

# SCIENCE

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## A COMPLETED CHAPTER IN THE HISTORY OF THE ATOMIC THEORY.\*

THE great discovery of the law of gravitation was left reasonably complete by its author. The explanation of this fact is obvi-

\* Address by the retiring President of the American Association for the Advancement of Science at the Buffalo Meeting.

ous. No other force of sensible magnitude complicates the action of gravitation ; its law appeals to simple geometrical relations ; and the facts had been well observed and reduced to order. Accordingly, by a few numerical comparisons of the hypothesis with the facts, Newton established the truth of his conjecture, so that it has been generally accepted as a law of nature. The first suggestion of the theory was quickly followed by its final triumph.

Very different has been the history of the discovery which most chemists regard as next in importance to that of Newton. The discovery that matter consists of an aggregation of infinitesimal units or individuals was made by Dalton ; but the first suggestion of this kind had been made at least twenty-two centuries before Dalton. Leucippus and Democritus were the earliest recorded believers in this doctrine ; Epicurus adopted it ; Lucretius expounded it in strains of noble eloquence. But all the early suggestions were quite barren and unfruitful for the advancement of science, for no one before the present century was in a position to make any verifiable hypothesis ; and science grows by means of hypotheses so closely in touch with facts as to be verifiable. In later times, Leibnitz accepted the notion of a certain kind of atomic structure of matter ; Newton accepted, and reasoned soundly upon, a view which Dalton recognized as akin to his own. Kant