



Henry Ford

Henry Ford grew up on a farm. Although he faithfully attended to his chores, he was much more interested in machines. When he was given a watch, he took it apart to see how it worked. Soon he was repairing watches and clocks for neighbors and friends, sometimes walking 15 miles to the nearest town where he could buy replacement parts.

He was a good student, excelling in mathematics. He learned to solve difficult math problems in his head. This early training in mental math helped train him to work out engine designs in his head.

One day, while accompanying his father on a trip, Henry saw a self-propelled steam engine being driven down the road. Steam engines were used to grind wheat, thresh, and do other chores on the farm, but they had always been towed around by a team of horses. This event opened up his thoughts to the world of horseless carriages. Henry temporarily left the farm to study to become a machinist.

He met Clara Bryant and after four years of courting, they were married. His father gave Henry and Clara 40 acres of land as a wedding gift.

Henry's fascination with machines continued. He wanted to build a lighter weight steam engine. Steam engines were so heavy that they were impractical to be used in a vehicle. Eventually Ford concluded that he must build a gasoline internal-combustion engine. For this he would need to understand electricity. So Henry moved Clara to Detroit, and he went to work for the Edison Illuminating Company.

Clara was disappointed to leave the farm, but she had faith in Henry. Henry referred to her as "the great believer," because she often kept her faith in him, even when Henry doubted himself.

He learned about electronics and began building a gasoline engine. Six months after his first success with an engine, he had built his "quadricycle." Unfortunately, he had assembled his vehicle in a garage without a door big enough to drive through. So he took an ax and chopped an opening through the wall.

He continued upgrading the engine and the automobile design for a few years. During this time, Ford tried twice to start up an automobile company. Both times the businesses failed, primarily

because Ford kept thinking up improvements to make and didn't get around to producing a car for sale. During this time, automobile makers were making race cars to try to make a name for themselves. Ford won a few races and became well known.

Finally, in 1903, seven years after his "quadricycle," Ford established the Ford Motor Company and began producing Model A's. Business was good. Eventually complaints came in concerning the Model A. Some were beginning to leak oil and they didn't have enough power to go up hills.

Ford redesigned and came up with the Model T. The Ford Motor Company moved up to a new, larger factory, and began using assembly lines to build the Model T. Speed increased and the price fell, leaving the average man able to afford one. Automobiles were no longer toys for the rich. They became affordable and useful.

Henry Ford became very rich. He examined the lifestyle of his assembly line workers and made changes to improve their quality of life. He doubled their pay and reduced the length of the work day. English classes were started to help employees.

Henry's son, Edsel, followed his father into the business. They were a great success.

But hardship came. Labor unions were forming and Ford resisted them. Eventually things got violent and Clara strongly urged him to give in. Ford had a stroke and his mind began to fail. Edsel and his father disagreed on important issues.

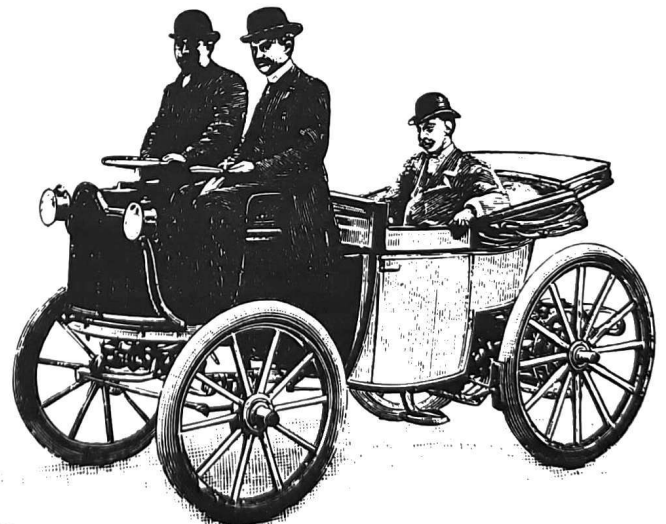
After Edsel's death, Ford proclaimed himself the president again, but the job was too much for the 80 year old man. Henry II, Ford's grandson, stepped in and helped restore order. He modernized the plant and made several good changes. Ford died in Clara's arms at the age of 84.

