Name: _____ Date: _____

Who Invented the Light Bulb?

Reading level 11 (7th grade) · 844 words

Who invented the light bulb? Ask almost anyone, and they will say Thomas Edison. But the rangers who care for his laboratory in New Jersey say it plainly: Edison did not invent the first light bulb. People were making bulbs before he was born. The trouble was that those bulbs burned out after a few minutes. A light that dies in minutes is a wonder, but it is not much use at suppertime. The real story has many more people in it than one.

Long before Edison, an English scientist named Humphry Davy passed electricity through a thin strip of platinum and made it glow. That was in the early 1800s. The glow did not last. Later, another Englishman, Joseph Swan, tried a thread of carbon in a glass bulb. By the late 1870s Swan was getting excellent results with carbonized cotton thread. Good bulbs also needed a pump strong enough to take out the air, and that was hard. Edison was about to enter the same field.

Edison had left school after only a few months and had educated himself by reading. At sixteen he was working full time as a telegrapher. In 1876 he moved his helpers to a village called Menlo Park, New Jersey, and built a laboratory that could make almost anything. Menlo Park became the model for later research labs. Edison called his helpers muckers, and he put them in teams. He still liked to try things for himself, just as he had in the cellar of his boyhood home.

Edison wanted a soft light for indoor rooms. Arc lights, the kind in use in his day, were bright enough to light a city street. Incandescent lights were soft enough for indoors. His muckers each had a part to play. Ludwig Boehm, who came from Germany, blew the glass. Charles Batchelor, from Great Britain, tested one material after another for the filament, the tiny thread that glows inside the bulb. John Kruesi, from Switzerland, built the dynamo that made the electricity.

The search was long. Batchelor tried thousands of materials. Platinum failed, and so did rubber, and so did the black soot from kerosene lamps. For more than a year the team worked with platinum wire. Then they switched to carbon, and that proved to be the key choice. In the fall of 1879 they carbonized a cotton thread by burning it hard, set it in glass, pumped out the air, and sealed the bulb. It burned for at least thirteen hours.

Batchelor, the same helper who had tested so many failures, then found an even better filament: bamboo from Japan. Bulbs with bamboo threads lasted up to twelve hundred hours, about ninety times as long as the first cotton thread, and that filament was the standard in Edison bulbs for about ten years. That long hunt for the right thread was nearly over. In December 1879 the team lit the Menlo Park lab with more than fifty bulbs for a public

demonstration.

But a bulb needs more than a thread. It needs wires, switches, meters to count how much each customer uses, and a power station. All of these had to be invented too, and the muckers did it. On September 4, 1882, Edison opened a power station on Pearl Street in New York City, the first commercial power station for incandescent lighting in the United States. It lit customers in a square mile of lower Manhattan. Progress after that was slow. Most Americans kept lighting their homes with gas and candles for more than forty years.

Swan and Edison each patented a bulb, and there was a legal fight over whose patents came first. In the end the two companies joined: in 1883 Swan's company and Edison's British company merged. That is how two rivals became partners. The U.S. Department of Energy says no single inventor deserves all the credit, because the bulb grew from small improvements on the ideas of earlier inventors, and Edison's team made one of the biggest. Edison himself earned 1,093 U.S. patents, a record for many years.

Historians still do not agree on some details. Many books say the cotton thread bulb was lit on October 21, 1879. The park service says new research has shown that date to be false. Books of earlier years repeat the old date, and other sources still give it. Sources also disagree on how long it burned, with some giving thirteen hours and others thirteen and a half. So the honest answer is that it burned at least thirteen hours, sometime in the fall of 1879.

So who invented the light bulb? Davy showed that a thin strip could glow, Swan made a thread glow with carbon, and Edison's team made a bulb that lasted and then built the whole system to use it. Next time you switch on a lamp, count the pieces you can see: the bulb, the switch, the cord and the plug. The bulb is only the part that glows. Each one of them is a small invention. Who invented each one?

Questions

1. What do the park rangers say about the first light bulb?

A. Edison invented it alone
B. Edison did not invent the first one
C. Swan invented it in 1882

2. Why did Edison's team switch from platinum to carbon filaments?

A. Platinum was too heavy to carry
B. Carbon was shinier
C. Platinum did not work well and carbon proved to be the key choice

3. What did Charles Batchelor do for the team?

A. He blew the glass
B. He tested materials for the filament

C. He built the dynamo

4. In this book, what does dynamo mean?

A. A machine that makes electricity

B. A kind of glass

C. A light switch

5. Why does the book say the cotton-thread date is uncertain?

A. The bulb was lost

B. Edison forgot it

C. Sources disagree about the date and how long it burned

6. What happened between Swan's company and Edison's British company?

A. They stopped making bulbs

B. They merged in 1883

C. They moved to Japan

Words to know

filament: glowing thread
carbonized: burned to carbon
dynamo: power maker
laboratory: science workplace
patent: inventor's legal claim
incandescent: glowing from heat

Answer key: Who Invented the Light Bulb?

1. B. Edison did not invent the first one
2. C. Platinum did not work well and carbon proved to be the key choice
3. B. He tested materials for the filament
4. A. A machine that makes electricity
5. C. Sources disagree about the date and how long it burned
6. B. They merged in 1883