

SCIENCE

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THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

ATOMIC THEORIES OF RADIATION¹

TWENTY years ago the system of theoretical physics seemed so complete as to justify the opinion, not infrequently expressed, that it was probable that the great discoveries in physics had all been made, and that future advances were to be looked for in the sixth place of decimals. And yet, in the very midst of these predictions, came the announcement, made just eighteen years ago this week, of Roentgen's discovery which showed that there were great mines of physical gold as yet unworked. Since that time discoveries of fundamental importance have followed one another with such amazing frequency that one who is at all familiar with the history of physics will scarcely challenge the statement that the past fifteen years is quite unparalleled in the number and the significance of its advances. At the present time, too, the air is full of suggestion of still more fundamental developments.

Most of these recent advances find a place under the general title, "The Triumphs of an Atomistic Physics." Within the past decade, the atomistic conception of matter has silenced the last of its enemies, and today we are counting the number of atoms and molecules in a given mass of matter with as much certainty and precision as we can attain in counting the inhabitants in a city. No census is correct to more than one or two parts in a thousand, and there

¹ Address of the vice-president and chairman of Section B—Physics—American Association for the Advancement of Science, Cleveland, December, 1912.