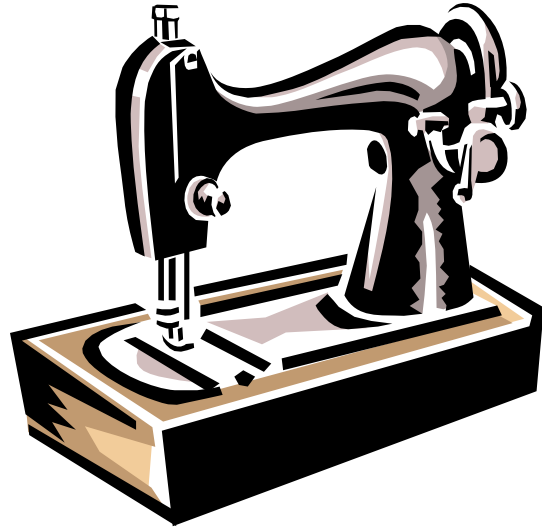


#1880 INVENTORS AND THE AMERICAN INDUSTRIAL REVOLUTION



CHURCHILL FILMS, 1983
GRADE LEVELS: 5-12
TIME: 14 MINUTES
COLOR
INSTRUCTIONAL GRAPHICS: 5

DESCRIPTION

Will Rogers, Jr. gives an informative glimpse of American inventors and their ideas. Using archival footage, songs, and voices from past eras, the curiosity and persistence of noted inventors are presented. Included are Edison, Ford, Fulton, Morse, Whitney, Bell, and the Wright Brothers.

GOALS

1. To introduce the term *The Industrial Revolution*.
2. To present some of the landmark inventors and inventions of the American Industrial Revolution.
3. To illustrate how these inventions affected our way of Life.
4. To expose the students to the creative and practical process of Inventing.

INSTRUCTIONAL OBJECTIVES

1. Students will discuss the term *The Industrial Revolution*.
2. Students will match the ten inventors presented in the media to their inventions.
3. Students will explain how the American Industrial Revolution brought some problem.
4. Students will discuss how inventions have affected our lives.
5. Students will list major inventions that have occurred in their own lifetime.

BEFORE SHOWING

1. Write the title of the media on the chalkboard.
 - a. Discuss the meaning of the word *inventor*.
 - (1) What is an inventor?
 - (2) Name some inventors with whom you are familiar.
 - (3) What did they invent?
 - b. Discuss the term *The Industrial Revolution*.
 - (1) The Industrial Revolution refers to the development of industrialization and changes that occurred.

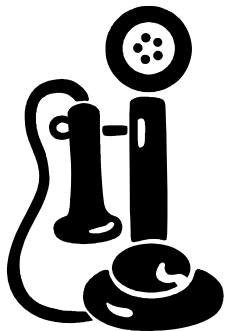
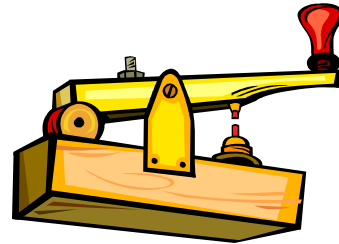
C a p t i o n e d M e d i a P r o g r a m

- (2) Industrialization took place in various countries at different periods. It spread to North America in the early 1800s.
2. Refer to the SCRIPT and choose vocabulary appropriate for the students. Discuss the meaning of these words and phrases.
 3. Construct a bulletin board display showing inventors and their inventions.
 4. Inform the students that Will Rogers Jr. will be narrating most of the media.
 - a. Ask the students if they know who he is.
 - b. Present basic information about him.
 - (1) He is the son of the late humorist, Will Rogers.
 - (2) He is well known for his radio and acting career.
 5. Tell the students to note the following special effects in this media.
 - a. Many black and white film clips from long ago.
 - b. Parts of songs from the era of the Industrial Revolution.
 - c. Voices of elderly people, remembering the past.
 6. Give each student a copy of the "Inventor Fact Sheet" included in this guide and have them read it. (See INSTRUCTIONAL GRAPHICS.)

