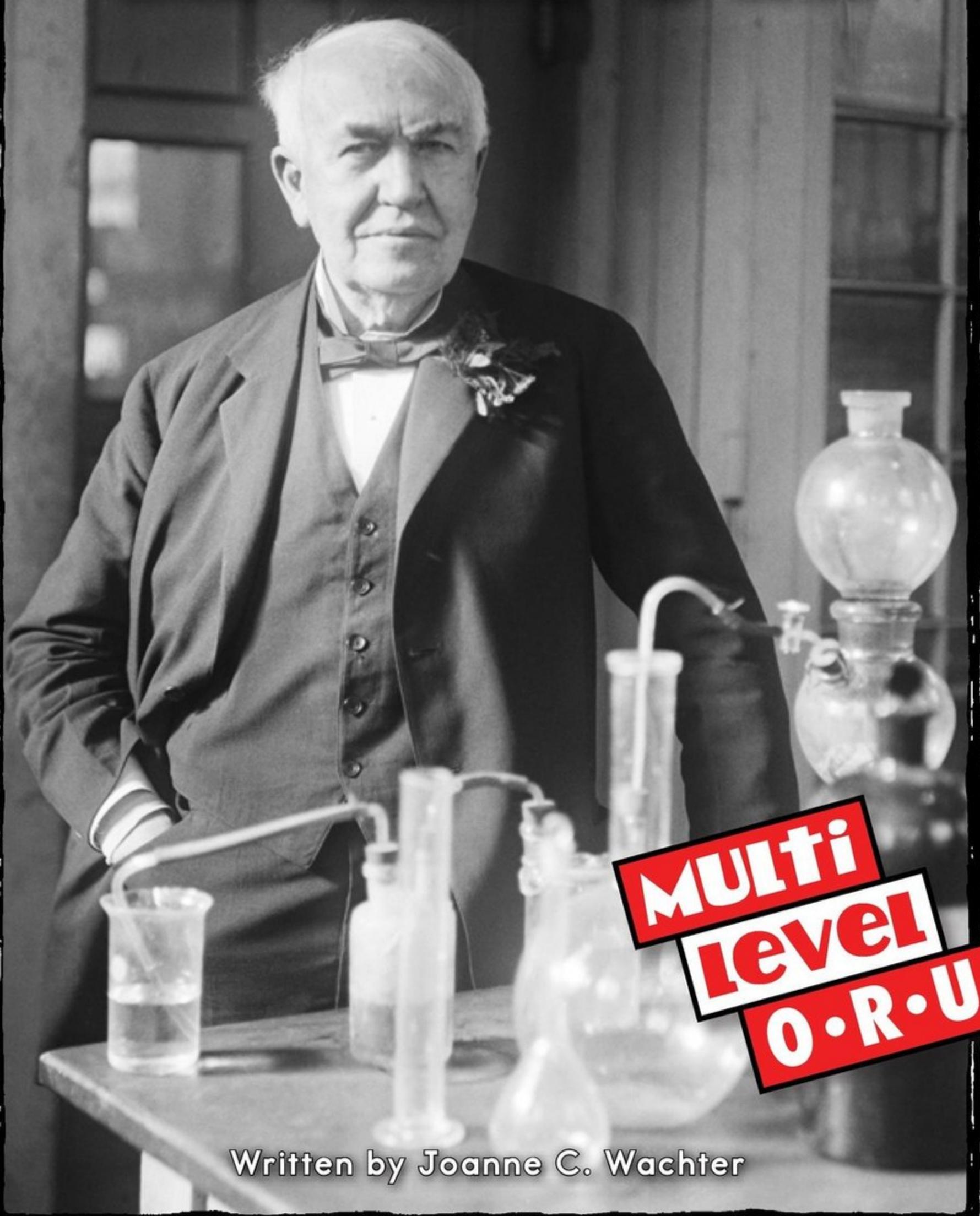


LEVELED BOOK • U

Thomas Edison



MULTI
level
O•R•U

Written by Joanne C. Wachter

Thomas Edison



Written by Joanne C. Wachter

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Focus Question

What traits describe Thomas Edison,
and how did they affect his actions?

