pitch, students should seek to answer the following questions:
 - What can you tell us about yourself?
 - What was your role in inventing or improving the steamboat?
 - How does your invention or innovation work?

- Why was your invention or innovation important?
- What is the legacy of your work?
- Why do you deserve the credit for having invented the steamboat (or making the invention so popular)?
- Students may make a drawing of their character's invention/innovation to use in their presentation or they may create a poster using images of Fitch's, Fulton's, or Shreve's steamboats. (Images of these boats are provided on pages 17, 18 and 19 of this lesson).

Assessment

The teacher may use a pretest to gauge prior knowledge of the development of steam engine and steamboat technology. A posttest can be used after the activity is completed in order to determine student learning.

Suggested Modifications

For advanced students particularly interested in science and technology:

- Instructions for building a miniature steam engine are available at the National Transportation Safety Board Kids Site (http://www.nhtsa.gov/kids_site/play/steam-engine.html). Tools such as a drill, pliers, and tin snips are required. This project should only be attempted with adult supervision.
- Instructions for building a putt-putt or steam-powered boat are available at the Instructables Web site at <http://www.instructables.com/id/Pop-pop-or-put-put-steamboat-made-easy-for-children/>. Although the Web site encourages you to become a member, it is not necessary to have a membership to view the instructions. You will simply have to view each step separately rather than accessing a PDF of the complete instructions. Alternately, follow instructions for creating a putt-putt boat from the Science Toy Maker Web site at <http://www.sciencetoymaker.org/boat/assembly.html>. A video accompaniment

to the Science Toy Maker Web site instructions is available at <http://video.google.com/videoplay?docid=-7580169078461039729#>.

- Instructions for building a simple steamboat are available from the California Energy Commission at <http://www.energyquest.ca.gov/projects/steamboat.html>. This project is geared toward younger students.

For students more interested in history or language arts:

- Students might create a reader's theater production, where students playing Fitch, Fulton, and Shreve meet to discuss their inventions and innovations.
- Have students create a time line that places the invention and subsequent improvements of the steamboat in the context of other inventions, technological innovations, and historical events.
- Have students write a journal entry from the perspective of Nicholas or Lydia Roosevelt, who were aboard the *New Orleans's* first voyage, describing the excitement and importance of the voyage and what they think its legacy will be.

Additional Resources

Publications

- Andrist, Ralph K. *Steamboats on the Mississippi*. New York: American Heritage Publishing Company, 1962.
- Ford, Carin T. *Robert Fulton: The Steamboat Man*. Berkeley Heights, NJ: Enslow Publishers, 2004.
- Kane, Adam. *The Western River Steamboat*. College Station: Texas A & M University Press, 2004.
- Orr, Tamra. *The Steam Engine*. New York: Franklin Watts, 2005.
- Tunis, Edwin. *Oars, Sails, and Steam: A Picture Book of Ships*. Baltimore: Johns Hopkins University Press, 2002.

Web sites

Bolon, Kendra. "The Steam Engine."

<http://campus.udayton.edu/~hume/Steam/steam.htm> (accessed September 16, 2010)

An article about the steam engine and its revolutionary role in history.

Kurt Spitzner, ed. "Engine room tour" on Twain-times—A time line of events in the life of Samuel Clemens (Mark Twain).

<http://twaintimes.net/boat/sbindex.html> (accessed September 16, 2010).

Muster, Nori. "Who Built the First Steamboat?"

<http://www.steamboats.com/research.html> (accessed September 16, 2010).

Essay that answers the question "Who built the first steamboat?" and includes an excerpt from the 1856 publication *Lloyd's Steamboat Directory and Disasters on the Western Waters*.

Muster, Nori. <http://www.steamboats.com/research/classroom.html> (accessed September 16, 2010).

A page for students who want to research steamboats for school or hobby.

Muster, Nori. <http://www.steamboats.com/museum/engineerroom.html> (accessed September 16, 2010).

