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CURRENT PROGRESS IN X-RAY PHYSICS¹

By Professor DAVID L. WEBSTER

STANFORD UNIVERSITY

INTRODUCTION

WHILE the title of this address covers a great deal of ground, it is really intended to limit the field rather than to widen it. Current progress in x-rays might well include the great advances in the application of x-rays to medicine, both in diagnosis and in therapy. Likewise it might include x-ray engineering. In that field there is rapid progress in the use of x-rays for testing engineering materials and also in the design and improvement of x-ray apparatus. While current progress in x-ray medicine and x-ray engineering are of vast importance, it is obvious that they can not be included in this address. Likewise, x-ray chemistry and mineralogy, by which I mean the use of x-rays in the study of the structures of molecules,

¹ Address of the retiring vice-president and chairman of the Section of Physics, American Association for the Advancement of Science, Boston, December, 1933.

either in fluids or in crystals, would take us much too far afield. I must therefore consider only topics that are clearly x-ray physics.

Even within this limit the field is far too large to be covered uniformly. So I shall illustrate the nature of current progress in x-ray physics by taking as an example a still more restricted field within it, namely, the physics of x-ray emission.

HISTORY

To bring out the significance of current progress in x-ray emission, let us first consider some familiar landmarks in its history. The most familiar of all, probably, is the famous series of spectra photographed by Moseley in 1913 and shown diagrammatically, with extensions to lighter and heavier elements than those used by Moseley, in Fig. 1, after Siegbahn. Moseley's spectra showed such a regular-

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