

appeared very clearly at 110,000 volts, and their distance from the centre of the beam could be measured. Comparison with an assumed structure of atoms arranged in a centred cubic lattice, with the scattering electrons in each atom concentrated at its centre, failed to account for all the lines. Displacement of all the electrons from the centre along the cube diagonals in four groups of 2, 8, 8, 8, at distances  $\frac{1}{32}$ ,  $\frac{1}{16}$ ,  $\frac{1}{8}$ , and  $\frac{1}{4}$  respectively of the distance to the nearest atom, makes it possible to account for all the observed facts within the limit of the experimental error.

Although but a rough approximation, the excellent agreement indicates that this is a step in the right direction. Iron is given its correct valence thereby.

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#### THE EFFECT OF X-RAYS ON THE LENGTH OF LIFE OF TRIBOLIUM CONFUSUM.<sup>1</sup>

By Wheeler P. Davey.

THIS is a detailed account of the work briefly described in the *Physical Review*, 9, 557, 558 (1917). A short review of the literature of the effects of X-rays on various forms of animal life is given.

The characteristics of *Tribolium confusum*, and the methods of manipulation employed to eliminate sources of error and the individual idiosyncrasy of the beetles are described in full.

A dose of 15,000  $\frac{\text{M.A.M.}}{25^2}$  at 50 kilovolts killed all beetles during administration. Doses less than 500  $\frac{\text{M.A.M.}}{25^2}$  at 50 kilovolts were not fatal to all the beetles.

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#### THE PLIOTRON OSCILLATOR FOR THE PRODUCTION OF LARGE CURRENTS OR HIGH POTENTIAL AT HIGH FREQUENCIES.<sup>2</sup>

By William C. White.

THE use of a pliotron of the same type of design as that recently described<sup>3</sup> as a sort of converter to supply alternating-current energy from a direct-current source is described.

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<sup>1</sup> *General Electric Review*, 20, 174-182 (1917).

<sup>2</sup> *Ibid.*, 20, 635-637 (1917).

<sup>3</sup> *Ibid.*, 19, 771 (1917)