Dates

- 1863 ---born
- 1875 ---first saw a self-propelled steam engine
- 1888 ---married
- 1893 ---Edsel born
- 1903 ---formed the Ford Motor Company
- 1908 ---began manufacturing Model T
- 1927 ---stopped manufacturing Model T
- 1941 ---agreed to allow workers to form union
- 1943 ---Edsel dies
- 1947 ---Henry Ford dies

Books

- Henry Ford by Jacqueline L. Harris J926.F75
- We'll Race You Henry by Barbara Mitchell J926.F75
- Along Came the Model T! How Henry Ford put the World on Wheels by Richard Quackenbush J129.2Qu (includes instructions on making a model of a Tin Lizzie from styrofoam egg cartons)
- Henry Ford and Mass Production by James P. Barry J629.2 B27
- History of the American Automobile Coloring Book by Dover Publications





Orville Wright



Wilbur Wright

Wright Brothers

Orville and Wilbur Wright grew up in a minister's home. Their father was away from home a lot. Because he was so pressed for time, he was unable to build a sled for his boys. So their mother helped them. She taught them how to make a careful drawing on paper before building a sled. She also taught them about wind resistance.

They built a sled that was stronger and faster than any of their friends' sleds.

Later, Wilbur and Orville started building kites. Each time they built a new kite, they tried to improve their design. They were soon making and selling kites to all their friends.

One winter day, Wilbur was in a hockey accident and needed to spend an extended time recuperating in bed. During this time, he read and practiced drawing. When Wilbur was better, he and Orville built a printing press and started a newspaper. They were quite successful. They built a bicycle out of old parts to help them deliver the paper. Eventually they sold their printing business to a friend and opened a bicycle repair shop.

They put together a few bicycle races, which they won, and in so doing, drummed up more business. They were successful because of their hard work and attention to detail.

They had always had the dream of building a kite that would take them up into the sky. They began experimenting with the wind and with air pressure. But Orville came down with typhoid fever.

While Orville was recovering, Wilbur read to him books about gliding. He had written to and received back books and pamphlets from the Smithsonian Institution written by scientists experimenting with flight.

They quietly constructed a glider in the back of their bicycle shop. They kept it a secret because the neighbors would think they were crazy. They wrote to the Smithsonian Institution to ask if there was a good location to practice gliding, with plenty of wind and no trees. The Smithsonian passed their letter on to the Weather Bureau. The Weather Bureau responded with a list of such places. Wilbur and Orville chose Kitty Hawk, in North Carolina.

They spent a few months in Kitty Hawk, gliding and making improvements to their glider.

Over the next few years they took several trips to Kitty Hawk with bigger gliders, attached rudders to control altitude and direction, and eventually attached motors.

They spent many hours learning how to fly. On December 17, 1903, the Wright brothers were able to control their airplane, the "Flyer," and stay in flight for nearly a full minute.

Many people were skeptical at first. The Wright brothers had kept their work a secret and it was quite a surprise to hear they had flown. A few more adjustments and the Wright brothers were able to stay up in the air as long as there was gas in the engine -- about an hour. Wilbur and Orville were later asked to build planes for the military.

Dates

April 16, 1867-----Wilbur Wright born
August 19, 1871 -----Orville Wright born
December 17, 1903-----first successful flight
May 30, 1912 -----Wilbur died
January 30, 1948 -----Orville died

Books

The Wright Brothers: Pioneers of American Aviation by Quentin James Reynolds J926 R33
The Wright Brothers: How they invented the Airplane by Russell Freedman J629.13
Wilbur and Orville Wright: Young fliers by Stevenson (from the Childhood of Famous Americans series)
Wright Brothers Sower Series by Charles Ludwig
History of Flight Coloring Book by Dover Publications
You can find books describing how to make paper airplanes in the library under J629.133.

Areas to Study

wind resistance/aerodynamics
air currents
airplane design
how airplane wings use air pressure to achieve lift
how birds achieve lift
Smithsonian Institution and Professor Langley
Chanute and Otto Litherthal