# Teacher's Guide

This unit is designed for four classroom periods and one field trip to see the U.S. Snagboat *Montgomery,* if possible. It may be enriched by including lessons about steamboats based on the many available websites.

*These lessons work towards fulfilling the following objectives:*
Students will:
Understand the impact both socially and economically of technological progress.
Understand the basic economics of trade.
Understand the governments role in providing for safe and effective transportation routes.
Increase understanding of economic growth across the southern United States.
Increase vocabulary and reading comprehension.
Learn about famous inventors such as Robert Fulton and how their inventions affected everyday life.

**Day 1:**

1. Give each student a copy of *A History of Steamboats* to be read.
2. Each student should prepare a brief (1 page) biography of one of the following inventors: Robert Fulton, Henry Miller Shreve, James Watt, or John Fitch. There are numerous websites containing this information. Students should be instructed to cite all materials used.

**Day 2:**

1. Discuss *A History of Steamboats*. Pay particular attention to unfamiliar vocabulary.
2. Give each student a copy of the Steamboats crossword puzzle as a follow-up to reinforce the vocabulary lesson and history lesson. This puzzle may be used as a graded assignment.

**Day 3:**

1. Give each student a copy of *The U.S. Army Corps of Engineers and the U.S. Snagboat Montgomery* to be read.

2. Using the internet, students should research the U.S. Army Corps of Engineers. This site provides some basic information: http://education.usace.army.mil/ This link, http://www.hq.usace.army.mil/history/brief.htm takes you to a very well written history of the Corps.
Suggested topics for 2 to 3 page papers include:
    dredging
    environmental actions
    emergency response
    cultural resource management
    wildlife and ecosystem management

Teachers: you may wish to divide the class into groups of 3 to 5 students and assign these as oral presentations rather than written papers. If using oral presentations plan enough classroom time for each presentation to take approximately 5 to 10 minutes with audio-visual aids.

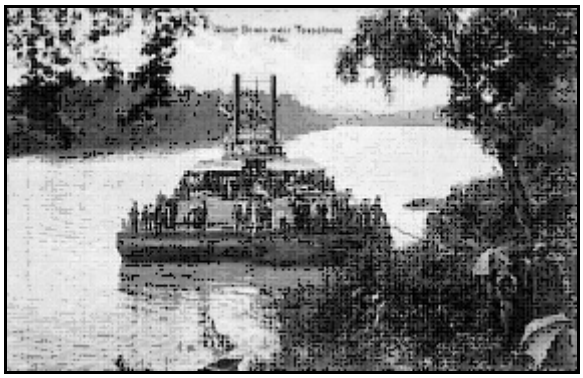
**Day 4:**

1. Give each student a copy of the Montgomery crossword puzzle as a follow-up to reinforce the vocabulary lesson. This puzzle may be used as a graded assignment or quiz.

**Day 5:**

Field trip to the *Montgomery*. Please tell Rangers at Tom Bevill Visitor Center that your class has completed these lessons.

The Tom Bevill Visitor Center has several displays about local wildlife, the construction of the Tennessee-Tombigbee Waterway, and the placement of the Montgomery into the dry berth. Rangers can arrange for several short video presentations to be shown to classroom groups.



# A History of Steamboats

Before trains, cars, trucks and airplanes existed, rivers were used for travel. They carried people and goods from one place to another. River travel was often slow because speed of travel depended on the river current and manpower. That all changed with the introduction of steam-powered boats in the late 1700s and early 1800s. The steam-powered boats could travel at the astonishing speed of up to five miles per hour. They soon revolutionized river travel and trade, and dominated the waterways. The dangers of steamboat travel such as explosions, sinkings, Indian attacks, and daring steamboat races captured the imagination of the country. The great steam-powered boats

of the nineteenth and twentieth centuries also played an important role in the expansion of the United States to the west. Eventually, other forms of transportation became more important than steamboats, but during their day, they ruled the nation's rivers.

## Early Steamboat History

The years after the Revolutionary War were years of growth in the southeastern United States. At the heart of this westward growth were southern rivers like the Mississippi, Alabama, Apalachicola, Chattahoochee, and Flint to name a few. In

1798, the Mississippi Territory, including what is now Alabama and Mississippi, was created. Then in 1803, the Louisiana Purchase gave the newly formed United States the city of New Orleans and the large Louisiana Territory. The rivers flowing through Alabama, Mississippi, and Louisiana provided a way for settlers to move west from states like Georgia and South Carolina. Cities grew along the rivers to make trade and transportation easier.

By 1810, flat-bottomed keelboats were carrying goods along the South's rivers. These keelboats brought goods to and from towns and to port cities like Mobile and New Orleans. The speed of these boats depended on the river current; and if the riverboatmen changed their cargo and returned upriver from where they started, they had to pole the boats against the current. A round trip could take as long as nine months. Because the trip upstream was so difficult, keelboat owners often took apart their boats at their destination and sold the timber. They would then make the trip back home overland. Keelboats were the most common way of river travel until the mid-nineteenth century when the quicker and more powerful steamboats gained popularity.

In 1769, a Scotsman named James Watt invented an engine that was run by steam. Once inventors learned about the steam engine they began to experiment with using it to run boats. The first man to build a steamboat in the United States was John Fitch. In 1787, Fitch built a 45-foot steamboat that he sailed down the Delaware River while members of the Constitutional Convention watched. John Fitch built four more steamboats, but they were expensive to build and to operate. Because they were so expensive, his steamboats were unsuccessful. The first successful steamboat was the *Clermont*, which was built by American inventor Robert Fulton in 1807.

Fulton's *Clermont*

The *Clermont* was the combined effort of Fulton and Robert Livingston. Fulton was born in Lancaster County, Pennsylvania. By the age of 17, he was working as a painter in Philadelphia. In 1786, Fulton moved to London where he turned his lifelong interest in science and engineering into a new career. Fulton was especially interested in the use of steam engines and the possibility of using one to run a boat. He was also interested in canal

systems and, eventually, moved to France to work on canals. It was in France that he met Robert Livingston. Livingston was a lawyer from New York who served in the Continental Congress and also on the committee that drafted the Declaration of Independence. Thomas Jefferson appointed Livingston as a minister to France, where he met Fulton in 1803.