A tour of a steamboat's engine room with explanations about how the engine works.

Public Broadcasting Service. They Made America.

<http://www.pbs.org/wgbh/theymadeamerica/whomade/> (accessed September 16, 2010).

Find out about the extraordinary innovators whose ideas and entrepreneurial spirit gave birth to landmark advances such as the steamboat and the 747 jetliner, and cultural touchstones such as the Barbie doll and CNN. Profiles of each innovator can be viewed chronologically, geographically, and by category. Search for John Fitch, Robert Fulton, and Henry Miller Shreve.

Rose, Nathan. Kids.Net.Au. <http://encyclopedia.kids.net.au/> (accessed September 16, 2010).

A search engine/portal for youth, parents, and teachers that includes an encyclopedia. For information on the invention and improvement of the steam engine, search for Newcomen and Watt.

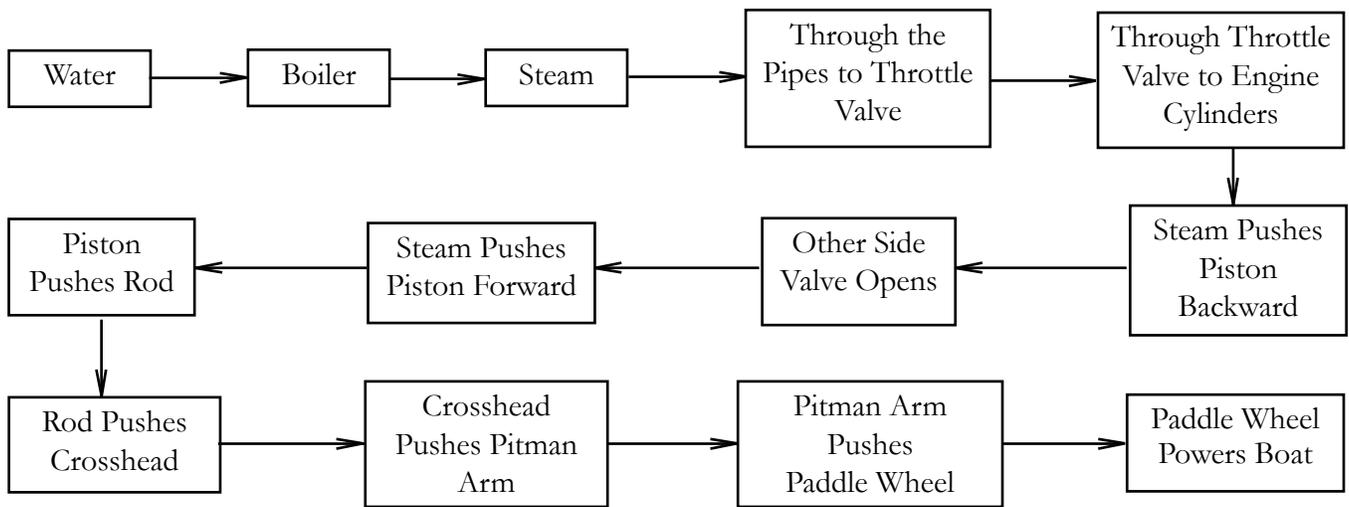
U.S. Army Corps of Engineers. "A History of Steamboats." U.S. Snagboat Montgomery National Historic Landmark Web page. <http://montgomery.sam.usace.army.mil/educational/5thand6th/ahistoryofsteamboats.pdf> (accessed September 16, 2010).