Words to Know

apprenticeship
discouraged
filament
for-profit
invented
investors

manufacture
models
patent
peephole
sketched
technology

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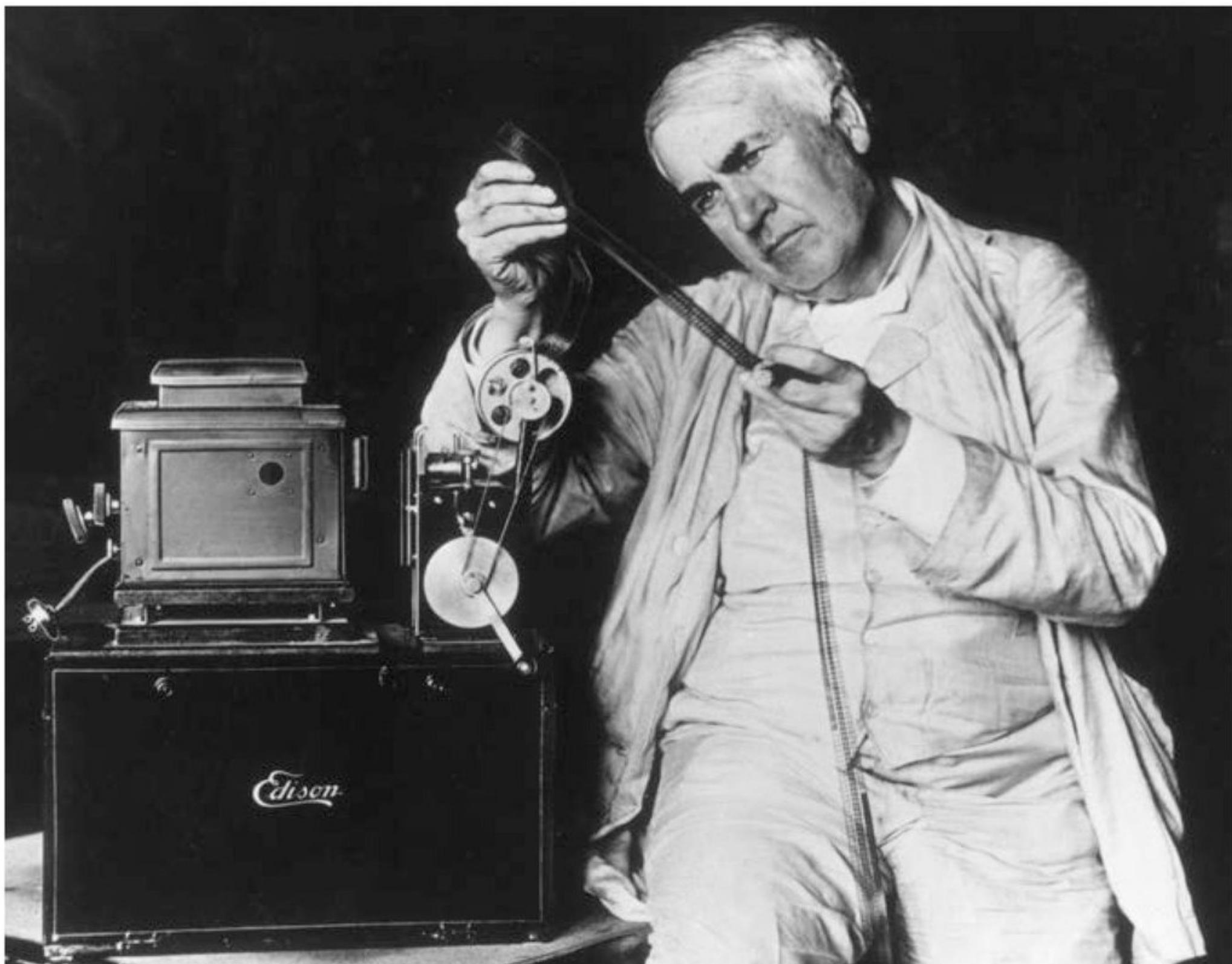
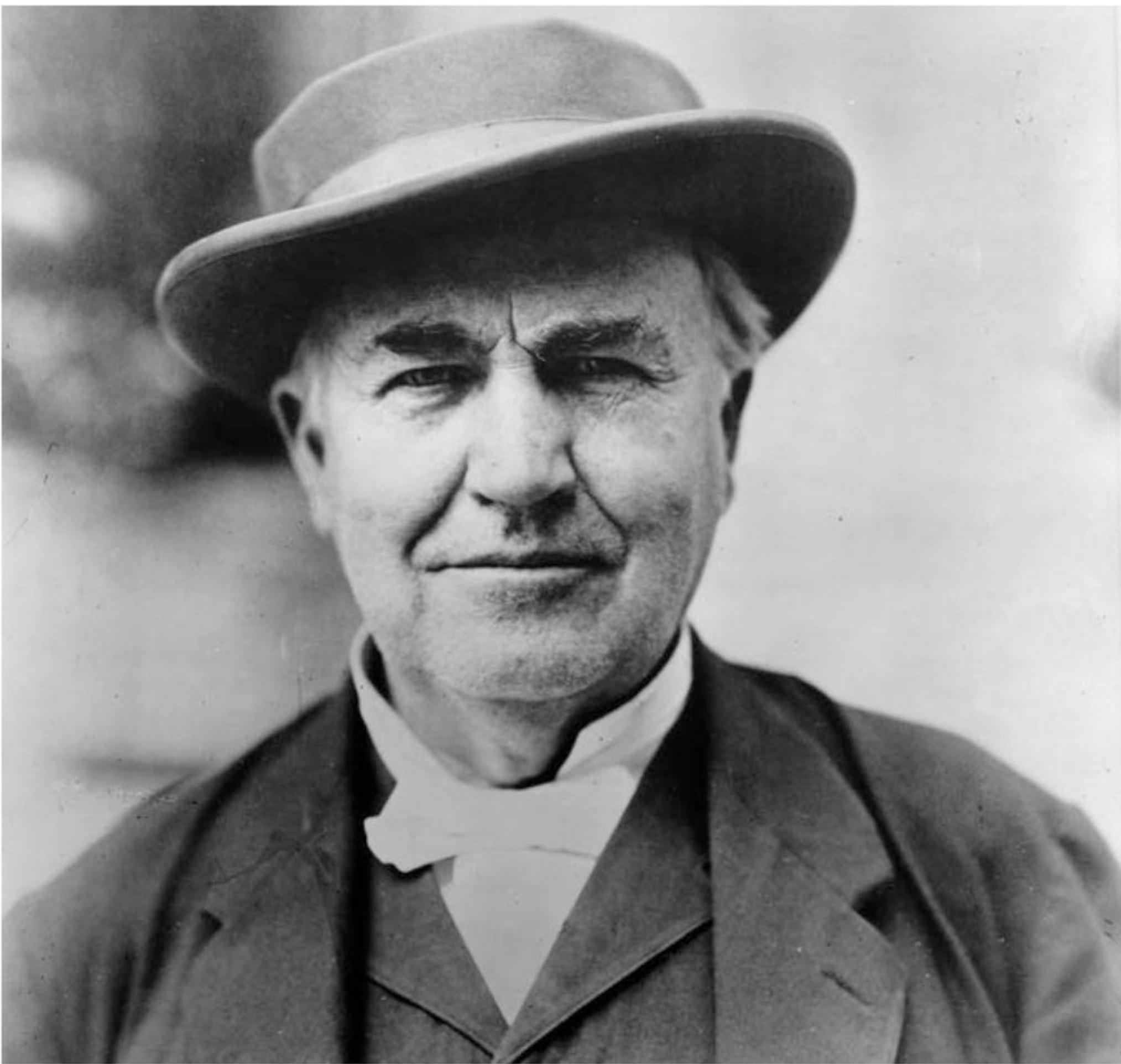