AFTER SHOWING

Discussion Items and Questions

1. Did all of the inventors' ideas work?
2. What was the function of the cotton gin? Explain how the cotton gin was beneficial. Explain how the cotton gin was destructive.
3. What kind of production began in Eli Whitney's rifle factory? How did this revolution make people rich?
4. What principle did Joseph Henry discover?
5. What communication mode was developed by Samuel Morse?
6. What machine did Cyrus McCormick build for farmers?
7. Who invented the sewing machine?
8. Did different inventors ever work on the same Ideas?
9. What invention by Henry Ford was said to have changed life the most?
10. Who invented the airplane?
11. What mode of communication did Alexander Graham Bell invent?
12. Who was the most inventive man in the country? What company did Thomas Edison begin? What poem did Thomas Edison recite into the phonograph?
13. Who can be an inventor?
 14. Discuss the meaning of mass production and assembly line. (See INSTRUCTIONAL GRAPHICS.)
 15. Discuss how American life changed after the industrial revolution. Do these changes affect people today?
 16. The media states that industry brought problems. Discuss some of those. Give some examples of problems brought about by modern inventions.
 17. Ask the students to name major inventions developed in their lifetimes. List these on the chalkboard.
 - a. Discuss the advantages of these new inventions.
 - b. Discuss some of the problems brought about by these inventions.



C a p t i o n e d M e d i a P r o g r a m

18. Ask the students to name major inventions specifically for the hearing impaired. List these on the chalkboard. Ask the students the following questions:
 - a. How have these inventions affected you?
 - b. Who invented these items?
19. Tell the students that one of the inventors in the media was instrumental in aiding the hearing impaired.
 - a. Discuss Alexander Graham Bell and his accomplishments.
 - b. Name other famous inventors that aided the hearing impaired.
20. Ask the students what the difference is between an invention and a discovery?
21. Discuss how an inventor gets an idea. What personality traits do inventors have?

Application and Activities

1. Assign each student a report to write and present to the class on one of the following Inventors:
 - a. Robert Fulton.
 - b. Eli Whitney.
 - c. Joseph Henry.
 - d. Samuel Morse.
 - e. Cyrus McCormick.
 - f. Isaac Singer.
 - g. Henry Ford.
 - h. Wright Brothers.
 - i. Alexander Graham Bell.
2. As a group, make a timeline showing the major inventions of these famous inventors.
3. Many people alive today remember when some of the inventions noted in the media were introduced.
 - a. Ask the students to talk to their grandparents or older people about changes they recall happening when new inventions appeared.
 - b. Ask an older deaf person to come and speak to your class about some of the inventions for deaf people throughout the years.
4. Ask your students to invent something, at least on paper. Ask them to draw their plan. Ask them to explain the inventions and how they work.
5. Have the students complete the worksheet included in this guide. The "Inventor Fact Sheet" may be used as a guide. (See INSTRUCTIONAL GRAPHICS.)
6. Have the students complete the crossword puzzle. The "Inventor Fact Sheet" may be used as a guide. (See INSTRUCTIONAL GRAPHICS.)



COMMUNICATION



1. The voices in the media have unique qualities.
 - a. Discuss these voices.
 - (1) Will Rogers, Jr.—accent.
 - (2) Older people's voices—quality.
 - b. Ask the students to listen for these voices and qualities.
2. Locate an old Victrola. Bring it to school and let the students see how it works. Let the students listen to records playing. Discuss the quality of the sound.

C a p t i o n e d M e d i a P r o g r a m

3. Parts of two songs were sung in the media. Discuss the meaning of each of these songs. Locate the lyrics and music from a store or music books.
 - a. Teach the students the words, emphasizing speech and signing skills.
 - b. Videotape the students singing and signing the songs to the music.