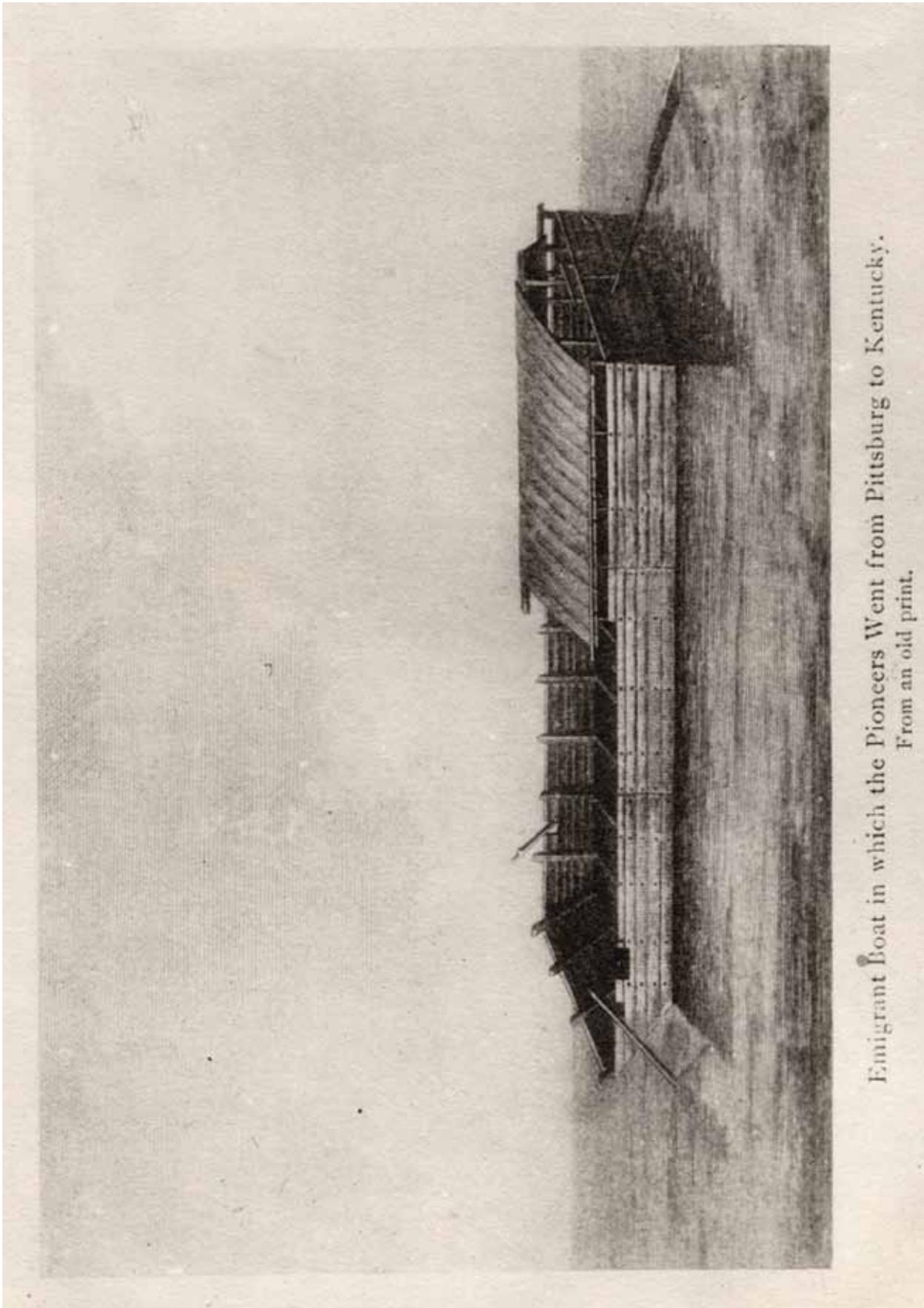
A history of steamboats from the U.S. Army Corps of Engineers.

U.S. Army Corps of Engineers, U.S. Snagboat Montgomery National Historic Landmark Web page. <http://montgomery.sam.usace.army.mil/educational.html> (accessed September 16, 2010).

This page includes a teacher's guide with lesson plans on subjects such as the history of steamboats, the snagboat *Montgomery*, etc.

Sample Diagram to Explain How a Steamboat Works





Emigrant Boat in which the Pioneers Went from Pittsburg to Kentucky.
From an old print.

