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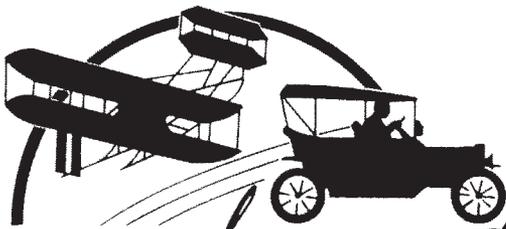
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Everyday Life:
INVENTIONS

WALTER A. HAZEN

 GOOD YEAR BOOKS

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To Martha, Jordan, and Allison

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Design: Christine Ronan Design

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Printed in the United States of America.

ISBN-13: 978-1-59647-277-8

Previous ISBN: 0-673-36323-6

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Introduction

In the early 1900s, some people suggested that the U.S. Patent Office in Washington, D.C., be closed. Their reasoning? Everything that could be invented had been, and the need for a patent office no longer existed.

Sounds absurd, doesn't it? Obviously, the persons making such a recommendation were neither inventors nor scientists. The true inventor knows that progress and new ideas will continue as long as people populate the earth.

In *Everyday Life: Inventions*, you will learn about some of the inventions that helped shape the history and character of our country. You will see how progress in such fields as science, industry, medicine, transportation, and electronics made America strong and gave its people the highest standard of living in the world. Although the book mentions some inventors from other nations, its focus is on discoveries and inventions that took place within the United States itself.

Each chapter concludes with several pages of activities designed to challenge and motivate. Answers are provided in the Answer Key.

Everyday Life: Inventions provides a valuable supplement to any classroom textbook on American history.

Editor's note: Wherever applicable in the worksheets, metric equivalents have been given alongside the U.S. Customary measurement system. You may use either measurement system to work the problems. You also can try solving in one system and then try the other. Answers for both measurement systems are in the Answer Key.

The information in this book is as accurate as possible. Frequently sources did not agree on the most basic information, such as the inventor, the spelling of names, and the year of invention. We have provided the information we think to be accurate based on the best available evidence.



New Implements Revolutionize Farming

During its early years, America was an agricultural nation. Tools and machinery were simple and basic, and not much changed until 1793. In that year, a tinkerer named Eli Whitney invented a machine that had a profound impact on American history.

The Cotton Gin

Thoughts of the South before the Civil War conjure up images of huge plantations worked by hundreds of slaves. This did occur in some places but came close to not happening at all.

For many years, cotton was not a profitable cash crop. It only grew in certain kinds of soil, and processing it was extremely slow. The problem lay in removing the seeds. It took one slave an entire day to clean one pound (.45 kilogram) of cotton. At this slow rate, conditions were unfavorable for the development of large plantations planted in acres and acres of cotton.

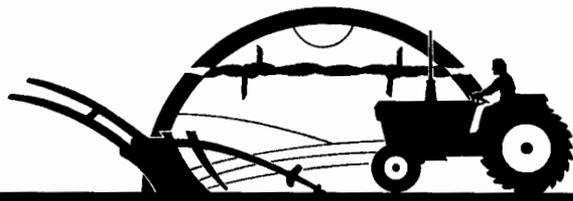
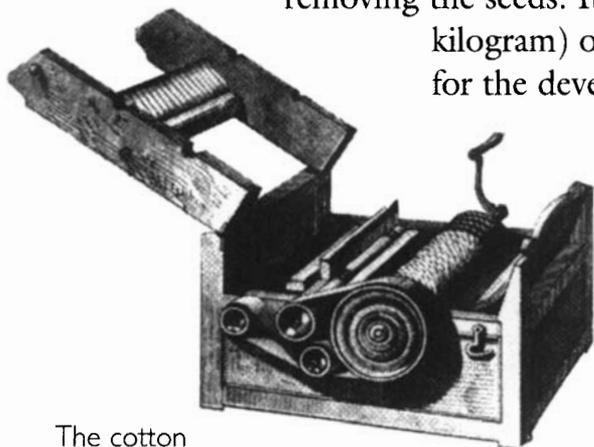
What made the mass production of cotton possible was Eli Whitney's cotton gin. Whitney was the son of a Massachusetts farmer who grew up working with and repairing farm machinery. He worked his way through Yale University, and in 1793 set out for South Carolina to tutor the children of a wealthy planter. His plans fell through when another teacher was given the job. Then he met Catherine

Greene, the widow of Revolutionary War hero General Nathanael Greene. Mrs. Greene invited young Whitney to stay as a guest at Mulberry Grove, her large plantation outside of Savannah, Georgia.