Like Fulton, Livingston was interested in using steam engines to run boats. He talked Fulton into returning to New York to build a steam-powered boat. Robert Fulton returned to New York in 1806 and began building a steamboat on the East River. One year later on 17 August 1807, Fulton's steamboat, the *Clermont*, made its first voyage on the Hudson River traveling 40 miles from New York to Albany in a record eight hours. After the *Clermont's* successful first voyage, it made regular trips from Albany to New York every four days. Sometimes she carried as many as 100 passengers. Fulton had found a way make steam powered boats not only useful, but profitable; and the age of steamboats was born.

## Types of Steamboats

Any boat that is run by a steam engine is considered a steamboat, however, most steamboats built in the nineteenth and twentieth century were paddlewheel boats. The steamboats that traveled the South's rivers shared a basic design; they had a hull, or body, made of timber (later steel was used), and a wooden paddlewheel. The paddlewheel had a circular center with spokes coming from it like a bicycle wheel. Planks were attached to the spokes to make the paddle, which was placed on either the side or rear of the boat. Boats with paddles on the side were called sidewheelers, while boats with a paddle at the rear were called sternwheelers. The paddlewheels were run by an engine that was powered by steam. Steam to run the engine was made by boilers, which were giant copper tubes with two flues and a firebox. The boiler was filled with water, and the fire was stoked high enough to make steam. First wood, and then coal were used to build the fire.

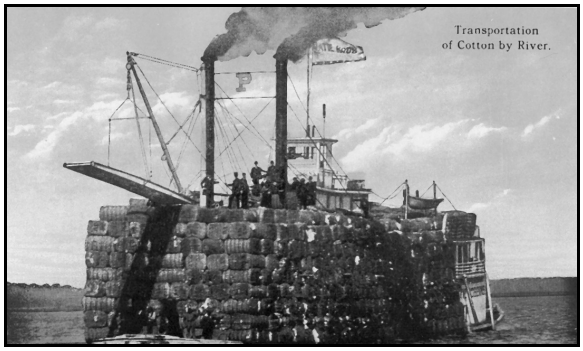
Most steam-powered boats shared a similar design, but different types of boats had different jobs. Towboats moved barges by pushing them up and down rivers; ferries carried people across rivers; snagboats cleared the river of dangers; packets carried goods, mail and people; and steamboats called fuelers met other steamboats along the rivers and re-supplied them with wood and coal or oil. Perhaps the most famous type of steamboat was the showboat.

Showboats were the floating palaces of the nineteenth and early twentieth centuries. Many showboats were beautifully

decorated and had theaters, galleries, ballrooms, and saloons. They traveled up and down rivers bringing plays and music to river towns. Showboats would announce their arrival by playing their organ-like steam calliope, which could be heard for miles. While showboats provided excitement and entertainment for river towns, they were never very common. In 1900, there were less than 30 showboats, and by 1930 there were less than 10.

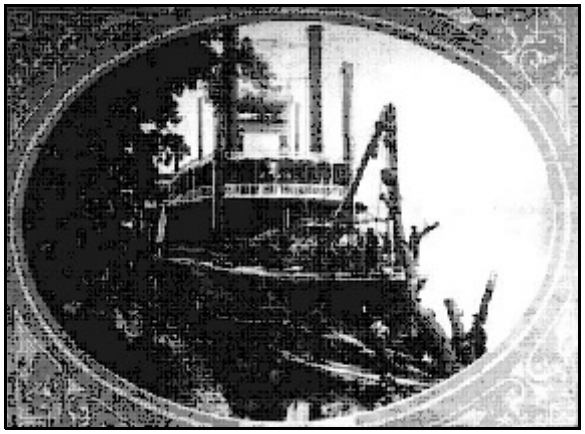
The *J.S. De Luxe*, a showboat

Showboats may be the most famous type of steamboat, but the most common boat on the South's rivers was the packet boat. Packet boats were very important because they were used to carry crops up and down the rivers. In fact, many river towns were built near large southern plantations to make getting crops to packet boats easier. Packets were also important because they carried people. On many of the boats there was a first class deck where passengers who could afford to traveled in relative luxury. Those who could not afford first class traveled in cramped conditions in the lower decks with the cows, pigs, and horses.



A packet boat piled high with bales of cotton

One of the most important types of steamboat was the snagboat. These boats patrolled the rivers and removed snags so other boats would not hit them and sink. A snag is a sunken tree, stump, or boat wreck that could cause damage to a ship if it hit it. Before the first snagboat was invented in 1829, snags caused many problems for steamboats. Sometimes, the damage from hitting a snag was so bad it caused boats to

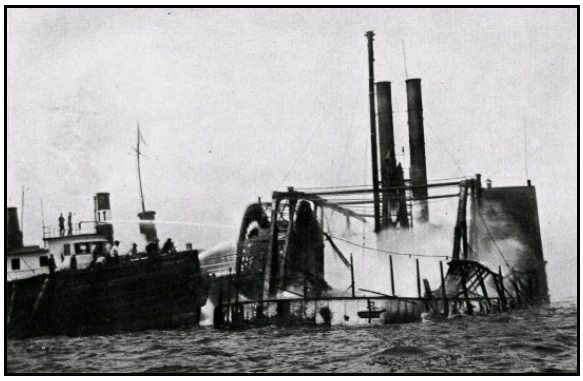

A nineteenth century snagboat

sink. Snagboats lessened this problem by using a crane to remove snags from the river making it safe for travel.

