

## THE MAGIC GENIE

By Richard Sorokin

In 600 B.C. a Greek by the name of Thales discovered that by rubbing amber strange things happened. He discovered static electricity, a curious phenomena that would take hundreds of years to fully understand. From 600 B.C. to about 1800 A.D. electricity was played with, measured and parts named. It was a curiosity with no useful purpose. It remained a curiosity for 2400 years.

The genie was in the bottle but no one could get it out, really use it. In this period great scientists such as Volta, Oersted, Ampere, Ohm, Faraday, Henry, and Ben Franklin worked on electricity. They understood the relationship between electricity and magnetism. They could create it measure it and play with it, but couldn't get the genie to do anything practical for mankind.

There was no use for electricity until the wizard of Menlo Park came into the scene, Thomas Edison. Edison invented a workable light bulb. He created the first power station in 1884 in New York City. The power station was able to send electricity only about a mile away. At this time Edison only used direct current, that is current moving in one direction only. The problem with transporting electricity by direct current is that it heats up the wire and requires a large diameter wire to reduce the friction.

George Westinghouse opened the first major power plant to use alternating current at Niagara Falls. Alternating current here in the United States changes direction sixty times a second. In the instant that the current changes direction there is no current and the wire has a chance to cool. Because of this, alternating current is the best way to move electricity. Edison fought against A.C. current until he died....

The problem with A.C. & D.C. currents is that for some things you must have the correct current. For other things it makes no difference. Light bulbs will work on both currents. However motors have to be either the A.C. or D.C. type. Our AC voltage here in the states is 110 volts running at 60 Hz. In Europe it is different, 220 volts at 50 Hz.

In our electronic age where so much is done by direct electricity a method had to be found to do the converting. At first we used transformers and vacuum tubes. These were heavy, took up a lot of space, got hot and had to be ventilated. Things were big and bulky. What makes our electronic world possible is the size of the transformers, diodes and capacitors that make A. C. into D.C. Today all electronic devices that you plug into an A.C. outlet have transformers, diodes and capacitors to change the A.C. to D.C.

Today our lives are so entwined with the magic genie that we wouldn't know what to do without it. Our functioning world as we know it would not be. Think of your daily life without electricity. Truly shocking.