

line furnace, Ricketts' rubbing plate, and Jones' reductor are all mentioned and some of them figured and there are numerous references to this Journal, to the *Journal of Analytical and Applied Chemistry*, and to the *Engineering and Mining Journal*. Drown's method for silicon is described as "Verfahren von Brown."

One feature of the book deserving of notice is the reprinting of the most useful tables on separate sheets. These are placed at the end of the book to be torn out and pasted up in the laboratory if desired. The mechanical execution of the book is excellent. The third volume is promised for the middle of 1900.

E. H.

THE GRAMMAR OF SCIENCE. BY KARL PIERSON. Second edition revised and enlarged with 33 figures. London: Adam and Charles Black. 1900. New York: The Macmillan Co. 8 vo. xviii + 548 pp.

This is a metaphysical book written by a believer in scientific methods. It is divided into twelve chapters and an appendix. The chapters are entitled as follows: Introductory; The Facts of Science; The Scientific Law; Cause and Effect—Probability; Space and Time; The Geometry of Motion; Matter; The Laws of Motion; Life; Evolution (Variation and Selection); Evolution (Reproduction and Inheritance); The Classification of the Sciences; The mechanical execution of the book (printed by R. and R. Clark, Edinburgh) is superb.

E. H.

ELEMENTARY CHEMISTRY FOR HIGH SCHOOLS AND ACADEMIES. BY ALBERT L. AREY. C. E. Rochester High School. New York: The Macmillan Company. 1899. xi + 271 pp. Price, 90 cents.

There seems to be an increasing tendency to introduce chemistry into the secondary schools as a disciplinary study. This volume is offered as a text-book in elementary chemistry, and is an attempt to present the subject in such a manner as to develop the student's faculties for observation and interpretation. This is accomplished by making the book a laboratory guide as well as a text-book. Numerous questions on the text and the laboratory experiments are found throughout the book. They have been intelligently selected, and are of such a nature that they can be answered only by direct experiment or by analogy. Many statements of facts have purposely been omitted so that the student may be more impressed with the experiment. The experiments are well selected and well arranged.

The main portion of the book treats of the elementary laws, the preparation, properties, and reactions of the gases, non-metals and metals. No mention of the periodic law is made, and there is no attempt to show the striking analogies in the properties of the elements and their compounds. It is much to be regretted also that there is little mention of historical names. They are so intimately connected with the science that it seems a great pity to have dropped them almost entirely. The author has introduced the term *crith* as the weight of a liter of hydrogen. It does not aid in the understanding and must surely lead to confusion.

The last chapter of twenty-five pages treats briefly of qualitative analysis. In the reviewer's opinion this portion of the book should have been devoted to the study of the preparation of typical inorganic compounds. The prime object of many books of this class is to prepare the student to make *separations*. While this cannot be said of this volume, there will, nevertheless, be a strong tendency on the part of the student to anticipate qualitative analysis on account of its presence in the book.

With the exception of the criticisms made, the book is to be commended.

HENRY FAY.

THE THEORY OF ELECTROLYTIC DISSOCIATION AND SOME OF ITS APPLICATIONS. BY HARRY C. JONES, Associate in Physical Chemistry in Johns Hopkins University. New York: The Macmillan Company. 1900. Cloth. xii + 289 pp. Price, \$1.60.

This book contains a survey of the earlier physical chemistry, an account of the origin of the theory of electrolytic dissociation together with a presentation of the evidence supporting the same, and some of the important applications of the theory.

Every student of chemistry, physics, and biology, who is not already well acquainted with the theory of electrolytic dissociation will find this an interesting and valuable book to read. The development of modern physical chemistry is, in a large measure, intimately connected with this theory. The facts that the latter has been able to explain and to correlate are many; and above all, the importance of the stimulus it has given to research can hardly be overestimated.

In this book the theory of electrolytic dissociation is viewed in its most favorable light. It must be admitted, however, that during the last year or two, facts have begun to accumulate which