## Dangers of River Travel

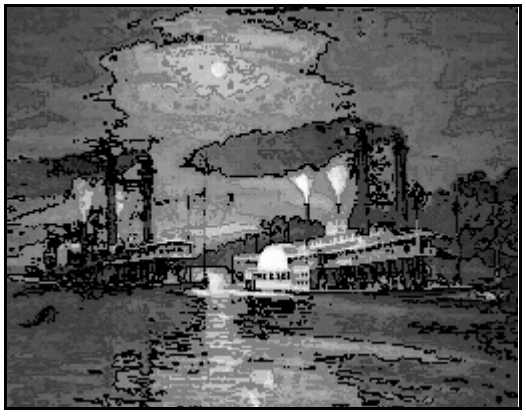
While snagboats helped remove one of the dangers facing steamboats, many others existed. Two of the biggest dangers were Indian attacks and boiler explosions. Often, Indians would hide along the banks of a river and begin shooting at a boat when it got close enough. If a boat wrecked near the bank, the ship would certainly lose its cargo, and the crew and passengers might even lose their lives.

Indian attacks were a concern, but the biggest danger facing steamboats was boiler explosion. If boilers were not carefully watched and maintained, pressure could build up in the boiler and cause a spectacular and deadly explosion. One of the worst steamboat disasters ever recorded was that of the *General Slocum*. The *General Slocum's* boiler exploded killing 958 people and injuring 175. The *General Slocum* explosion was one of the worst recorded, but it was hardly the first or last. From 1811 to 1851, 21 percent of river accidents were caused by explosion. Because of all the dangers, steamboats did not last long. It was rare for a steamboat to last five years. In fact, between 1830 and 1839, 272 steamboats were destroyed after less than three years of travel.



The *General Slocum* burning

If boiler explosions and Indian attacks did not present enough danger, steamboat captains often added to the dangers of river travel by racing each other. One of the most famous steamboat races was the 1870 race between the steamboats Natchez and the Robert E. Lee. The two steamboats raced from New Orleans, Louisiana, to St. Louis, Missouri. The Robert E. Lee won the race arriving in St.



The steamboat race between the *Natchez* and the *Robert E. Lee*

Louis after three days. The Natchez arrived six hours later. While the public found steamboat races exciting, they were dangerous for the boats' crews and passengers.

## The Demise of the Steamboat

Although steamboats ruled trade and travel in the 1800s and early 1900s, they were eventually replaced by newer forms of transportation. Steamboats began experiencing competition from railroads as early as the 1830s. At this time there were only 23 miles of tracks in all of the United States. This small amount of tracks did not provide much competition, but by 1880 there were around 93,000 miles of tracks and the trains were taking away much of the steamboats' business. In the twentieth century, with the invention of cars, trucks, and airplanes, steamboats became obsolete, and most were retired. Steamboats no longer travel the nation's waterways, but they will always remain one of the most important advances in United States technology.

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For more information on steamboats, visit these websites:

*Steamboats*
http://www.steamboats.com
http://www.steamboats.org

http://inventors.about.com/library/inventors/blsteamship.htm

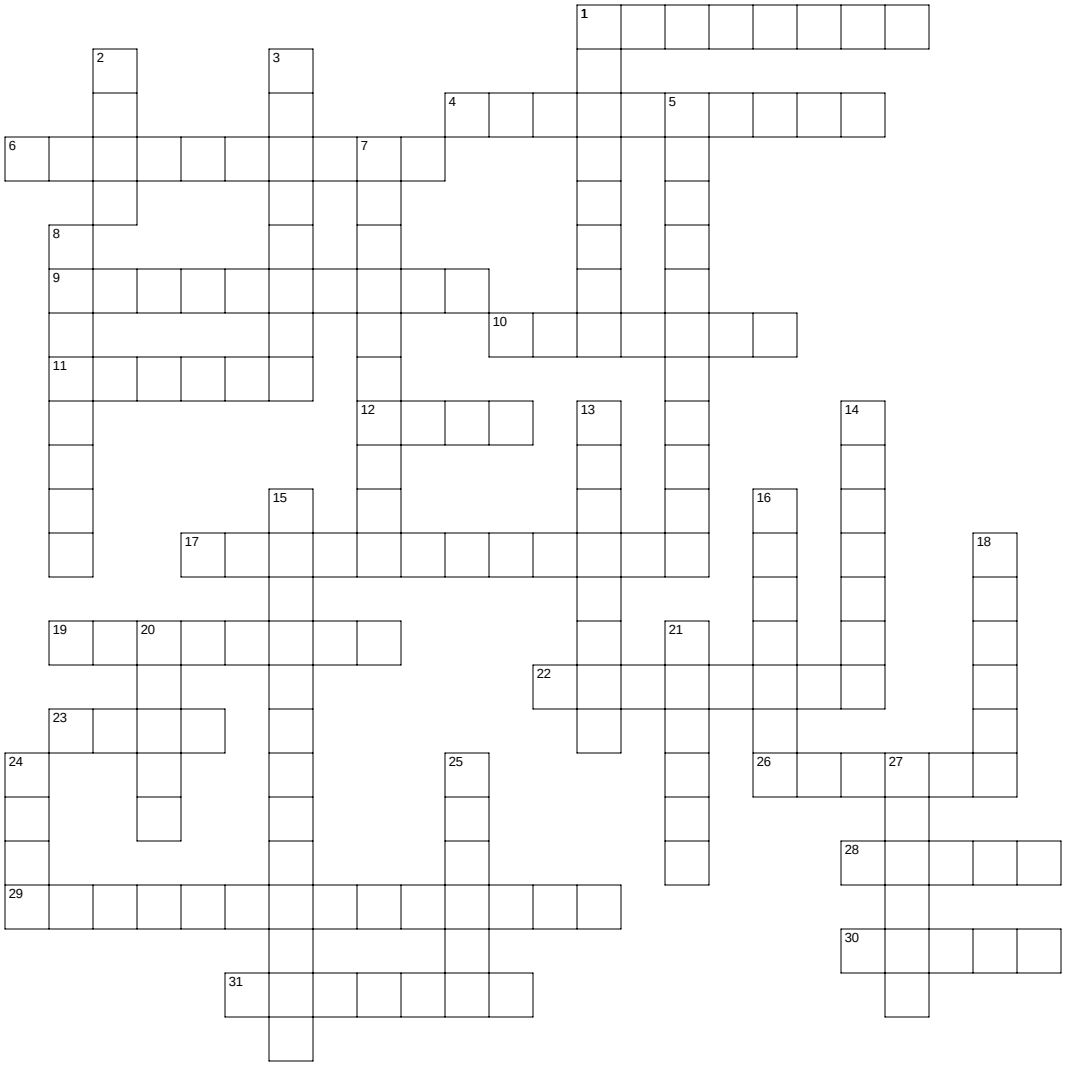
http://inventors.about.com/gi/dynamic/offsite.htm?site=http://www.steamboats.com/museum.html

http://www2.cemr.wvu.edu/~venable/asa/carl1.htm

http://twaintimes.net/
http://twaintimes.net/boat/sbindex.htm

*The General Slocum disaster*
http://www.general-slocum.com/
http://en.wikipedia.org/wiki/General_Slocum