While at Mulberry Grove, Mrs. Greene, aware of Whitney's skill with machines, encouraged him to invent a device for removing the seeds from cotton. Whitney went to work at once, and in ten days he turned out the cotton gin. Within two years, his invention enabled the South to grow 8 million pounds (3.6 million kilograms) of cotton. This amount increased to 80 million pounds (36.3 million kilograms) twelve years later. Whitney's machine made the growing of cotton in vast amounts possible.

In spite of its benefits, the cotton gin had a negative effect on America's history. With more cotton being planted, there was a need for more slaves to

The cotton gin, which accelerated the process of removing the seeds from cotton, made increased acreage profitable and caused slavery to become even more entrenched in the South. From a drawing of an original gin.





work on the plantations. Thus, Whitney's invention contributed largely to the strengthening and spread of slavery in the South.

The Steel Plow and the Reaper

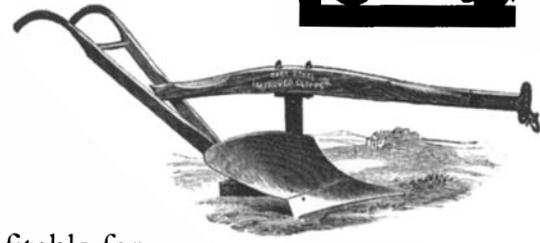
Two inventions in 1834 made life easier and more profitable for the American farmer. The first was John Deere's steel plow. The second was Cyrus Hall McCormick's reaper.

Until the settlement of the American prairie, farmers tilled the soil with wooden and iron plows. These worked fine in normal types of soils. But the heavy grassy farmland of the prairie posed a problem. The wooden plow had difficulty penetrating the hard ground, and the sticky soil had a tendency to cling to both wooden and iron plows. John Deere, a New England blacksmith, made a model for a new plow out of an old circular saw. He found that soil did not stick to the steel surface, and a new plow was born.

Deere's steel plow made him a successful businessman. He opened a shop in Grand Detour, Illinois, and later a larger one in Moline, Illinois. In 1875, his factory turned out the first horse-drawn, riding plow. Deere's inventions enabled farmers to plant more seeds and therefore produce larger crops. The result was a tremendous increase in America's food supply.

Now that it was possible to grow more grain, a faster way had to be found to harvest it. McCormick found that way shortly after Deere's steel plow came into use.

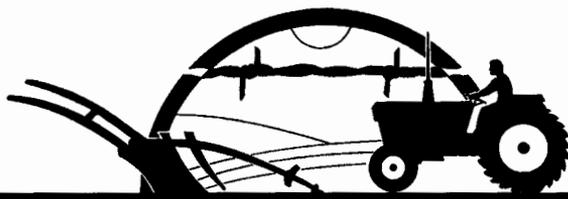
For years, men had tried to make a reaper that cut wheat. More than forty people attempted and failed. Cyrus's own father had actually made a cutting machine, but it did not work very well. Farmers had to continue harvesting their crops with scythes and cradles.



The steel blade plow was a great advancement over those made of iron and wood. It made farming easier and helped increase production. From a photograph of an original John Deere plow.



Cyrus McCormick demonstrates his reaper before an enthusiastic crowd in 1831. From a famous 1930 painting.





Although Cyrus was a strong, young man, he did not like cutting wheat by hand any more than other farmers. One day he asked his father if he could work on his reaping machine and try to get it to cut better. The older McCormick concurred, and twenty-two-year-old Cyrus set to work. He soon had a machine that he felt would do the job. It was pulled by horses and featured four long blades that turned as the machine moved forward.

Cyrus demonstrated his reaper in a neighbor's field of oats. The weird-looking device caused quite a commotion among the local population. Farmers stared in disbelief as the noisy machine went about its task. Young boys shouted. Dogs barked. Doubters shook their heads. But the reaper worked! In just a few hours, it harvested as much grain as three men could cut by hand in a day.

The reaper made McCormick a rich man. He patented his device in 1834 and moved to Chicago. At the age of thirty-six, he opened a factory to produce harvesting machines. Because of his efforts, Chicago soon became the grain capital of the United States.

McCormick's reaper completely revolutionized farming in America. Larger farms that grew huge amounts of grain became a reality. In 1902, eighteen years after his death, McCormick's company joined with several others to form the present International Harvester Company.



Joseph Glidden's barbed wire enabled farmers to fence in their lands, ending the open range. From an advertisement lauding the virtues of barbed wire.

Barbed Wire

Even though the steel plow made farming practical on the Great Plains, one other invention was necessary for this large area to become permanently settled. That invention was barbed wire.

