

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 Hoëfer (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

French Cabinet, gave to historians new and valuable material in his six quarto volumes on the ancient Greek alchemists, and the writers of the middle ages, but the most carefully written general history of recent date is that of Ernst von Meyer (Leipzig, 1889), and that of A. von Ladenburg, which is now under review in its English dress.

This is not a history of chemists and their labors but a philosophical study of the growth of the science since the period when Lavoisier placed it on a firm basis; the author magnifies the part played by Lavoisier, shows the origin of the false claim made for Wenzel, does justice to Richter who introduced the term stoichiometry, points out that the atomic weights of Dalton were rather arbitrarily ascertained, though he says nothing to belittle his genius.

The fact that the matter is presented in lecture form has its advantages, and assists the author in his attempt to follow the development of our present ideas from those that were formerly current; while written concisely, the student can pursue given topics more thoroughly by referring to the many treatises and articles named in foot-notes.

As thirty years elapsed between the first publication of the work in German and the appearance of this English translation, Dr. von Ladenburg has added another chapter, bringing the history down to date. In this he does justice to the labors of Gibbs, Ostwald, and van't Hoff in developing the physical aspect of chemistry, the ionization theory, and the advance made in electrochemistry. Dr. von Ladenburg's lectures are altogether the strongest writings on the development of the recent aspects of chemistry, and are recommended to readers seeking an adequate presentation of this subject.

The English translation is admirable; we notice, however, a few blemishes in proof-reading; *e. g.*, "Mon-atshfte," and 1771 for the date of Priestley's discovery of oxygen. The indexes to names of persons and to subjects are in distinct alphabets, an arrangement the advantages of which are not evident.

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EXPERIMENTS ON LOSSES IN COOKING MEATS. BY H. S. GRINDLEY.
Bulletin No. 102, U. S. Department of Agriculture, Office of Experiment Stations. Washington: Government Printing Office. 64 pages.

This pamphlet gives the results of investigations carried out in