

Name _____

Date _____

Edison and Tesla: Innovation of the Electric Generator

Read this passage with your partner or small group. Use a highlighter or colored pen to mark vocabulary that you would like to explore further.

You've heard of AC/DC, right? (We're talking about electricity now, not the heavy metal band.) Both AC and DC describe types of current flow in a circuit. In direct current (DC), the current, or electric charge, only flows in one direction. Direct currents can't travel very far. Think of the batteries in your flashlight; those run on DC. The electric charge in alternating current (AC), on the other hand, changes direction periodically. Because of that, it can travel long distances, like from a power plant to light the lamp beside your bed. Why are we talking about AC/DC currents? Because believe it or not there was a minor "war" (really a rivalry) 130 years ago about which type of current was better. This AC/DC war was fought between two inventors: Thomas Edison and Nikola Tesla. Who do you think won?

Thomas Edison was known as the "Wizard of Menlo Park" because of the New Jersey town where he did some of his best-known work. He's the one you may have heard most about. He was an inventor who developed many devices that greatly influenced life as we know it today, like the phonograph and the motion-picture camera. I'll bet you're thinking "don't forget the light bulb!" But Thomas Edison didn't actually invent the light bulb . . . others did that before him. But those early light bulbs didn't last long. Edison and his employees tried and failed many times to improve the light bulb, until they finally figured out how to make it last. In fact, they failed over 3,000 times before getting it right! That's probably what Thomas Edison should be known for—the fact that he never gave up his search for answers. One of the many famous quotations he is known for is "Genius is one percent inspiration and ninety-nine percent perspiration." In other words, it takes a lot of hard work.

Nikola Tesla, like Edison, is responsible for many technologies that impact our lives today. His ideas ultimately led to the development of things like neon lights, wireless transmission, smartphones, laser beams, x-rays, and even robotics! Tesla's engineering training taught him to work out theories before actually trying them out in the laboratory. This was a lot different from Edison's style of innovation. Although Edison hired Tesla when he first immigrated to America, Edison thought the man's ideas were "splendid" but "utterly impractical." And Tesla once said that if Edison ". . . had a needle to find in a haystack he would not stop to reason where it was most likely to be, but would proceed at once, with the feverish diligence of a bee, to examine straw after straw until he found the object of his search . . ." That statement pretty well sums up the different styles of these two innovators.

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Edison and Tesla: Innovation of the Electric Generator, continued

Edison refused to even consider Tesla's ideas about using AC technology to bring electricity to the people. Edison insisted that his own DC system was superior because it was safer. Tesla argued that AC technology is more practical and can send massive quantities of energy over long distances. At the time, DC technology could only deliver power up to a half mile away. Tesla told a story of a time when Edison bet Tesla \$50,000 that he couldn't fix one of Edison's failed DC generators. Tesla did it and demanded his payment. Edison said it was a joke and that Tesla just didn't understand American humor. After that, Tesla quit and struck out on his own to prove AC current was the best solution for bringing power to the public. Edison continued in his quest to improve his DC-powered generator.

In the end, Nikola Tesla was instrumental in helping his new backer George Westinghouse win successful contracts for his electric generator—powered with alternating current. But Edison's original point about DC providing enough power for most appliances was absolutely correct: Some household appliances can't handle the massive amounts of energy coming from the outlets in the wall. Those appliances include internal devices that actually convert AC back to DC. Think about that box stuck in the middle of your laptop cord. Its purpose is to reduce the power coming from your wall to something your laptop can use.

So . . . now that you know the story, who do you think won the AC/DC war?