

## Illuminating the Path of Progress

Thomas Alva Edison is the most famous inventor in American History. Edison designed, built, and delivered the electrical age. He started a revolution that would refocus technology, change life patterns, and create millions of jobs. He became famous for his scientific inventions, even though he was not a scientist. His real talent was his ability to clearly judge a problem and be persistent in experimenting. He was the master of the trial and error method.

Thomas Edison was born on February 11, 1847 in Milan, Ohio. He was the last of seven children born to Samuel and Nancy Edison. Edison's early life was spent in Ohio near the nation's busiest grain port. He spent time exploring the canal and played near his father's shingle business.

When Alva was a child, he had scarlet fever. The fever damaged his hearing and delayed his entrance into school. Edison was curious about the world around him and always tried to teach himself through reading and experiments. Alva spent three years in home schooling. He was taught by his mother. He later returned to school but left at age twelve to get a job and help support his family.

Edison got his first job selling newspapers and snacks to the passengers on the train between Port Huron and Detroit. Edison bought a used printing press in 1862 and published the Grand Trunk Herald for passengers. It was the first newspaper published on a train.

When Edison was fifteen, he was taught Morse code and became a manager of a telegraph office. Edison got the idea for his first invention from working here. His first inventions were the transmitter and receiver for the automatic telegraph. At 21, Edison produced his first major invention, a stock ticker. In 1869, when Edison was twenty-two, he patented his first invention

and advertised that he would devote his time to bringing out his inventions. The first patent received by Edison was for a vote recorder. Years later Edison's design was put in use by state legislatures for use by the public in general elections. By the age of twenty-three Edison owned two factories to manufacture telegraphic equipment and had money to pursue his research.

On December 25, 1871, Edison married Mary Stilwell. They had three children. Two of his children were nicknamed Dot and Dash after the Morse code.

In 1880 Edison made a discovery in science. He noticed that when a metal plate was inserted into a light bulb, the plate became a valve and the current could be controlled. This discovery is known as the "Edison Effect." It is the basis for the whole field of electronics. Edison did not pursue this field.

Edison grew tired of the manufacturing side of business and wanted to devote his time to experimenting on new inventions. He moved the laboratory to Menlo Park, N.J., where he directed groups of employees working on various projects. The move to Menlo Park was an important turning point for Edison. He was devoted to improving and inventing useful products. In 1877, inspired by the work he had done on improving Bell's telephone, Edison pursued the idea of not only transmitting speech but recording it. The result was the phonograph. This was the invention Edison was most proud of. Invented in 1877, it used tinfoil and wax cylinders to record the sound. He demonstrated his phonograph for the National Academy of Sciences and to President Rutherford B. Hayes.

After Edison conquered sound, he set out to produce electric lighting that would be cheap, safe and reliable. It took Edison just over a year to invent a practical light bulb. One of his bulbs burned for 1,589 hours. He gave a public demonstration of his lighting system by lighting the town of Menlo Park. He later established the Edison Electric Light Company. This would own all of Edison's electrical inventions. Then came the challenge of creating a system for distributing electric power over a wide area from a central generating station. Edison applied for nearly 40 patents to cover the devices he invented for his electricity distribution system. Later that year, New York's first power station was opened. By the end of 1883, Pearl Street was lighting 10,000 lamps for 431

customers.

In the summer of 1884, tragedy struck with the sudden death of his wife who died of typhoid fever. Two years later he married Mina Miller. He moved to West Orange, New Jersey and raised a second family.

In 1888, Edison invented a kinetoscope, an early form of motion picture camera. The kinetoscope could not put a moving image onto a screen. Edison's attempts to put sound and vision together ended in failure. In 1899 he develops the fluoroscope, but chooses not to patent the invention because of its universal need in medicine and surgery.

Edison's main interest during the 1890's was a project to develop a method of extracting iron from low grade ore. Edison spent \$2 million trying to develop a method of extracting iron. He spent almost all of the money he had made from his electricity business. He failed to develop a commercial process for magnetic ore separation. In 1898, Edison bought a large area of land and built a cement plant. By 1905 this new venture had become the fifth largest cement works in the United States. His next project took him back to the field he knew best, electricity. He improved the electric battery, making it last longer and ensuring it was less easily damaged when overcharged.

With the outbreak of World War I in 1914, the Secretary of the Navy, Josephus Daniels, invited him to become president of an advisory group of scientists. Edison's contribution came through his scientific work on torpedo detection methods and perfecting sailing lights and periscopes.

By the 1920's, Edison was the most famous living American. People in the United States honored Edison's contributions by naming him one of the most important individuals in American history. Among his many honors he was voted the "most useful American" in 1913. In 1971 he ranked third of the ten greatest men in American business history. He was elected to the American Academy of Sciences. In 1928 Congress ordered a special gold medal to be made in his honor for his lifetime contribution to society.

In 1927, when Edison was 80, he founded the Edison Botanic Research Company to find a new way of making rubber. After examining 14,000 plants he decided goldenrod offered a source of rubber. The process was too expensive, but the onset of illnesses prevented him from finding a way to make it cheaper.

The fiftieth anniversary of the light bulb was celebrated in 1929. Henry Ford set up a museum in Michigan. One of his exhibits was a recreation of Edison's laboratory at Menlo, Park. Edison re-enacts his discovery of the light bulb for this occasion. The government issued a special postage stamp, showing Edison's prototype light bulb.

In his 70's he was working sixteen hours a day. He was told by his doctors to slow down. He replied "There will be plenty of time to rest at 100." Edison made his last public statement in 1931. He sent a message of goodwill to lighting engineers who were meeting at a conference. Edison died four months later on October 18, 1931. He suffered from diabetes, Bright's disease and stomach ulcers. On the day of his funeral the torch of the Statue of Liberty was extinguished as a mark of respect. People all across America dimmed their lights in honor of the great inventor.

Edison's legacy is not in the machines he invented. It includes his influence on the business of invention. Edison made invention a profession, an occupation rather than a hobby. Edison's commercial success inspired other inventors and businesspeople to copy his methods. Edison's invention of the research and development laboratory continues to be one of America's most important tools.

Edison owed his success to hard work. He often said his inventions came from "1% inspiration and 99% perspiration!" He believed in himself and was willing to try different ways of doing things. He worked hard and did not give up.

Edison's wealth and scientific accomplishment set him apart from others. However, things that contributed to his fame were things he had in common with many average Americans. Most Americans would find it hard to go through a day without using an invention

created by Edison.

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