For a short time after the Civil War, the Great Plains was open-range cattle country. Wealthy cattle barons grazed their stocks on the unfenced lands, fattening them for shipment to the East. Anyone could drive and graze a herd anywhere without opposition.

The Homestead Act of 1862 changed this. The government promised to give 160 acres (65 hectares) of land to anyone who settled on it and cultivated it for five years. Soon large numbers of people flocked to the Plains. They felt they had as much right to the land as the cattle owners did.





In 1893, an Illinois farmer patented an invention that brought an end to the open range. Joseph Glidden's barbed wire gave farmers an inexpensive way to fence in land to keep cattle from destroying their crops. Glidden opened a factory in DeKalb, Illinois, that turned out 600 miles (965 kilometers) of barbed wire daily. With production so large, barbed wire was relatively cheap. Farmers began to fence in large tracts of the prairie, an act that infuriated the cattle owners. Cowboys responded by cutting the barbed wire. Soon range wars broke out between the homesteaders and those who favored an open range. The government supported the farmers, and the open range came to an end. Fencing off large areas of the Plains also brought an end to the American frontier. Having lost the struggle, cattle owners retreated to lands too dry for farming. In certain areas of the Southwest, they established some of the large cattle ranches that continue to this day.

The Tractor

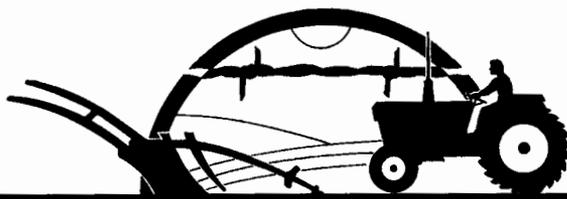
Farming entered the modern age with the invention of the tractor. Although it took many years, tractors eventually replaced horses and mules on most American farms.



Benjamin Hall came out with the first gasoline-powered tractor in 1904, but steam-driven tractors were used as early as 1890. This picture shows a cumbersome steam-driven tractor in use.

The first tractors appeared in the 1890s. They were large, cumbersome machines powered by steam. Few farmers bought them because of their high price. A team of mules or horses could be purchased much more cheaply than the new mechanical devices.

In 1904, Benjamin Holt patented the first gasoline-powered tractor. It was a big improvement over its steam-driven predecessor. Holt's tractor was a crawler type, which meant that it moved on a belt or track similar to a tank. It was more maneuverable and easier to use than the steam-driven and animal-driven tractors. Still, farmers were slow to purchase it. It was cheaper to feed a horse or mule than to provide gasoline and oil for a tractor. There also were not many mechanics around in those days to keep the machines repaired and in the fields. It took more than fifty years for most farmers to discard the horse and mule in favor of the tractor. When they finally did, their productivity increased and their work was made considerably lighter.



Name _____ Date _____

Solve Some Math

Complete using either the U.S. Customary or metric measurement system.

- In 1792, two years before Eli Whitney invented the cotton gin, 138,000 pounds (62,597 kilograms) of Southern cotton were exported to England. By 1794, this number had increased to 1,600,000 pounds (725,760 kilograms).
 - How many more pounds/kilograms of cotton were exported in 1794? _____ pounds/kilograms
 - What percent increase in production took place between 1792 and 1794? Round to the nearest one.

_____ %

- Cotton is packed into bales weighing 500 pounds (227 kilograms) each. How many bales could have been packed from the 138,000 pounds (62,597 kilograms) of cotton exported in 1792? from the amount exported in 1794? Round to the nearest one.

1792 _____ bales 1794 _____ bales

- On a separate sheet of paper, make a line or bar graph of your own showing the amount of cotton picked in one week by each of the following workers on a plantation. (Use pounds for this exercise.)

John—6 pounds

James—6.5 pounds

William—7 pounds

Jesse—5.5 pounds

Charles—5 pounds

Robert—7.5 pounds

Name _____ Date _____

Test Your Geography Skills

Both Eli Whitney, the inventor of the cotton gin, and John Deere, who invented the steel plow, were from New England.

New England is made up of six states. Locate these on a map or in an encyclopedia. Then write the names of the six states and their capitals on the lines at right.

State

Capitol

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Look at a map of Massachusetts and answer the following questions:

1. Two states lie north of Massachusetts. They are _____ and _____.
2. West of Massachusetts is the state of _____.
3. Two states that border Massachusetts to the south are _____ and _____.
4. _____ is the capital of Massachusetts.

Cyrus McCormick, the inventor of the reaper, was born in Virginia. Look at a map of Virginia and answer the questions below.

1. The states of _____ and _____ border Virginia to the south.
2. If you lived in Richmond, Virginia, in which direction would you have to travel to visit a friend in Kentucky?