RELATED RESOURCES

Captioned Media Program

- [*Alexander Graham Bell: Voice of Invention* #8029](#)
- [*The American Industrial Revolution* #3431](#)
- [*Connections 2: Revolutions* #8062](#)
- [*Father of Invention: Thomas A. Edison* #8080](#)
- [*Henry Ford: Tin Lizzy Tycoon* #8272](#)
- [*The Industrial Revolution* #3259](#)
- [*Industry* #8773](#)
- [*The Wright Stuff* #3684](#)

INSTRUCTIONAL GRAPHICS

- WORKSHEET
- INVENTOR FACT SHEET
- INVENTORS (CROSSWORD PUZZLE)
- SONGS
- MASS PRODUCTION

LESSON GUIDE WRITTEN BY SUSAN BROSMITH

SCRIPT

ROGERS: Back in the days when Ben Franklin was trying to figure out electricity, Americans did not even have a word for Inventor.

In England, they had put steam to work Just for pumping water out of mines.

Manufactured goods came from Europe by ship. That was expensive. Twenty years after the Revolution almost everything was handmade. Hard work.

Life on the farms was very hard.

America was about to change. The people who led the way were the inventors.

Of course, not all of their ideas worked.

But, a lot of them did. Thomas Edison. The Wright Brothers. Alexander Graham Bell. Can you imagine what life was like before these men's great inventions? Some of us remember those times. We lived it.

MAN: My mother had those things when she was growing up.

(Gramophone Playing Music)

C a p t i o n e d M e d i a P r o g r a m

MAN: When I was a kid In Chicago, we didn't have electric lights. We didn't have a telephone. Many people did, but we didn't. There have been many changes in the world, even in my lifetime.

ROGERS: Let's get back to those early years after the Revolution.

Many tried putting the steam engine on a boat. Everybody thought they were crazy. But, traveling by road was slow and bumpy. America needed to use wide, smooth rivers. Finally, somebody came along with enough money to build the first successful boat. Robert Fulton got the credit. The Clermont started the era of the steamboats.

The South had troubles. They could grow cotton. But it had seeds. It took a day to clean just one pound by hand.

WOMAN: In 1794, Eli Whitney invented the cotton gin. Its function was to separate seeds from raw cotton. And production would be greater. The cotton gin was very beneficial. But, it was also destructive. It fostered slavery. It encouraged the cotton planters to import slaves.

ROGERS: A few years later Whitney started something in the North. It was as important as the cotton gin. In the past, when a part broke, you either fixed it or threw the whole thing away.

But, Whitney built this rifle factory based on a new Idea. Each rifle had interchangeable parts. One broken part could be replaced. This was the beginning of mass production.

Just think what this revolution started. It helped make America rich. Factory owners became rich, too.

Weaving mills in New England grew up next to water power. New power looms were designed, but, it wasn't all big business.

Joseph Henry was experimenting with electricity. He discovered the principle of the transformer. He made an electromagnet that could lift a ton. This was his Idea for the first electric telegraph.

Samuel Morse was an artist. He knew nothing about electricity. But, he developed the telegraph. After years of experiments, he won out . . . We know what that did to communication.

There were mostly farmers back then. Somebody should have invented something for them. Cyrus McCormick built a machine for farmers. That machine could bring in the harvest faster than people. McCormick built a factory to make reapers. He went from farm to farm, selling reapers to farmers.

WOMAN: The reaper was a big help. It could go faster, raise more grain, sell more, and make more money.

ROGERS: McCormick's timing was perfect. The steam engine ran on wheels by this time. Both railroads and farmers were pushing into the Midwest. Now farmers could get their harvest to cities.

What about the way people dressed? Ordinary folks were lucky to have clothes on their backs. Sewing was done by hand. The sewing machine could make ordinary folks look elegant. A kid might turn up looking like this.

C a p t i o n e d M e d i a P r o g r a m

Very often different inventors worked on the same idea. Isaac Singer won out. He was an inventor, a manufacturer, and a great promoter.

WOMAN: I remember when we got a sewing machine. It cost a lot of money, about \$25. Those people look familiar. They thought they were really somebody when their pictures were taken.