“Flatboat, Emigrant Boat” (Indiana Historical Society Digital Image Collections, Item ID folder135_doc6.jpg)



“Encampment of the Travellers on the Missouri,” 1841 (Indiana Historical Society Digital Image Collections, Item ID BODMER_FF29-_025)

JOHN FITCH



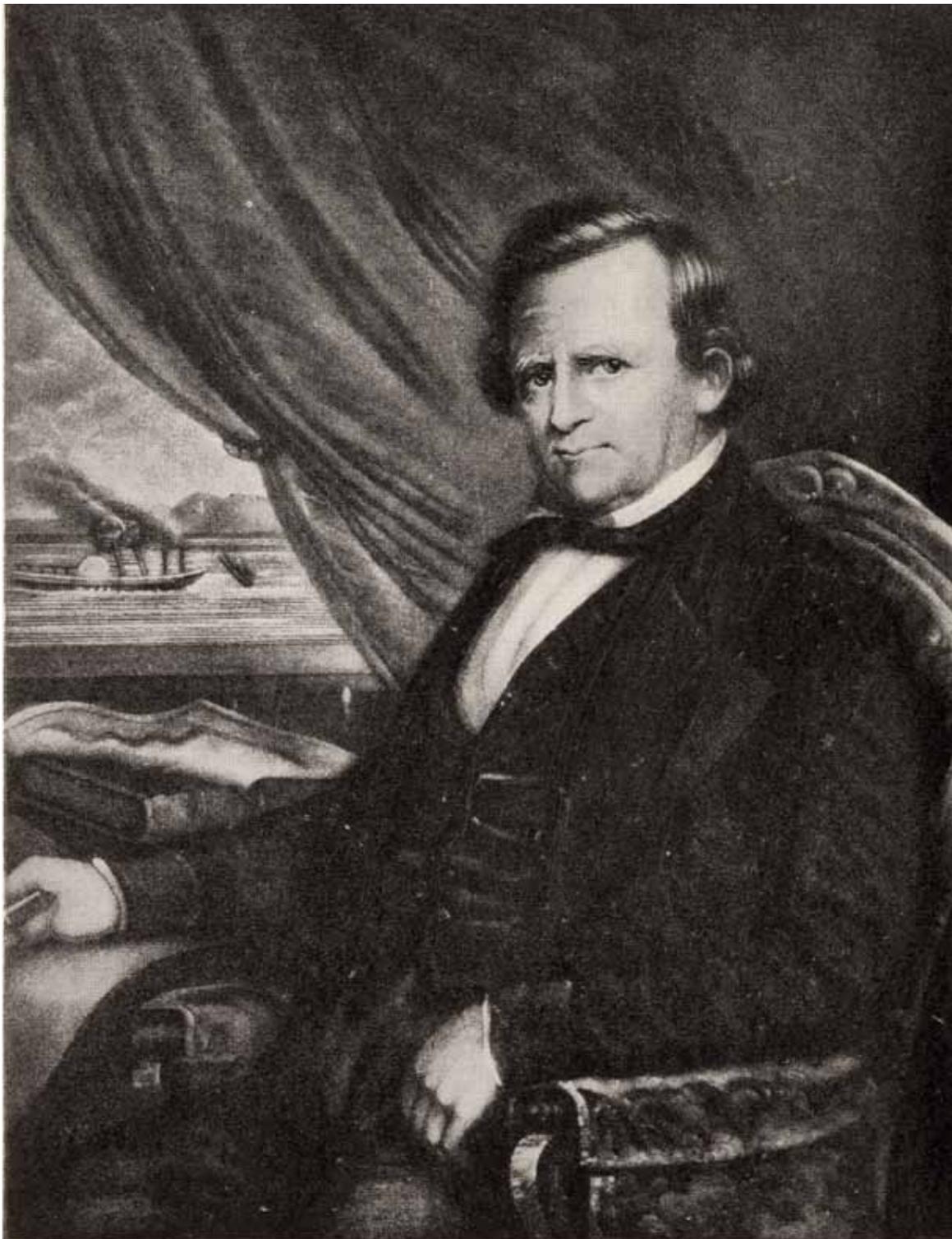
Fresco by Constantino Brumidi, c. 1876, from The Architect of the Capitol Web site at http://www.aoc.gov/cc/photo-gallery/brumidi_corridors.cfm. Courtesy Architect of the Capitol. (assessed September 3, 2010).

