

any other cause, capable of producing mechanical compression, should produce the same effect as the Hertzian waves on the coherer. Now, rapping on a vessel containing loose particles, tends to pack the particles. Rapping on the transmitter of the telephone, or even on anything in contact with the transmitter, produces a loud disagreeable noise. The reason is that the rap causes the sides of the apartment, containing the carbon particles, to vibrate, and thus to compress the particles. If the action of the coherer were of the same nature as that of the transmitter of the telephone, should not the vibrations of the glass tube produced by a stroke of the wrapper, cause the filings to become better conductors, as it happens to the carbon particles? The opposite, however, happens, for the rap destroys the conductivity of the filings.

Moreover, Mr. Branly replaced the loose filings by mixtures of filings with melted resin, sulphur, or paraffine. When these mixtures hardened they formed solid masses. Under the influence of the Hertzian waves, the filings thus imbedded, produced the same phenomena as loose filings. It is hard to see how, in such conditions, the waves can pack the filings closer together.

The Hertzian waves must, therefore, have some other effect on the filings than that of compressing them, and producing greater cohesion among the particles of metal. The name "coherer," which implies this theory, is then a misnomer. It would be preferable to adopt the name given to the instrument by Mr. Branly, and to call it a radioconductor, because it becomes a conductor under the influence of the electric rays. As to the real nature of the influence exerted on the filings by the Hertzian waves, no satisfactory explanation has yet been given. In such a case it is more conducive to the progress of science to express one's 'honest doubt,' than to assert, with oracular positiveness, that this or that is an explanation. Scientists are frequently too dogmatic on very doubtful points in scientific matters, and too skeptical with regard to very certain truths of a higher order. A proper investigation of the matter might throw new light on some points of the science of electricity that still remain obscure, such, for instance, as the theoretical explanation of the induction of currents. It might confirm Faraday's theory of induction. For it is possible that the