

# HIGH TENSION WIRES TRANSMIT THE VOICE

**A New Development of Radio Is  
Made and Announced by  
the General Electric.**

## **CARRIER CURRENT SYSTEM**

**Waves Are Kept Concentrated About  
Lines, Insuring Privacy and  
Direction of Signals.**

BALTIMORE, Md., Dec. 30.—The successful transmission of voice over electric power lines carrying 70,000 volts by means of carrier current, a new development of radio, was announced here today by the General Electric Company.

The tests were made over the high-tension transmission lines connecting the Highlandtown sub-station of the Pennsylvania Water and Power Company here with its hydroelectric plant at Holtwood, on the Susquehanna River, a distance of forty miles. Conversations were carried on under every possible condition that might occur on a power transmission line, such as short circuits, grounding and broken wires.

The apparatus by which the transmission of voice is made is similar to a radio outfit, having vacuum tubes, batteries and other appliances. Instead of radiating waves through space in all directions, as from a broadcasting station, the voice waves are kept concentrated about the electric power lines, thus insuring privacy and direction of signals.

For power companies the carrier current system has many advantages over the land telephone, for, so long as there is a single transmission line in operation communication can be carried on. Ordinary telephone wires, which are many times smaller than the high-power electric lines, are generally the first to suffer during a storm, whereas transmission lines are seldom affected by even the most violent storms.

In the tests made here the quality of speech was much better than that obtained by a land telephone over the same route. The conversation was free from hums and other noises which are usually experienced when a telephone line parallels a high-power electric system.

Carrier current, in addition to assuring privacy in communication, has other advantages over radio. Static, fading of signals and interference from other stations are entirely eliminated. Government broadcasting licenses are not required, and it does not require a licensed radio operator.

A small switch connected with an ordinary telephone instrument does all the work. By moving this switch upward a bell is rung at the other end of the line. The switch then automatically returns to neutral or listening position, and the conversation begins. The apparatus is in operation only when a conversation is in progress, the telephone hook holding the receiver acting as a switch for the set.

When the receiver is raised, a small motor generator set is started, supplying 1,000 volts direct current. This is put through two 50-watt vacuum tubes and converted into high frequency alternating current of 15,000 cycles. This voltage carries the voice signals from the telephone into a wire 1,000 feet long, leading from the station and parallel to the transmission lines.

Instead of radiating the sound waves into space this wire acts as one plate of a condenser and the energy is all inducted into the electric lines and the magnetic field which surrounds the wires.

Traveling at the speed of light the voice is received at the other end much the same as radio broadcast signals. The equipment consists of a detector and two amplifier tubes. Tuning is not necessary, as the wave length and other characteristics are always the same. Since carrier current travels on a wave length of 15,000 meters, it is removed from any possibility of interference from radio broadcasting stations.

The 50-watt sets, as tested here, are capable of carrying on communications for a distance of eighty-five miles. Larger sets of 250 watts are being made by the General Electric Company which will make it possible to extend the distance of communication to 200 miles.