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Thomas Alva Edison in 1914

A Curious Boy

From an early age, Thomas Edison loved to question things. He spent his whole life exploring why and how things worked. Once he understood how things worked, he tried to figure out how to make them work better.

Thomas Edison **invented** or improved over a thousand things, some of which we use every day. Many people consider him one of the greatest American inventors of all time.

Young Al

Thomas Alva Edison was born on February 11, 1847. He was the youngest of seven children, four of whom survived to adulthood. Al, as he was called as a boy, lived in Ohio with his family until 1854, when they moved to Michigan.

Although smart and curious, Al did not do well in school. In those days, students memorized and recited facts and didn't have the opportunity to explore and ask their own questions, which is what Al loved to do. Al's mother eventually removed her son from school and taught him at home. She taught him to love to read. His father encouraged his reading by giving him ten cents for every classic book he read.

Al's parents allowed him to take a job with the railroad when he was just twelve years old. He sold food and newspapers to the passengers. Al used the money he earned to buy books and science supplies. He was allowed to set up a science lab in a baggage car until an accidental fire ended his experiments.

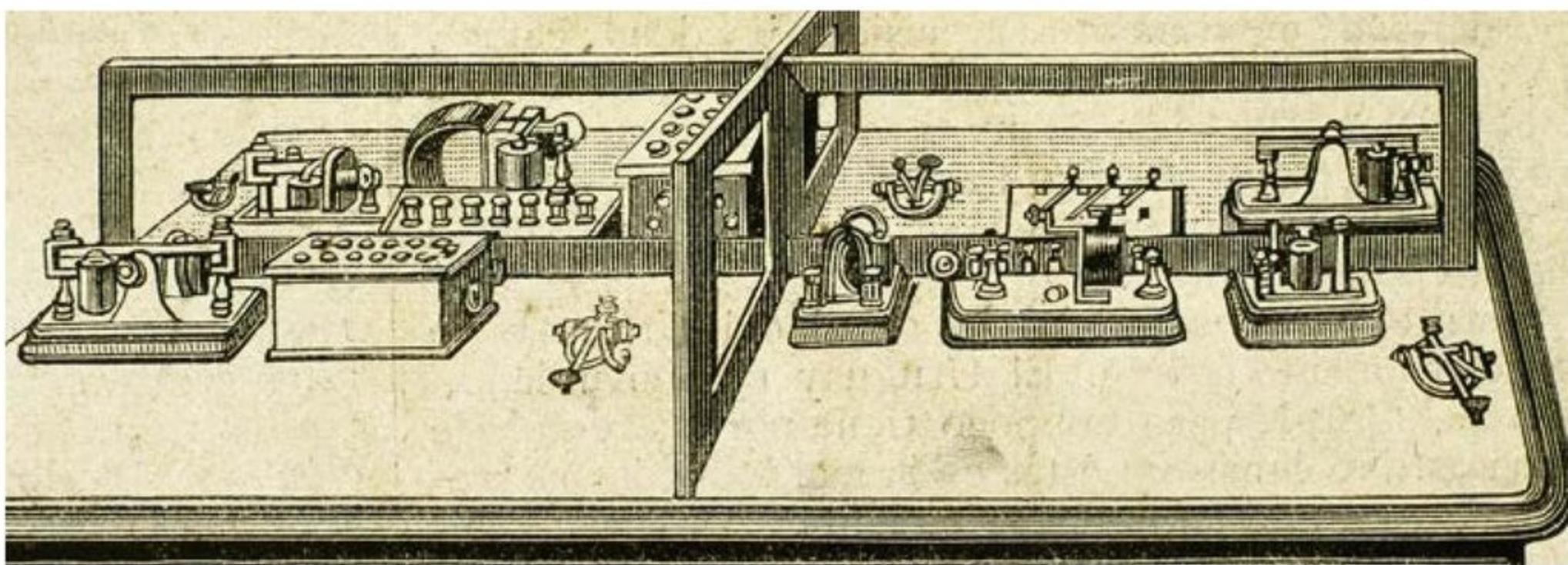
Also around this time, Al lost most of his hearing. As an adult, he would say someone grabbed him by the ears and pulled him onto a train. The story could not be confirmed.



Thomas Edison at fourteen years old

When Al was fifteen, he saved a young boy's life. The boy was about to be run over by a boxcar when Al grabbed him and carried him to safety. The child's grateful father, who was a telegraph operator, offered Al an **apprenticeship**.

As Al grew older, he traveled around the country as a telegraph operator. He now preferred to be called Tom. He continued to be interested in science and spent much of the money he earned on books and supplies. He liked to work the night shift and use his days for experiments.