ROGERS: About that time, people began making engines that ran on gasoline.

WOMAN: I'd say that the automobile changed life the most. I've seen and ridden in cars like that. They don't look like a car. They are faster than a horse and buggy.

SONG: Come away with me Lucille.
In my merry Oldsmobile.

MAN: That song was about an Oldsmobile. That was one of the first makes.

SONG: Down the road of life we'll fly.
Automobubbling, you and I.
To the church we'll swiftly steal.
Then our wedding bells will peal.
You can go as far as you like with me.
In my merry Oldsmobile.

ROGERS: Henry Ford was one of the many inventors who worked on horseless carriages. His biggest contribution was the idea of the assembly line. It made cars so cheaply that many families could have them.

Industry boomed. It made life easier for us. It brought problems, too. But that's a different story.

Another idea was how to fly. The Wright Brothers worked with gliders. They made them strong and light. They wanted to control them. They put on an engine and propeller. Things have never been the same,

Alexander Graham Bell changed our world in another way.

WOMAN: I remember our first telephone. That was a wonderful thing. We thought we were in heaven when we got a telephone.

SONG: Hello Central,
Give me heaven,
For my mother's there;
You will find her with the angels,
on the golden stair . . .
tell her that . . .

THOMAS EDISON: I'm in my laboratory in Orange, New Jersey talking to the National Electric Light Association.

ROGERS: Thomas Edison was the most inventive man in this country. He certainly changed people's lives. Now we know about the electric light. Edison also developed a dynamo to make electricity. He started a company that brought electricity to people. He worked on many different things. Many of them had to do with electricity or with chemistry.

C a p t i o n e d M e d i a P r o g r a m

FRANCIS GELL: This Is Edison's first invention. He was only 21 years old when he invented the volt recorder.

ROGERS: This Is Francis Gell. He worked with Edison.

FRANCIS GELL: Edison invented the electric pen. This pen was presented to Mr. Henry Ford by Mr. Edison at Fort Myers. Florida. Edison also invented the mimeograph. Edison is the father of stencil work. He ran through that hardboiled "university of life." He gave the world the machine that returned the voice of the dead. He called it a phonograph. I will repeat what Edison repeated in his first phonograph.

(Gell Recording His Voice) Hello. Hello. Hello. Mary had a little lamb. Its fleece was white as snow. And everywhere that Mary went the lamb was sure to go. Ha Ha Ha Ha Ha.

(Voice Recording) Hello. Hello. Hello. Mary had a little lamb. Its fleece was white as snow. And everywhere that Mary went the lamb was sure to go. Ha Ha Ha Ha Ha.

ROGERS: Edison even manufactured his inventions. Everything fascinated him. Edison did more to change our lives than any other person.

THOMAS EDISON: It's a great pleasure and my privilege to have a part in the origin, development, and continuance of this industry. I thank you and hope that even greater successes may reward your labors.

(Gramophone Playing Music)

WORKSHEET

Please match the inventors to their inventions.

- | | |
|--------------------------|--|
| a. Cyrus McCormick | 1. Invented the steamboat |
| b. Isaac Singer | 2. Invented the cotton gin |
| c. Eli Whitney | 3. Invented the airplane |
| d. Samuel Morse | 4. Invented the automobile |
| e. Joseph Henry | 5. Invented electrical light |
| f. Thomas Edison | 6. Developed the telegraph |
| g. Alexander Graham Bell | 7. Invented the sewing machine |
| h. Robert Fulton | 8. Made an electromagnet that could lift a ton |
| i. Wright Brothers | 9. Invented the telephone |
| j. Henry Ford | 10. Invented the reaper |

Fill in the blanks.

seeds
automobile
slavery
mass production

assembly line
idea
inventive
volt recorder

- a. The cotton gin separated _____ from raw cotton.