# Steamboats



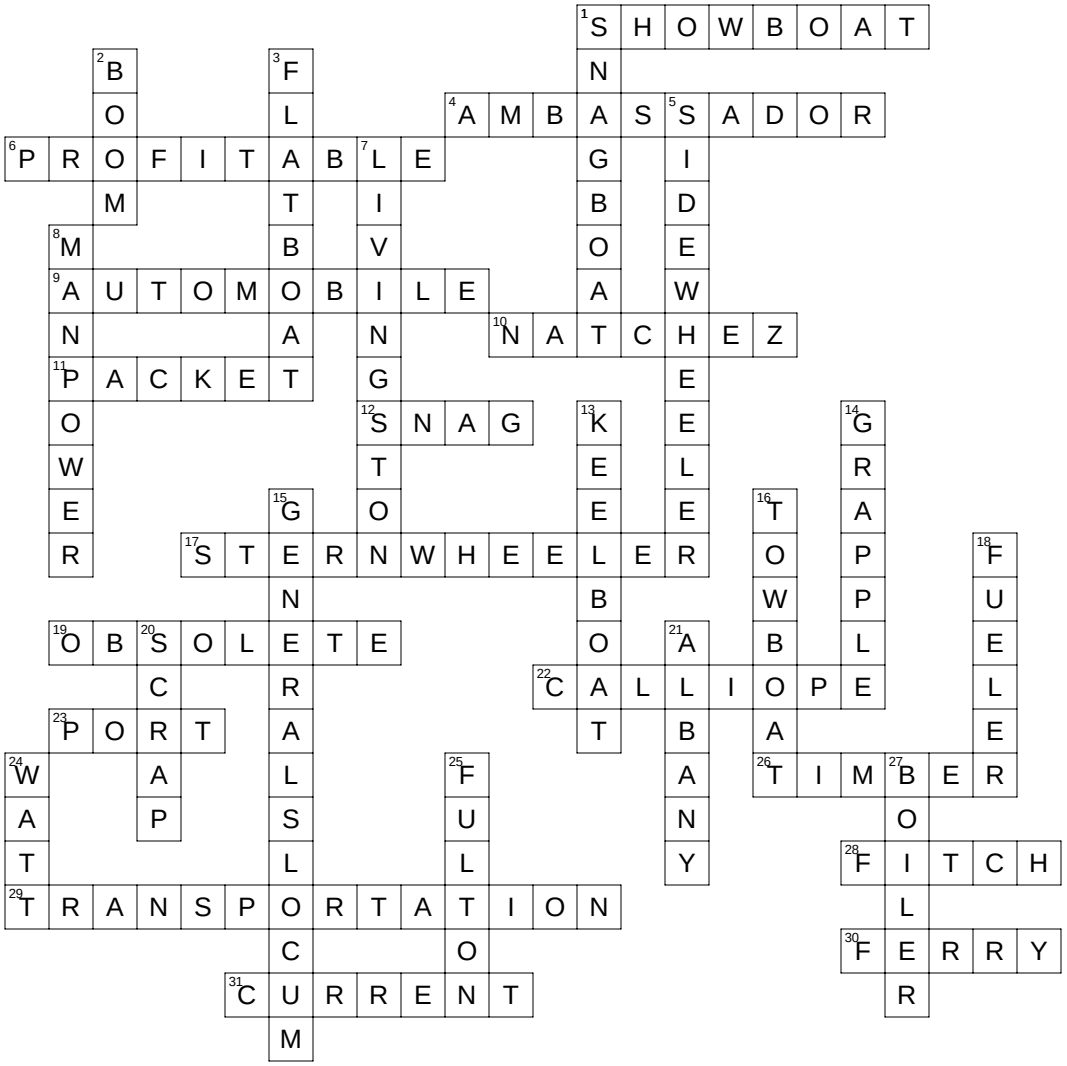
## Across

1. a steamboat used for entertainment
4. a person who represents his government in a foreign country
6. adjective describing something that makes money
9. another name for a car or truck
10. one of the famous steamboats that raced from New Orleans to St. Louis
11. a boat that carries cargo and people
12. a submerged tree, stump, or other hazard
17. a boat with a paddlewheel in the rear
19. out of style or no longer used
22. a steam-powered musical instrument
23. a harbor
26. wood for use in making something
28. built first American steamship
29. for example, trains, cars, trucks, boats, planes
30. a boat that carries people and cargo across a river
31. one of two ways keelboats were propelled

## Down

1. a boat designed to remove river hazards
2. a derrick
3. a boat with a flat bottom that was hand rowed or poled
5. a boat with a paddlewheel on the side
7. friend and business partner of Clermont builder
8. human labor
13. a covered boat for cargo that was hand rowed or poled
14. a claw-like hook used for raising items
15. a famous steamboat wreck
16. a boat that pushed or pulls cargo barges
18. a boat that carries fuel for other boats
20. to discard in pieces
21. the Clermont ran from New York to ?
24. invented the steam engine
25. built the Clermont
27. the part of a steam engine that produces the steam

# Steamboats



**Across**

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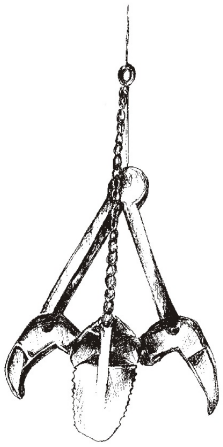


# The U.S. Army Corps of Engineers and the U.S. Snagboat *Montgomery*

The Corps carries on a proud heritage that began in 1775 when the Continental Congress authorized the first Chief Engineer. His first task was to build fortifications near Boston at Bunker Hill. In 1802, a corps of engineers was stationed at West Point and constituted the nation's first military academy. The United States Military Academy was under the direction of the Corps of Engineers, until 1866. With the founding of West Point, the Corps began a tradition of military and civil works missions that continues to this day.