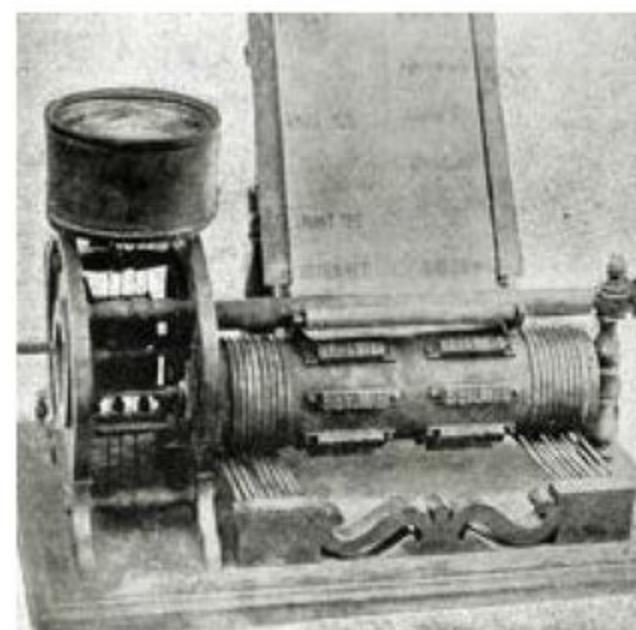


Edison's improved telegraph

Edison the Inventor

After a few years, Thomas Edison decided that he wanted to become a full-time inventor. Some of his early inventions were improvements on the telegraph machine. For example, he found a way to send two messages and receive two messages at the same time. Earlier telegraphs could only send or receive one.

Edison received his first **patent**, for an electric vote counter, in 1869. The invention did not do well.



Edison's electric voting machine

Edison continued to invent. He once said, “I never allow myself to become **discouraged** under any circumstances.”

Do You Know?

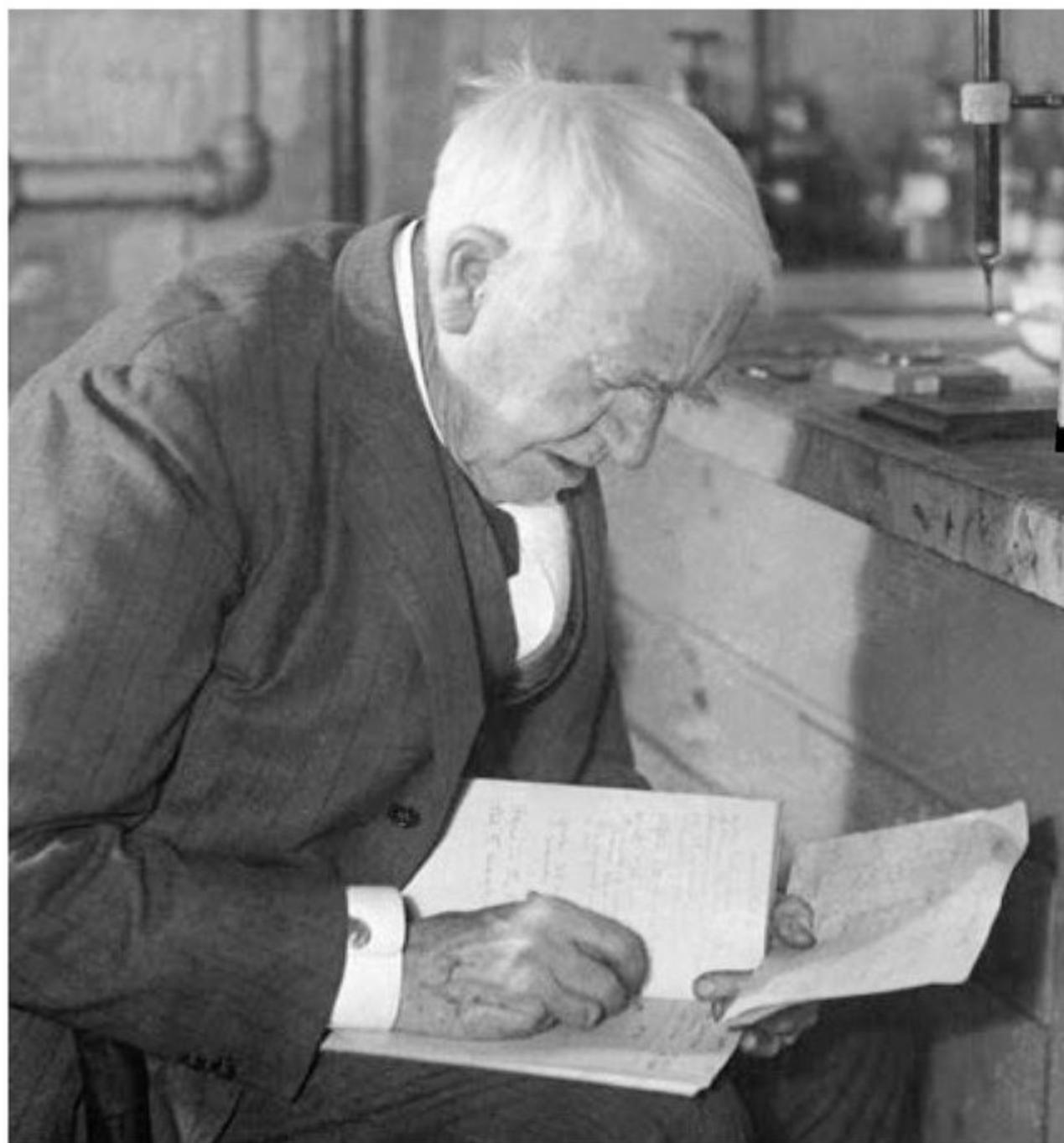
The telegraph let people communicate before the invention of the telephone. It used a code of dots and dashes, or short and long beeps, to form letters.



