

# SCIENCE

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## THE NATURE OF THE CHEMICAL ATOM<sup>1</sup>

THERE is probably no subject in physical science that has received more attention or produced a more profound influence on the theories of chemistry and physics during the last few years than that of the constitution of the atom. The problem has been attacked, not only by many of the foremost chemists and physicists of the world, but also by many eminent astronomers and mathematicians. It is one of the most difficult as one of the most important problems with which the chemist is concerned.

The conception of the atom became an important factor in chemical science early in the nineteenth century, when Dalton discovered the laws of definite and multiple proportions and announced his well-known atomic theory. He found that when one chemical element combines with another, it combines in a definite proportion or some integral multiple of that proportion. It was only natural that Dalton should have assumed this definite proportion, which he called an atom, to be an indivisible ultimate particle; and it was only natural that this theory should have prevailed throughout most of the nineteenth century, for, among the most prominent characteristics of the atom are its individuality and its permanency. It behaves in many respects like an indivisible particle.

Recent investigations, however, into the phenomena of the cathode rays, Lenard

<sup>1</sup> An address delivered at a meeting of the Southern California Section of the American Chemical Society, Los Angeles, California, Friday evening, October 22, 1915.