Today, the United States Army Corps of Engineers is made up of military and civilian engineers, scientists and other specialists. They work together on engineering and environmental matters. Their biologists, engineers, geologists, hydrologists, archaeologists, and other professionals provide engineering services to our nation. Corps' workers plan, design, build, and operate all types of water resource projects such as dams and hydroelectric facilities. They keep rivers clear for navigation. They design and construct military facilities and help with disaster response.

Around 1900, the Corps accepted responsibility for keeping our rivers open for navigation and flood control. During the 1800s, many states made attempts to clear

waterways and make them navigable. The Corps built a large fleet of vessels using the most modern designs available to help fulfill this goal. Snagboats and dredge boats were the Corps' main tool in keeping rivers navigable.

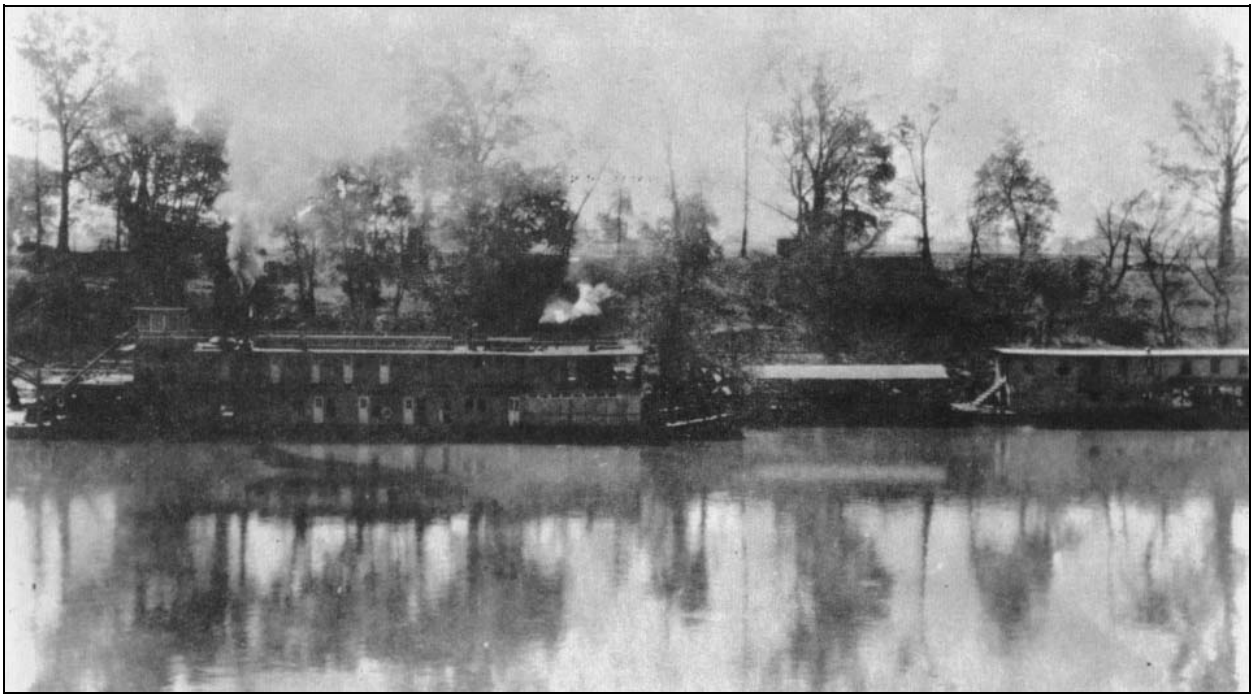
Henry Shreve designed the first steam-powered snagboat in 1829. The *Heliopolis* featured two hulls that were connected side by side. A derrick attached to the two hulls lifted the snags from the river bottom. This double-hull design continued to be used until the early twentieth century when high-strength steel hulls were developed.

Shreve's *Heliopolis*

## The U.S. Snagboat *Montgomery*

One of the hardest working snagboats in the Southeast was the U.S. Snagboat *Montgomery,* which was commission by the Montgomery District Corps of Engineers and built in 1926 by the Charleston Dry Dock and Machine Company of Charleston, South Carolina. The boat was based in Montgomery until 1933, when the Montgomery District became part of the Mobile District, and the boat was moved to her new home port of Tuscaloosa. However, she continued to work the waters of the Coosa River system, adding the Black Warrior-Tombigbee Rivers to her responsibilities. The Montgomery pulled snags from these river systems until 1959, when she was transferred to Panama City, Florida. She worked on the Apalachicola, Chattahoochee, and Flint rivers from 1959 until the end of her career, though her home port was transferred from Panama City to White City, Florida in 1979.