Edison at work in his Menlo Park lab (top) and the outside of the lab (bottom)

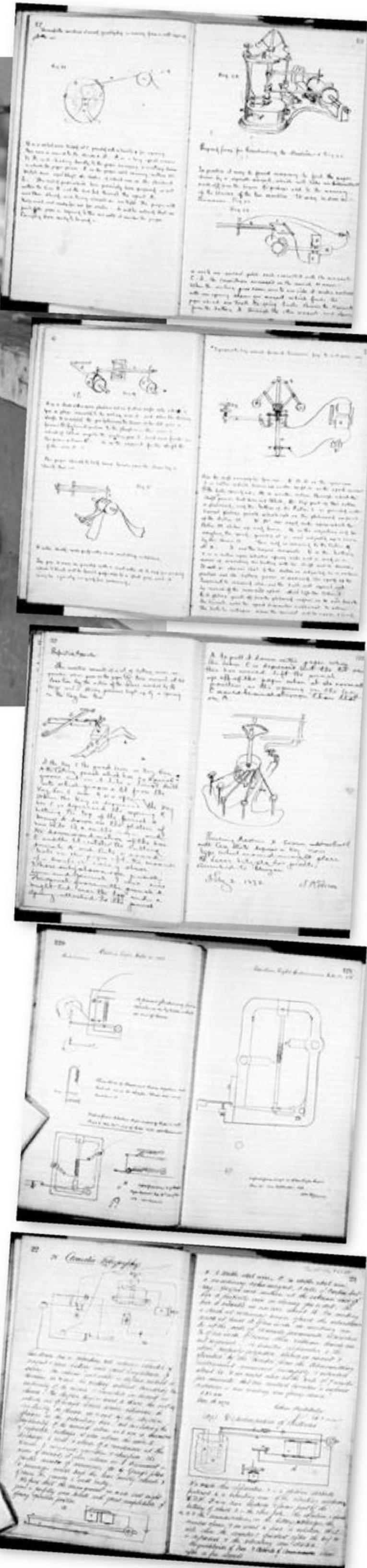
A New Lab

Edison found business partners and began to **manufacture** some of his inventions. In 1876, he built a lab for his science experiments in Menlo Park, New Jersey. It was the first **for-profit** research lab in the world. People called it the “invention factory” since multiple inventions could be worked on at once. There, Edison worked tirelessly for many hours each day, and many of his employees worked just as hard.



Edison writing in a notebook (main) and some pages from his notebooks (right)

Edison sketched his ideas in notebooks and gave the sketches to his twenty-five workers, who then made working models. In all, Edison filled 3,500 notebooks with ideas for inventions. Not all of those ideas worked, but Edison said, “Negative results are just as valuable to me as positive results. I can never find the thing that does the job the best until I find the ones that don’t do it.”

