

Radio-activity produced in substances by the action of thorium compounds. *E. Rutherford. Phil. Mag.* [5] 49, 161 (1900). — The power of setting up radio-activity in bodies, which is shown by the radiation from thorium compounds, the author considers connected with the "emanation" previously described from the same compounds. This secondary radiation can be induced in all bodies, can be concentrated by an electric field and exist for hours after the exciting rays have been removed. The rate of decay of the radio-activity was found to be according to a logarithmic curve. The increase was found also to follow a definite relation. The effect of E. M. F., of pressure and of gases was carefully studied, and various mechanical and chemical tests were applied, in addition, to throw some light on the nature of this induced radiation. A fine platinum wire, upon which the thorium rays had been concentrated was carefully weighed and subjected to microscopical tests, but although it gave out strong radiation, nothing of the nature of fine dust particles could be detected. The radiation could be reduced very considerably by wiping the surface with a cloth or fine sandpaper, but in order to remove it completely, it was found necessary to remove the surface layer by long rubbing.

The radio-activity of platinum was not much affected by washing in water, caustic soda, or nitric acid. On the other hand, sulphuric or hydrochloric acid had the power of destroying the intensity of the radiation in a short time. In one test the author shows that the cause of the radiation must be due to small particles, for on removing the radiation from a piece of platinum with dilute sulphuric acid and evaporating the acid to dryness, the residue was found to be radio-active.

H. T. B.

Thorium radiation. *R. B. Owens. Phil. Mag.* [5] 48, 360 (1899). — The author finds that the radiation emitted by thorium and its compounds is not divisible into two such distinct types as was found by Rutherford for uranium.

The method of experiment was essentially the same as that used by Rutherford. Determining the absorption of the radiation by different thicknesses of aluminum foil, it was found that the radiation consists of a readily absorbable kind forming the largest proportion and of apparently a simple nature following the absorption law, and a penetrating type of a complex nature, consisting of a number of component parts and thus unlike the β radiation found for uranium. When screens of paper were used instead of aluminum, a different effect was noticed, the first layer cutting down the conduction current 50 per cent.

The effect of pressure on the conduction current is very carefully studied and the results are found to agree with the ionization theory.

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Thermal radiation in absolute measure. *J. T. Bottomley and J. C. Beattie. Phil. Mag.* [5] 49, 543 (1900). — The experiments described in the present paper form a continuation of Bottomley's previous work. Radiation surfaces of platinum wires are compared in vacuum by electrical heating and the energy loss per unit of area per second determined, as well as the temperature of the wire, from its electrical resistance. Wires of bright polished surface are compared with wires over which a thin layer of soot has been deposited. Wires of different diameters are also compared.

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