The *Snagboat Montgomery* is a riveted steel sternwheel-propelled vessel with a steel hull and wood superstructure. The overall length, including the sternwheel is approximately 54 meters (178 feet), while the maximum width is approximately 10 meters (34 feet). The depth of the hull is 1.8

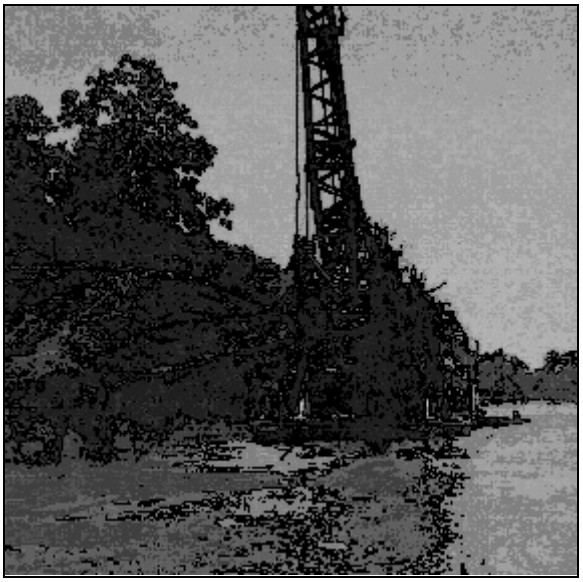


U.S. Snagboat *Montgomery* in 1929

meters (6 feet). The *Montgomery* has three decks. The propelling and snagging machinery, crew quarters, and the engine room are located on the main deck. The second deck contains the galley, officers' quarters, and an office; and the pilothouse at the top of the boat contains controls for the snagging boom and engine room. The boom is operated by two large steam winches; one turns the boom in an arc in front of the boat while the other lifts the snag. The Montgomery still has its original Scotch boiler, which created steam to power the boat. Water was heated inside a cylinder within the boiler. The steam produced by the boiler was extracted from the top of the boiler and passed through the main steam line overhead to the engine room in the stern. The boiler originally burned coal, but was converted to burn diesel fuel after World War II. The engines are high-pressure, or non-condensing, joy valve engines; and the paddlewheel is constructed of steel and wood and is 5.5 meters (18 feet) in diameter and 6 meters (20 feet) long. One interesting feature of the *Montgomery* is the telegraph machine located in the engine room. The machine has a dial with a hand that points to different possible engine room actions and is the way the pilot originally communicated with the engineers; a similar telegraph is located in the pilot house.

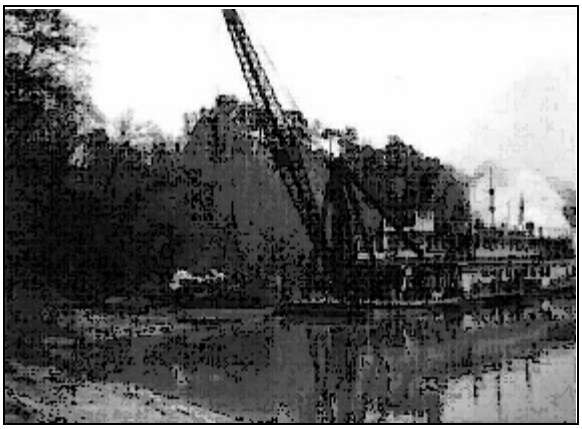
Snagging operations usually began in May of each year. The crews continued

through the end of the year. This was the peak time for river traffic. Snagboats generally operated in tandem with barges and tug (or tow) boats. A barge would be tied to the snagboat. As the snags were lifted, the snagboat would drop them onto the barge. Once the barge was full, a tug boat would take the barge away and leave an empty barge in its place. From January through May of each year, the snagboat would go back to dry dock for repairs.



*Montgomery* lifting a tree

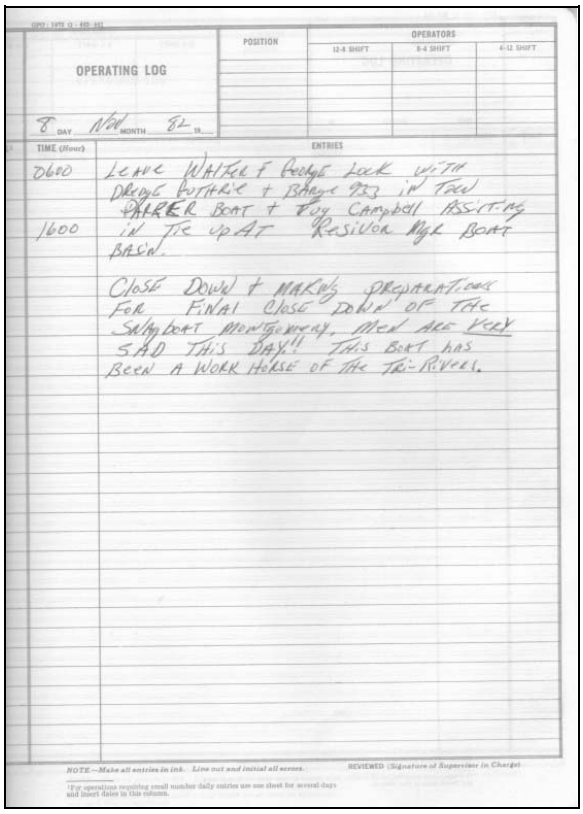
Over the years, the *Montgomery* participated in a number of projects other than her usual snagging work. For example, in early November 1964, the *Montgomery* assisted in raising the remaining section of the Confederate Gunboat *Chattahoochee* from the channel of the Chattahoochee River. The activities are recorded in Master Fleming's daily log of 6 November. He wrote, "Picking up stern section of Gunboat and Removing it from channel. While picking up Gunboat and trying to work it on the bank some of the upper sections of the boom were sprung." Today the Confederate Gunboat *Chattahoochee* can be seen at the Port Columbus National Civil War Naval Museum in Columbus, Georgia.



*Montgomery* lifting the Chattahoochee

Steam-powered boats, like the *Montgomery*, dominated transportation and commerce for most of the nineteenth and early twentieth centuries; however, river transportation began experiencing competition from railroads as early as the mid-nineteenth century. The continuing explosion of transportation technology in the twentieth century, including interstate highways, automobiles, trucks, and airplanes, eventually spelled the end of steam-powered boats. When the Corps of Engineers retired the *Montgomery* on 8 November 1982, she was one of only two

snagboats remaining in the United States, and the only steam-powered sternwheeler operating on any southern river. On her final day of service, the Captain wrote of the *Montgomery* in his log: "Me and [the crew] are very sad this day!! This boat has been a workhorse of the tri-rivers."