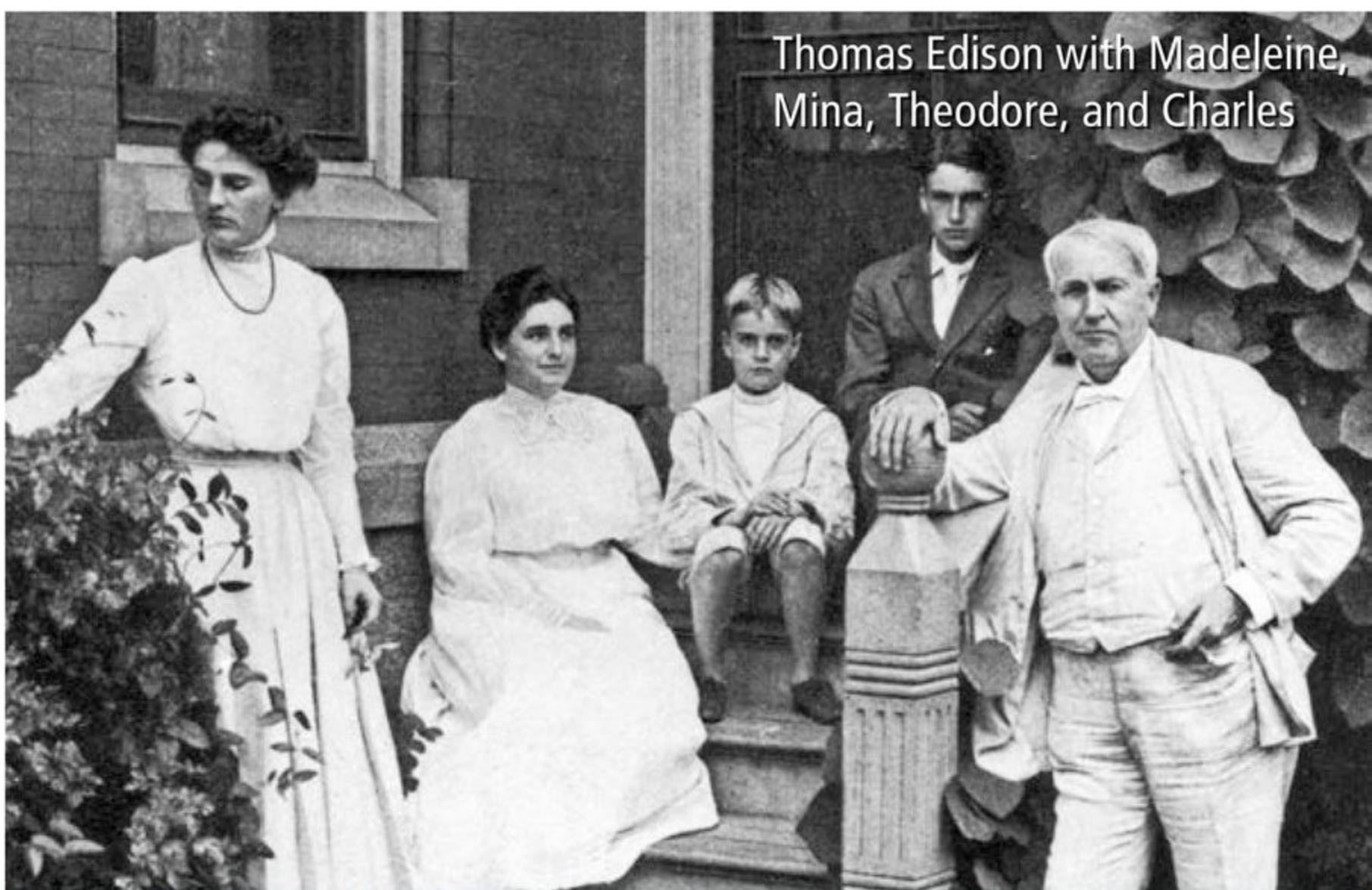


Important Inventions

Edison also improved other inventions. Alexander Graham Bell had invented the telephone in 1876. The first versions required people to yell into the receiver to make themselves heard. The farther away the telephones were, the worse it was. In 1877, Edison and his team developed a way to make a caller's voice louder and clearer, even over long distances.

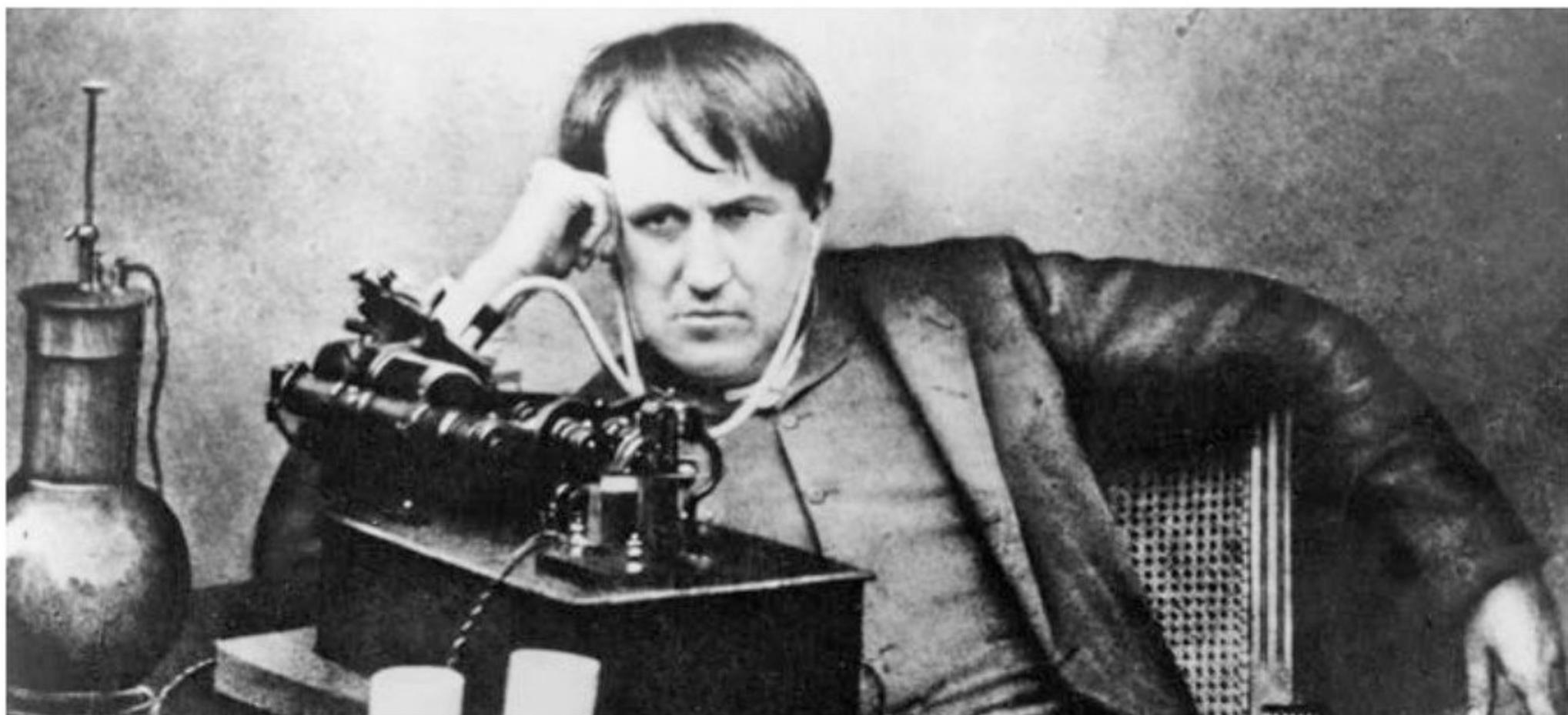


A telephone from 1877 with Edison's improvements



Edison's Family

Edison married Mary Stilwell in 1871. They had three children—Marion, Thomas Jr., and William. Mary died in 1884. Edison married his second wife, Mina Miller, in 1886. They had three children—Madeleine, Charles, and Theodore.



Edison working on an early version of the phonograph

From his work on the telephone and telegraph, Edison had an idea. He wanted to record words and play them back. This idea led to the creation of the phonograph. The first thing Edison recorded was the nursery rhyme “Mary Had a Little Lamb.” To everyone’s amazement, the machine played back the words. Some people didn’t believe it—they thought someone was talking in another room!

