

The Photoelectric Effect in Potassium Vapour as a Function of the Frequency of the Light. By ERNEST ORLANDO LAWRENCE*, M.A., Sloane Fellow in Physics, Yale University†.

Introduction.

BECAUSE of our ignorance of the precise nature of the ejection of electrons by light from solid surfaces, that is to say, because of the complexities involved in the photoelectric mechanism for solids which the Bohr theory has not yet encompassed, experimental facts of this sort do not bear vitally on the Bohr conceptions. On the other hand, experimental data on the photoelectric effect in vapours have a direct significance in the Bohr theory, inasmuch as in this instance the atoms are isolated and free to act the rôle to which the theory applies. Information of the latter sort is meagre. Steubing‡ has described an experiment which seemed to show ionization in mercury vapour by light transmitted through fused quartz. Anderson§ and Gilbreath|| have obtained ionization in potassium vapour which they attribute to a photoelectric effect in the vapour, but which probably resulted from a photoelectric effect from the electrodes. Kunz and Williams¶ have observed

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† Communicated by Professor W. F. G. Swann.

‡ *Phys. Zeit.* x. p. 787 (1909).

§ *Phys. Rev.* i. p. 233 (1913).

|| *Phys. Rev.* x. p. 166 (1917)."

¶ *Phys. Rev.* xv. p. 550 (1920); xxii. p. 456 (1923).