- b. The cotton gin fostered _____
_____.
- c. Eli Whitney's rifle factory was the beginning of _____
_____.
- d. Inventors often worked on the same _____.
- e. The _____
changed life the most.
- f. Henry Ford's biggest contribution was the idea of the _____.
- g. Thomas Edison was the most _____ man in
this country.
- h. The _____ was the machine that returned the voice of
the dead.

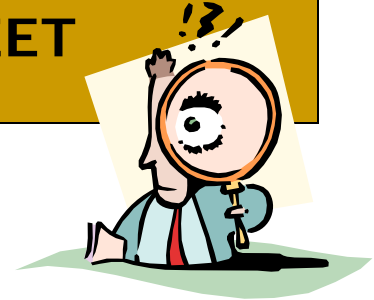
I think _____ is the most important invention mentioned in the media
because _____
_____.

I think _____ is the most important invention for the deaf and hard of
hearing because _____
_____.



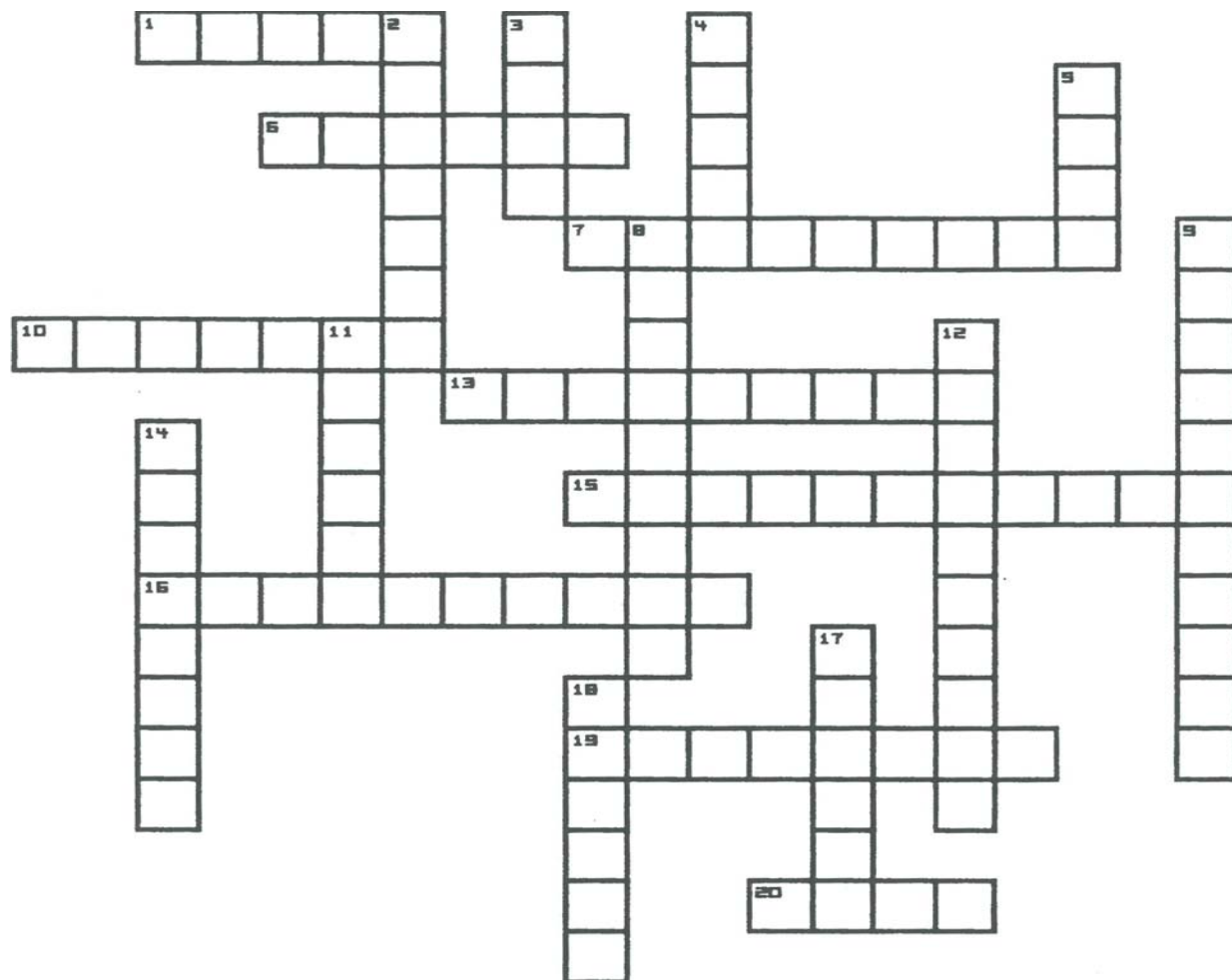
#1880 INVENTORS AND THE AMERICAN INDUSTRIAL REVOLUTION

INVENTOR FACT SHEET



1. Robert Fulton invented the first steamboat.
2. Eli Whitney invented the cotton gin in 1794.
 - a. This machine separated the seeds from raw cotton.
 - b. This invention fostered, or encouraged, slavery.
 - c. Whitney's rifle factory was the beginning of mass production.
3. Joseph Henry discovered the principle of the transformer.
 - a. He made an electromagnet that could lift a ton.
 - b. This was his idea for the first electric telegraph.
4. Samuel Morse invented the telegraph.
5. Cyrus McCormick invented a machine called a "reaper," to help the farmer. He also built a factory to manufacture reapers.
6. Isaac Singer invented the sewing machine. He was a manufacturer and a great promoter.
7. Henry Ford invented the horseless carriage, also known as the automobile. His big contribution was the idea of the assembly line.
8. The Wright Brothers invented the airplane.
9. Alexander Graham Bell invented the telephone.
10. Thomas Edison was one of the most inventive men in this country. His inventions include the following:
 - a. Electric light.
 - b. Dynamo to make electricity.
 - c. Volt recorder (first invention).
 - d. Electric pen.
 - e. Mimeograph.
 - f. Phonograph.

CROSSWORD PUZZLE