The phonograph was very simple compared to modern music players, but it was very exciting to people in the 1800s. Edison became famous, but he had a difficult time figuring out what to do with his invention. He experimented with different ideas, such as putting a phonograph inside a doll to make it “talk,” but the toy soon broke. Years later, after many improvements to the **technology**, the phonograph became popular as a way to record and listen to music.

A Special Project

Edison wasted no time starting his next project. For many years, people had tried to find a practical way to use electricity to make light. Many inventors created light bulbs, but the bulbs either burned too brightly or dimly, or burned out too fast. In 1878, Edison became determined to solve this problem and sought out **investors** to help him.

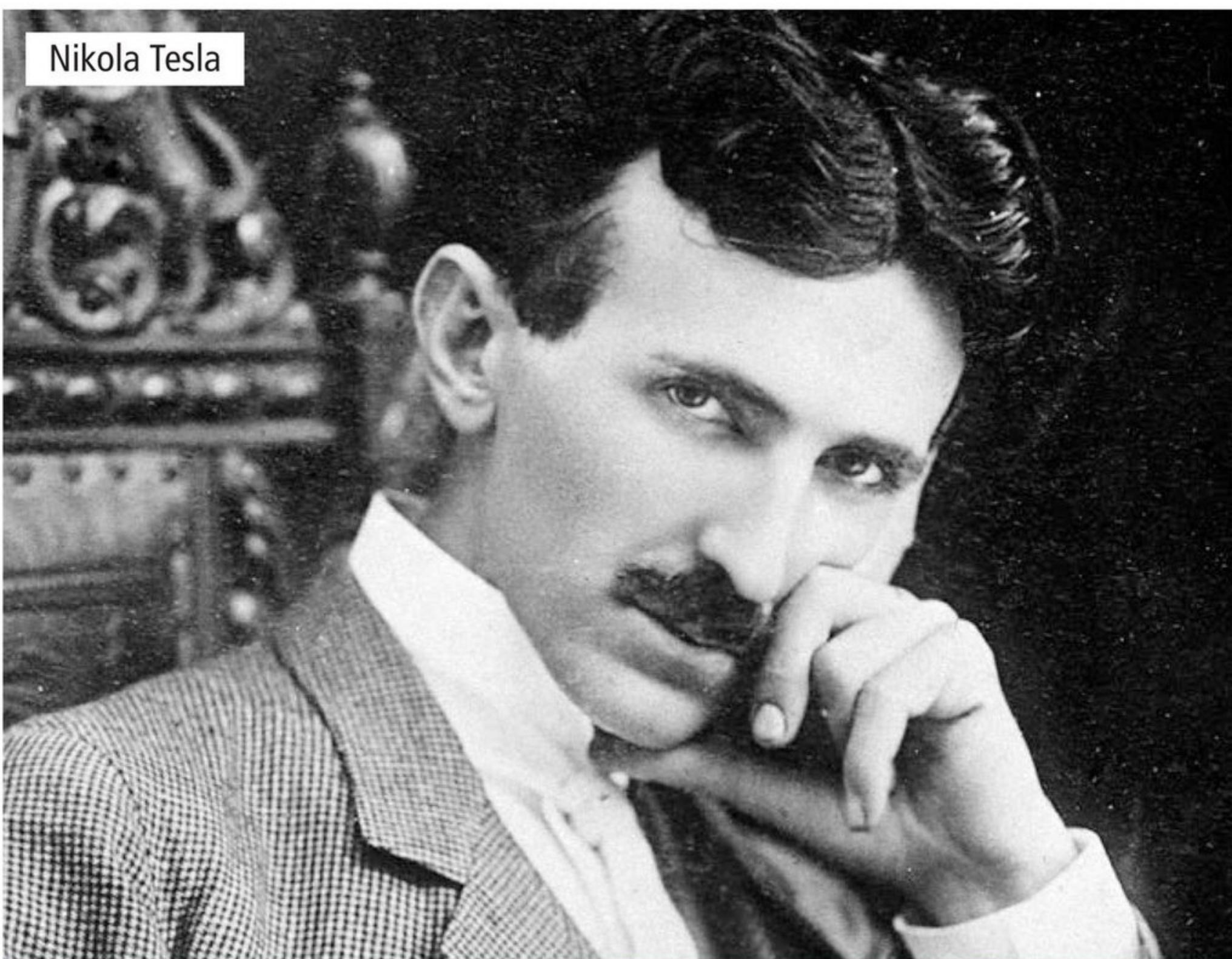
Edison and his team worked around the clock. The first challenge was to find a material for the **filament**—the part of a light bulb that glows. Edison's workers tried thousands of different materials until they found one that worked. Edison opened the lab for visitors to see his team's accomplishments. People were astounded when they walked up a path and entered the lab, which was brightly lit with electric lights. Soon, everyone wanted electric lights.



One of Edison's first electric light bulbs

The second challenge was creating an electrical system that could light a building and even a city. In 1881, Edison moved to New York City to help start the first electric power plant. Eventually, power plants in hundreds of communities were making it possible for people to switch from gas and oil lamps to electric lights.

Nikola Tesla



The War of the Currents

In the 1880s and 1890s, Edison and his electric companies were involved in fierce competition with another electric company led by George Westinghouse. Edison's method of delivering electricity was called *direct current*, or DC. Westinghouse claimed another method called *alternating current*, or AC, which was invented by Nikola Tesla, was a better, safer method. AC eventually became dominant.



The Kinetograph (left) and Kinetoscope (right)

Other Exciting Ideas

In 1887, Edison moved into a larger lab in West Orange, New Jersey. Around that time, he was shown a machine that played multiple still images in very quick succession. The things in the images appeared to be moving!

