

Airey's conclusions that when the electrical discharge passes through a mixture of hydrogen and chlorine there is no appreciable transport of the chlorine through the hydrogen, are not indicated by experiment. *H. T. B.*

On the variation in the electric intensity and conductivity along the electric discharge in rarefied gases. *H. A. Wilson. Phil. Mag.* [5] 49, 505 (1900). — The author extends the work of Graham by obtaining curves of the variation of electric intensity along continuous discharges for air and hydrogen besides nitrogen. The sudden positive drop at the anode is discussed and the effect noticed by Skinner of a negative electrification near the anode is confirmed, but the author considers that it may be due to some influence of the exploring wires. As such a condition of negative electric intensity must necessitate a source of E. M. F., it is suggested that the source is provided by positive ions shot off from the anode under the very large drop in potential and sufficient to carry them against a negative intensity for a short distance. The electric conductivity of the gases is also studied and the variation in conductivity in the striated positive column is shown. *H. T. B.*

Uranium radiation and the electrical conductivity produced by it. *E. Rutherford. Phil. Mag.* [5] 47, 109 (1899). — An exposition and careful study of uranium radiation from the point of view of the ionization theory of gases. An electrical method was employed and the rate of leak between two zinc plates, kept at a difference of potential of 50 volts, when metallic uranium or a compound of uranium was spread between them, was determined. This was done by connecting one plate to a battery and the other to an electrometer, one pole of the battery and one pair of quadrants of the electrometer being also connected to earth. The experiments showed that the radiation emitted by the uranium is complex, consisting of two distinct types which the author terms the α and β radiation. The first type was found to be very easily absorbed by a few layers of aluminum foil and to depend chiefly on the surface of the uranium, while the second is capable of very great penetration and depends also on the thickness of the layer. It was found that the transparency of aluminum for the β radiation is over 100 times as great as for the α radiation, and that the opacity of the metals Al, Cu, Ag and Pt, for the β radiation follows the same order as their atomic weights. The β radiation was found to have the same penetrating power as the radiation from an X-ray bulb. The author suggests that possibly the α radiation is a secondary radiation set up at the surface of the uranium by the β radiation. The absorption of the radiation in gases is studied and found to be least in hydrogen and greatest in CO_2 and apparently follows the same order as the density of the gases. Many other points are treated of in the paper, including the effect of pressure on the absorption, the total amount of ionization in different gases, the rate of recombination of the ions and a comparison of the velocities of the ions in Röntgen and uranium conduction in which the identity of the ions produced by the two types of radiation is indicated. *H. T. B.*

On the velocity and mass of the ions in the electric wind in air. *A. P. Chattock. Phil. Mag.* [5] 48, 401 (1899). — Considering the dissociation of a gas