ACROSS CLUES

1. The cotton gin separated this from raw cotton.
6. This machine could bring in the harvest faster than people could.
7. Robert Fulton invented this.
10. This man invented the cotton gin.
13. Alexander Graham Bell invented this.
15. John Henry discovered the principle of this.
16. This is the machine that "returned the voice of the dead."
19. A person who creates or thinks of something new.
20. The last name of "Henry" who worked on horseless carriages.

DOWN CLUES

2. The invention of the cotton gin fostered this.
3. Inventors often worked on the same what?
4. Mass production began in Whitney's what factory?
5. Thomas Edison's first invention was the what recorder?
8. Samuel Morse developed this.
9. Joseph Henry experimented with this.
11. He changed our lives more than anyone else.
12. The Industrial what spread to North America?
14. The Wright Brothers invented this.
17. Thomas Edison developed the what to make electricity?
18. Isaac who invented the sewing machine?

SONGS



In My Merry Oldsmobile
Words by Vincent Bryan
Music by Gus Edwards

Come away with me Lucile
in my merry Oldsmobile.
Down the road of life we'll fly
Automobubbling you and I.

To the church we'll swiftly steal
Then our wedding bells will peal.
You can go as far as you like with me
In my Merry Oldsmobile.

Hello Central, Give Me Heaven
Words and Music by Chas. K. Harris

Papa I ' m so sad and lonely,
Sobbed a tearful child.
Since dear mama's gone to heaven.
Papa darling, you've not smiled.

I will speak to her and tell her,
That we want her to come home;
Just you listen and I'll call her
Through the telephone.

Hello Central, give me heaven,
For my mama's there;
You can find her with the angels
On the golden stair.

She'll be glad it's me who's speaking
Call her won't you please;
For I want to surely tell her,
We're so lonely here.



MASS PRODUCTION



ASSEMBLY LINE



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