Edison requested that one of his workers, William Dickson, work on a machine that could record images and also a machine that could project them. Dickson and Edison would invent the Kinetograph, a motion picture camera, and the Kinetoscope, a projector that would allow one person to watch the movie through a **peephole**. Edison also tried to link sound with the images of this new invention. He found it too difficult to get the sound and pictures to match, so his films were silent.

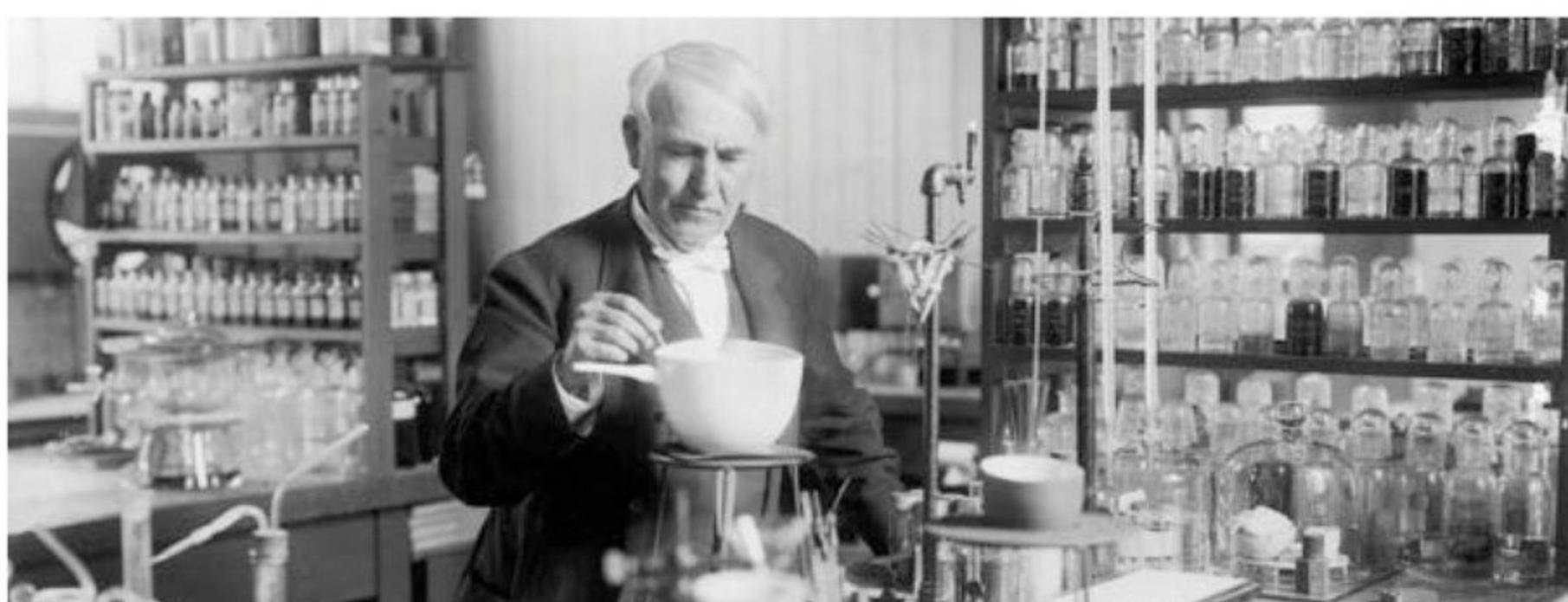
A Remarkable Man

Edison continued to pour ideas into his notebooks and work with his team to turn his ideas into reality. Some of his other inventions included machines for mining, improved batteries, and new uses for cement.

Throughout his life, Edison obtained 1,093 patents, which was a record at the time. He continued to work until he was more than eighty years old.

Thomas Edison died on October 18, 1931. President Herbert Hoover asked everyone in the country to turn out the lights for a short time to honor Edison. Sitting in the dark for a few moments, people could think about the great changes Thomas Edison had made in their lives.

As Edison once said, “If we did all the things we are capable of doing, we would astound ourselves.”



Edison conducting an experiment in 1910

Glossary

apprenticeship (<i>n.</i>)	a period of training during which a person learns a skill or trade from a skilled professional (p. 6)
discouraged (<i>adj.</i>)	not feeling courageous, confident, or enthusiastic about something (p. 7)
filament (<i>n.</i>)	a thread or threadlike object that conducts electricity, such as that found in a light bulb (p. 12)
for-profit (<i>adj.</i>)	set up or done to make money (p. 8)
invented (<i>v.</i>)	created, designed, or built something that did not exist before (p. 4)
investors (<i>n.</i>)	people, companies, or organizations that buy something or put money into a business hoping to make a profit (p. 12)
manufacture (<i>v.</i>)	to make finished goods or products from raw materials (p. 8)
models (<i>n.</i>)	smaller versions of an object made to look like the real thing (p. 9)
patent (<i>n.</i>)	a document granting the right to make money from an invention (p. 7)
peephole (<i>n.</i>)	a small hole through which a person looks (p. 14)
sketched (<i>v.</i>)	made a rough drawing or outline of something (p. 9)
technology (<i>n.</i>)	the use of scientific knowledge or tools to make or do something (p. 11)

Thomas Edison

A *Reading A-Z Level U Leveled Book*
Word Count: 1,248

Connections

Writing

Research to learn more about one of Thomas Edison's inventions. Create a brochure about the invention to share with your classmates.

Social Studies

Make a timeline of Thomas Edison's life. Include at least five of his inventions on your timeline.



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