OPERATING LOG

POSITION

OPERATORS

8 DAY Nov MONTH 82 19

TIME (Hours) ENTRIES

0600 Leave Waterf Coochee Lock with Dredge Guthrie + Barge 923 in Tow PARKER Boat + Boy Campbell Assisting

1600 in The upAT Resilon Mgt Boat BASIN.

Close Down + MAKING PREPARATIONS FOR FINAL Close Down OF The Sailing Boat Montgomery. Men ARE VERY SAD THIS DAY!! This Boat has Been A Work Horse of the Tri-Rivers.

NOTE—Make all entries in ink. Line out and initial all errors. REVIEWED (Signature of Supervisor in Charge)

Master's log book entry
from 8 November 1982

In 1984, the Mobile District of the U.S. Army Corps of Engineers awarded a contract for extensive restoration work on the *Montgomery*. This work included replacing old material with new, sandblasting the entire hull and coating it with five layers of paint, and draining and cleaning the diesel fuel bunkers. After her first restoration, the *Montgomery* sat at the end of the nearby walkway. Visitors could tour the boat, reliving her days on the South's rivers.

In addition to being the one of the last surviving sternwheel snagboats, the *Montgomery* has another claim to fame. In 1984, the *Montgomery* was used as a set in the television movie *Louisiana,* which starred Margot Kidder, Ian Charleson, Victor Lanoux, and Andréa Ferréol. In the movie, the *Montgomery* is repainted and modified to resemble an ante-bellum passenger sternwheeler. However, the *Montgomery* has an unfortunate end in the movie; during a riverboat race, the sternwheeler explodes.

Beginning in the early twenty-first century, the Mobile District realized that exposure to river traffic and environmental factors were causing irreparable harm to this National Historic Landmark. They made the decision to remove her from the Tennessee - Tombigbee Waterway. On 2 October 2003, the U.S. Army Corps of Engineers, Mobile District, with the assistance of two derrick barges lifted the *Montgomery* on a specially-designed cradle and placed her in a dry mooring basin beside the lovely Tom Bevill Visitor Center.

*Montgomery* being lifted into dry berth

Soon thereafter, the *Montgomery* was again lovingly restored. Today, this National Historic Landmark is one of two remaining steam-powered sternwheel snagboats in the United States.

The U.S. Snagboat *Montgomery*

*Things to research:*

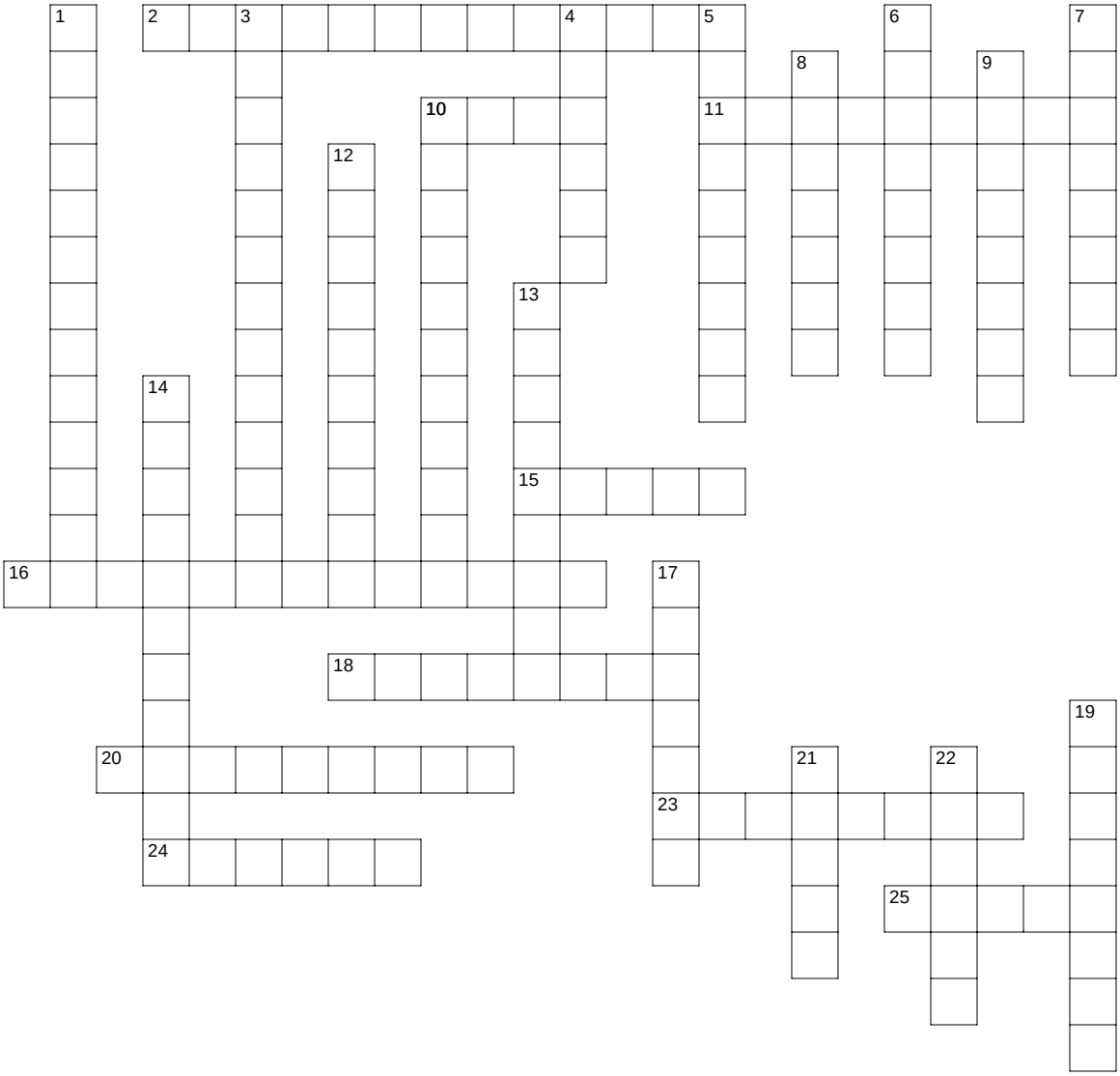
The Port Columbus National Civil War Naval Museum

