

primer. While the compounds of carbon and the compounds of some of the less important elements receive but little attention, no theory, no formula, no fact has been omitted out of consideration for the youthful mind, that is supposed to be most in need of elementary instruction. The theory of ionization is freely used, adding to the freshness, which characterizes the systematic portion of the text. Descriptions of experiments, and illustrations, are seldom given, and are not needed by the class of readers to which these books are suited. Students who have already gained an acquaintance with the elements of chemistry, will find them helpful, but for beginners their fitness is questionable.

L. B. HALL.

INDUCTION COILS. BY H. S. NORRIE (Norman H. Schneider). Second edition. New York : Spon and Chamberlain. 1901. xvi+270 pp. 13×17 cm. Cloth. Price, \$1.00.

This book, which is a revised and enlarged edition, contains fairly detailed, practical directions for making and operating the various types of induction coils in common use. The important subject of contact breakers is treated in a special chapter. The volume contains additional chapters on spectrum analysis, currents *in vacuo*, batteries for running coils, Tesla and Hertz effects, Roentgen rays, and wireless telegraphy. The chapter on spectrum analysis is introduced into the book in a very artificial manner. It is very inadequate and not free from error. Thus on page 135 we read, for instance, "The spectrum of hydrogen gives two very bright lines of red and orange." The book gives evidence throughout, that it has been written for the amateur. Rules for doing certain things are laid down without indicating the underlying principles; and when a feeble attempt at scientific explanation is made, the author frequently clearly demonstrates that he does not himself possess a firm grasp of the principle involved. Thus, for example, on page 180 in explaining the polarization of a Leclanche cell is this statement, "a film of hydrogen, which is a poor conductor, forms over the negative plate, increasing the internal resistance of the cell and setting up local action." It is impossible to go into further details here; but it naturally follows, that because the author is not always clear in his own mind as to the underlying principles, his directions for doing things are not always the best.

The induction coil is an important piece of apparatus in the

chemical laboratory. Its use is steadily increasing. The chemist may at times find some helpful suggestions in the chapters on coils and their use contained in this book.

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LECTURES ON THE HISTORY OF THE DEVELOPMENT OF CHEMISTRY SINCE THE TIME OF LAVOISIER. BY DR. A. LADENBURG. Translated from the second German edition, by Leonard Dobbin. (With additions and corrections by the author.) Edinburgh: Published by the Alembic Club. William F. Clay, Edinburgh, Agent; Simpkin, Marshall, Hamilton, Kent, & Co., Ltd., London agents. 1900. 12mo. xvi + 373 pp.

Since the appearance at Leyden, in 1561, of the little 46-page 16mo. by Robert Duval, entitled "De veritate et antiquitate artis chemicae," commonly regarded as the first history of chemistry, this topic has been the subject of a score or more of volumes, differing greatly in scope and method of treatment. Duval's essay contains sentences and paragraphs from genuine and many fictitious writings by theologians, physicians, poets, and philosophers thought to be pertinent. This early attempt was followed about one hundred years later by the "De ortu et progressu chemiae dissertatio" of Olaus Borrichius, a curious example of the extravagant credulity of a learned man; but it was not until the very end of the eighteenth century that the history of chemistry was attacked in a serious way by the distinguished chemist J. F. Gmelin, who produced an unwieldy, badly arranged work in three volumes.

These were followed by the sketchy volumes of Thomas Thomson (London, 1830), the systematic work of Ludwig Franz Bley (Halle, 1834), and the comprehensive study of Ferdinand Hofer (Paris, 1842, 2 vols.). Then appeared the erudite, exhaustive, four-volume "Geschichte der Chemie" of the scholar Hermann Kopp, which has proved an indispensable mine of information to nearly all its successors.

Two French historians have shown marked national bias; Béchamp's "Lettres historiques" (Paris, 1876) are dedicated to the memory of Lavoisier "unjustly outraged by the German chemists Kolbe, Liebig and Volhard;" and Jagnaux's "Histoire" (Paris, 1891, 2 vols.) is avowedly written to demonstrate the truth of the phrase used by another Frenchman: "Chemistry is a French Science."

Berthelot, the eminent chemist who also held a position in the