ROBERT FULTON (CA. 1800)



“Robert Fulton” (Indiana Historical Society Digital Images Collection, Item ID P0211_SERIESII_GRAPHICS_BOX1_FULTON)

HENRY MILLER SHREVE



HENRY M. SHREVE
The Real Creator of the American Steamboat

“Captain Henry M. Shreve” (Indiana Historical Society Digital Image Collections, Item ID VM623_E78_1929_HENRY_SHREVE)

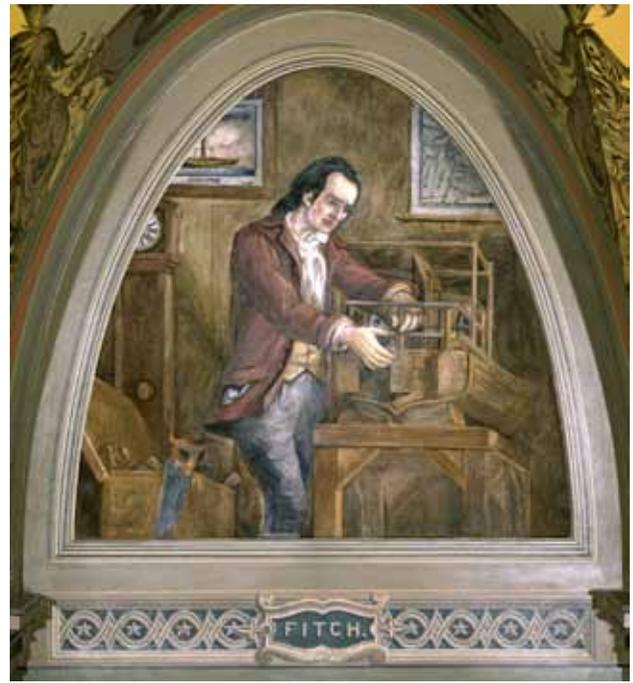
ABOUT JOHN FITCH

- Born in the colony of Connecticut in 1743
- Skilled at a variety of trades: farming, clock making, silversmithing, land speculation, and mapmaking
- Fought in the American Revolution for the Continental army
- After the war, explored the Ohio River valley and was captured by Native Americans and later released.
- Began work in 1785 on his steamboat
- Launched first American steamboat in 1787; also built three others
- Granted U.S. patent for his steamboat in 1791
- Unable to get financial backing
- Fitch's steamboat served as a ferry between Philadelphia, Pennsylvania, and Bordentown, New Jersey
- Unable to get investors in America or Europe, he became depressed and committed suicide in 1798

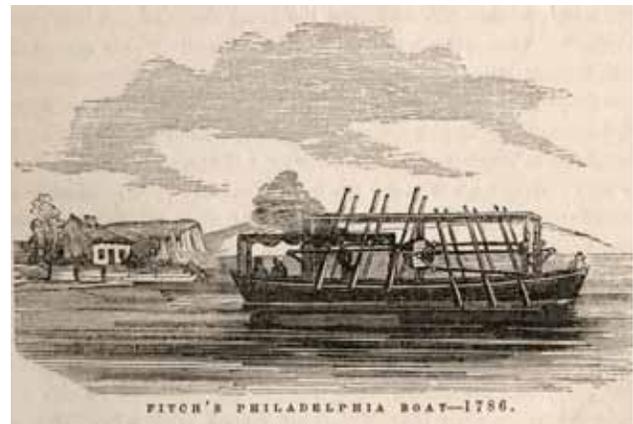
Sources

Lienhard, John H., "No. 1397, John Fitch," in the Engines of Our Ingenuity series. <http://www.uh.edu/engines/epi1397.htm> (accessed August 6, 2010).