The Confederate Gunboat *Chattahoochee*

The National Register of Historic Places

National Historic Landmarks Program

# The Montgomery



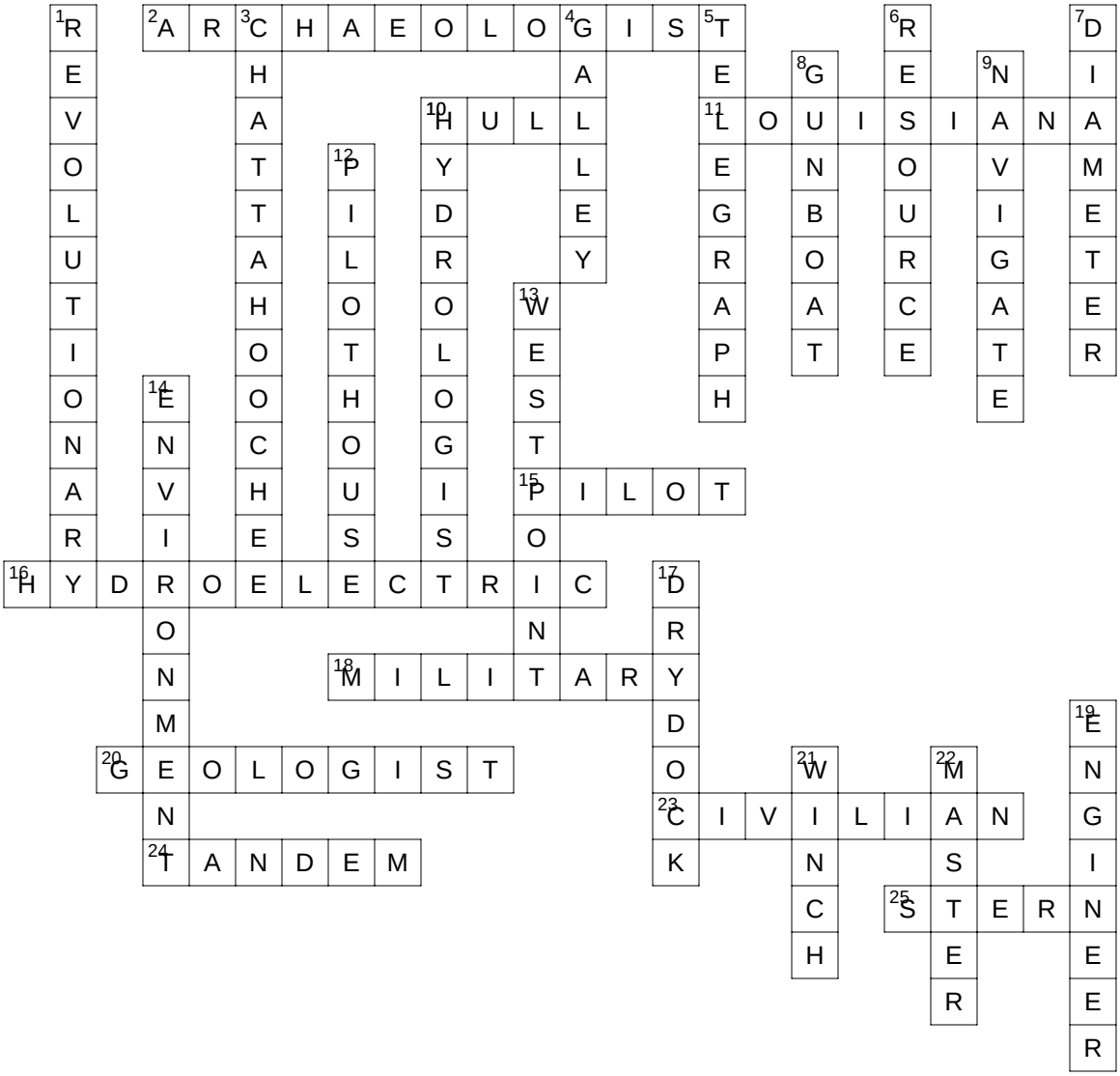
## Across

2. a scientist who studies past human life
10. the frame or body of a boat
11. the movie the Montgomery was in
15. he steers the boat
16. producing electricity by water power
18. having to do with the army or armed forces
20. a scientist who studies the history of the earth
23. a person not in the military
24. working together or one behind another
25. the back of a boat

## Down

1. war in which the Corps was first authorized
3. the name of a river and a Confederate boat
4. kitchen on a boat
5. a piece of equipment used for communication between the pilot and the engine room
6. a source or supply
7. thickness or the distance across a circle
8. a type of military boat
9. to steer a ship
10. a scientist who studies the properties and distribution of water
12. the place where the boat is steered
13. where the corps of engineers was first stationed
14. our surroundings
17. a place that can be kept dry for repairing or building ships
19. a designer or builder
21. a machine used for hauling and hoisting
22. the boat's captain

# The Montgomery



## Across

2. a scientist who studies past human life
10. the frame or body of a boat
11. the movie the Montgomery was in
15. he steers the boat
16. producing electricity by water power
18. having to do with the army or armed forces
20. a scientist who studies the history of the earth
23. a person not in the military
24. working together or one behind another
25. the back of a boat

## Down

1. war in which the Corps was first authorized
3. the name of a river and a Confederate boat
4. kitchen on a boat
5. a piece of equipment used for communication between the pilot and the engine room
6. a source or supply
7. thickness or the distance across a circle
8. a type of military boat
9. to steer a ship
10. a scientist who studies the properties and distribution of water
12. the place where the boat is steered
13. where the corps of engineers was first stationed
14. our surroundings
17. a place that can be kept dry for repairing or building ships
19. a designer or builder
21. a machine used for hauling and hoisting
22. the boat's captain