

passage of the waves, the resistance is from 500 to 100 ohms, that is, they are relatively good conductors.

Different explanations have been advanced, to account for this action of the waves on the filings. Mr. Leon de Montarlet gives the following explanation : " The electric undulations cause microscopic sparks between the filings. Such sparks are conductive. They destroy the stratum of oxide that exists upon the parts in presence of the graunles of filings, and perhaps even solder them together to some extent, and this establishes a more conductive chain. If then the tube happens to be struck, the chain will be destroyed, the filings will arrange themselves in any sort of way, and the tube will again become a poor conductor." (Translated in *Scientific American*, May 13th, 1899, from *Le Monde Illustré*.) The microscopic sparks may have been observed. But what proves that they are due to the Hertzian waves, and not to the current from the relay battery, that passes through the coherer after the filings have already been made conductors by the Hertzian waves?

Mr. Lodge's explanation is more generally received. Mr. John Trowbridge, director of Jefferson Laboratory, Harvard University, reechoes it in the following words, in *The Munsey* December, 1899 : " The coherer is not unlike the transmitter employed in telephony. The latter, in its elements, is merely two wires inserted in a mass of carbon particles, being connected with the poles of a battery. When we speak into the transmitter, the carbon particles are stirred by the vibrations of the voice, and change the flow of the battery current through the mass of the carbon. The coherer employed in wireless telegraphy can also consist of carbon particles between the wires of a battery. It is found better however to use metallic filings. . . . The electric waves, on falling on a vertical wire connected to one of the wires of the coherer, disturb the arrangement of the metallic particles, and modify the flow of a battery through the coherer. The action is analogous to that of the carbon transmitter in telephony, but the electric waves act instead of the human voice."

There are, certainly, sufficient points of resemblance between the coherer and the carbon transmitter, to constitute an analogy ; for, an analogy is simply an agreement or likeness between things,