Public Broadcasting Service, "John Fitch" in Who Made America? http://www.pbs.org/wgby/theymadeamerica/whomade/fitch_hi.html (accessed August 6, 2010)



Fresco by Constantino Brumidi, c. 1876, from The Architect of the Capitol Web site at http://www.aoc.gov/cc/photo-gallery/brumidi_corridors.cfm. Courtesy Architect of the Capitol.



"John Fitch's Philadelphia Boat"
Indiana Historical Society Digital Image Collections,
Item ID F353_L79_1856_021_BOAT)

ABOUT ROBERT FULTON

- Born in Lancaster County, Pennsylvania, 1765
- Worked as a jeweler and a portrait artist before becoming an inventor
- His interest in science and engineering led him to become involved in canal construction in 1793
- In 1804 he launched a diving boat (an early submarine) called the *Nautilus*
- Had the financial backing of Robert Livingston, who had negotiated the Louisiana Purchase from France
- Tried several times to make a self-propelled steamboat before being successful in 1807 with the launch of the North River steamboat *Clermont*
- Took John Fitch's steamboat design and modified it to make the steamboat viable
- Fulton's design had flat bottom, square stern, and a special English steam engine
- Fulton operated the *Clermont* and other ships as ferries on six different rivers and the Chesapeake Bay
- Died of pneumonia in 1815

Sources

Public Broadcasting Service, "Robert Fulton" in Who Made America? http://www.pbs.org/wgby/theymadeamerica/whomade/fulton_hi.html (accessed August 6, 2010).

The Oxford American Children's Encyclopedia, Second Edition, vol. 8. New York: Oxford University Press, 92.



Indiana Historical Society Digital Image Collections, Item ID P0211_SERIESII_GRAPHICS_BOX1_FULTON



"Clermont, 1807" (Indiana Historical Society Digital Image Collections, Item ID F0353_L79_1856_029)

ABOUT HENRY MILLER SHREVE

- Born in 1785 in New Jersey
- Grew up in the Ohio River valley
- Noted Fulton's success in 1807 with the *Clermont* and wanted to follow in his footsteps
- In 1815 he piloted the steamboat *Enterprise* to New Orleans to supply Andrew Jackson's army during the War of 1812. Prior to this trip, Robert Fulton and Robert Livingston had a monopoly on steamboat travel on the Mississippi River, which means they owned all of the steamboats navigating this river.
- The *Enterprise* was the first steamboat to make a round-trip between Louisville and New Orleans and it was the first steamboat to be used in warfare
- Built the *Washington* steamboat in 1816 with a flat bottom and shallow draft so that it could more easily navigate shallow sections of the river. It also had three decks, the top being the pilot deck. This design was copied on most future steamboats.
- In 1829 he developed a steam-powered snagboat, the *Heliopolis*. This boat had a jaw-like device on the bow that collected snags (sunken logs). The snags were then hoisted to a sawmill on the boat's deck, where they were converted to lumber. This made navigating rivers much safer and cheaper.
- Shreveport, Louisiana, is named after him
- Shreve died in 1854

Sources

Public Broadcasting Service, "Henry Miller Shreve" in *Who Made America?* http://www.pbs.org/wgby/theymadeamerica/whomade/shreve_hi.html (accessed August 6, 2010).

Text for *Steamboat A-Comin': The Legacy of the New Orleans* traveling exhibiton, Indiana Historical Society, 2010.



HENRY M. SHREVE
The Real Creator of the American Steamboat

"Captain Henry M. Shreve" (Indiana Historical Society Digital Image Collections, Item ID VM623_E78_1929_HENRY_SHREVE)



"Snag boat." Courtesy "Life on the Ohio River" Museum, Switzerland County [Indiana] Historical Society.