George E. Simons
General Electric Co.
A Century of Progress
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Adventures in science that represent years of laboratory research and that start the imagination on a thrilling trip into the future flash across the platform in rapid succession in General Electric's "House of Magic" in the Electrical Building at A Century of Progress. Four young engineers from Schenectady--William A. Gluesing, G. E. Drollinger, R. H. Mighell, and W. G. Williams--take you through a series of demonstrations that breed speculation on what electricity can be made to do next.

To begin the show, they introduce one of the newest of electrical wonders, the fever machine. It is one of the developments which has already been taken from the General Electric research laboratory at Schenectady and is now being used in several important medical centers for experimental work in the treatment of certain types of disease. In the House of Magic its effects are demonstrated on corn placed in a glass container set between two other containers filled with ice and water, and the corn is popped by electrical or radio waves. The machine operates in a manner similar to radio broadcasting equipment, giving off high-frequency electrical oscillations which produce a rise in temperature or artificial fever in the human body to kill disease germs. While it produces sufficient heat to pop corn in the demonstration, it does not cause discomfort to the human patient subjected to it.

Or these scientist-magicians may bring out what they call the most simple of all broadcasting stations. It is a high-frequency vacuum tube oscillator that sends electrical waves,

vibrating 3,000,000 times per second, out into the atmosphere in much the same way that a radio station sends out radio waves. Apparently, they cannot be felt by the human body, but a glass tube filled with gas--neon or helium--feels them and gives off light colored according to the gas used.

Next comes a queer looking black and white disc with a red light in front of it. Known as the Stroboscope, the red neon light flashes on and off faster than the eye can record, until the solid metal disc is rotated at high speed and the figures on it appear to be standing still or moving in different directions as the rapidly flashing light catches it in different positions. This, they point out, is used in the study of machinery rotating rapidly.

At that point, another type of tube, the Thyratron, is introduced and explained as an electron tube that can be used to multiply by more than a million times amounts of electricity so small that they are useful only when greatly amplified or made to control larger amounts of current. With this tube, these scientist-magicians turn an electric light on and off, very slowly, by waving a wand in its direction. Another tube of the same type is connected to the exit doors so that a wave of the lecturer's hand is enough to open them when the show is over. They are also used to control the lighting in the "House of Magic."

The electric eye, technically known as the photoelectric tube, is then explained as one in which electrons are driven off when light strikes certain kinds of metal with which the plate is coated.

Thistiny stream of electrons is the electric current that is amplified for demonstration. The electric eye, according to the demonstrators, has two distinct advantages over the human eye: it does not get tired and it responds to very rapid changes in light intensity. In the "House of Magic" it is made to count the changes in the light radiations given off by an incandescent lamp operated on 60 cycle alternating current. And then it picks up even more rapid light vibrations sent through a television lamp from a phonograph record, and thus you hear sound transmitted on a beam of light.

Having "heard light", you can see sound as it is pictured on a device introduced as the cathode ray oscillograph. A green dot of light moves back and forth on a screen so rapidly that it appears to be a solid line. When sound vibrations from a phonograph record are brought in, the dot describes a wave from which it is possible to study the pitch, volume, and quality of the sound.

Still another type of tube is shown, but this one is so new that it has no proper name, and as yet has no practical value. The lecturer points out that it is still in the early stage of development that many of the other tubes now known to have great practical value were in only a few short years ago. He calls it a sodium streamer and says it is an example of the pure science of today that may be the applied science of tomorrow.

Light, visible and invisible, provides the last demonstration on the program. With neon and mercury light sources, the ability of colored materials to reflect light vibrations of their own frequency is shown. Under the neon light, a green drape looks

black, while under mercury light only a red drape appears to be black. Under ultra-violet rays--invisible light--figures painted in fluorescent paint appear to create and radiate their own brilliant colors. A picture of a girl painted with three kinds of paint appears to change from a formal gown to a bathing suit at the snap of a switch, and then disappears altogether, leaving only the bathing costume visible. And a dull white shawl becomes, under ultra-violet light, a thing of glowing color and beauty.

These are a few of the demonstrations presented in the "House of Magic" to picture kinds of developments in the electrical industry that are seldom seen until they have been applied to some machine or device that becomes a commonplace piece of equipment in wide use.

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