Chapter I describes in a fragmentary manner the common apparatus and reagents, omitting some of the most useful. The recommendation to use for blowpiping a Bunsen flame one centimeter high with air supply cut off, is unfortunate. Half a dozen other devices are better.

Chapter II gives a general outline of blowpipe analysis, following the six primary tests of Berzelius. Here, several of the most valuable blowpipe tests, such as examination in an open glass tube, are omitted altogether. The tests given are only partially described, many details necessary for successful practice being omitted.

Chapter III, giving reactions for the detection of the elements, arranged alphabetically, is very unsatisfactory. The reactions given are, in general, those of the oxides only, and misstatements are numerous. Chapter IV, giving the behavior of some of the principal metallic ores, is little better.

There are in the book at least a score of downright misstatements, and another score which are inaccurate because of their incompleteness. The omissions are startling,—gold, selenium, tellurium, molybdenum, titanium, tungsten, uranium, and vanadium not being even mentioned in any connection.

What is correct in the book is well expressed, and the type is clear, but the book as a whole does not deserve a place in blowpipe literature.

JOSEPH W. RICHARDS.

A TREATISE ON THE KINETIC THEORY OF GASES. By S. H. BURBURY, M.A., F.R.S. J. and C. F. Clay at the University Press, Cambridge. New York: The Macmillan Company. 1899. vii + 157 pp. Price, eight shillings.

The object of this book as expressed by the author is to apply to the kinetic theory of gases a method of analysis different from that generally employed. Previous writers have always started with the fundamental assumption that with regard to their relative motion the molecules of a gas are independent of one another. To express this independence the law of distribution of momenta assumes the form E^{-hQ}, and the expression relating to the translation velocities becomes, $Q = \Sigma m(u^2 + v^2 + w^2)$, m being the mass and u, v, and w the component velocities. Boltzmann deduces his H theorem and the theorem of the equality of

mean kinetic energy for each degree of freedom from the above-mentioned independence and from the form of Q given. The author gives to Q the form $Q = \Sigma m (u^2 + v^2 + w^2) + \Sigma\Sigma b (uu' + vv' + ww')$, where b is a negative function of the distance r at the instant considered between the two molecules whose velocities are u, u', etc., which function is inappreciable except for very small values of r. The author shows that without the coefficient b the motion can not be stationary. Other investigators have proved that assuming the independence, the motion is stationary; the author does not question the proof but the axiom. The result of giving to Q the new value is that molecules near to each other have on an average a motion in the same direction; *i. e.*, they tend to form streams. The author admits that the usual form holds very well for ordinary gases under ordinary conditions, since for them the b coefficients are probably very small, but he maintains that his form is more general, applying without restriction as to density, except when the gas is liquefied or very near its point of liquefaction.

The subject is treated in ten chapters to which is added a short appendix containing proofs of certain mathematical propositions (relating chiefly to determinants) used in the book. Throughout the work the author considers critically the methods and results of other prominent writers on the kinetic theory in connection with his own. The style is clear and forcible. The book is not a treatise that seeks to present the subject in an elementary form; it is rather a piece of original work which every student of the kinetic theory should read.

The book is printed on good paper. The type is clear and the cloth binding is neat and durable.

The appearance of this book is additional evidence that interest in the kinetic theory is still being maintained in spite of the fact that kinetic explanations are at present viewed rather with disfavor by a number of prominent scientists.

LOUIS KAHLENBERG.

INORGANIC CHEMICAL PREPARATIONS. By FELIX LENGFELD, Assistant Professor of Inorganic Chemistry in the University of Chicago. The Macmillan Company. 1899. 57 pp.

The teaching of inorganic chemistry in the laboratory has been developed along analytical lines almost entirely. While there is