NEW BOOKS.

Chemistry in Old Philadelphia. 1st Edition. By EDGAR F. SMITH, University of Pennsylvania. J. B. Lippincott Company, Philadelphia, 1919. 106 pp. 6 figures. 24.5 × 16.5 cm.

The volume is a brief but very interesting and valuable account of the many-sided activities, chemical, literary, and political, of the following men: deNormandie, Benjamin Rush, Priestley, James Woodhouse, Thomas P. Smith, Andrew and Henry Seybert, John Redmond Coxe, Thomas Cooper, W. H. Keating, Gerard Troost, and Joseph Cloud. On account of it, American chemists owe an additional debt to Dr. Smith for the light he has thrown on the development of chemistry in this country. The subject is so interesting that one regrets that the book could not have been expanded and the contributions of the various men somewhat more critically evaluated. We would wish to know more of what Rush himself did, personally or through his students, to carry on the inspiration of Joseph Black.

The work of Priestley in this country is but briefly noted, and must wait for a separate volume such as have detailed for us the work of Hare and Woodhouse. Special attention has been paid to the Seyberts, father and son, for their pioneer work in mineralogy; to Coxe, who was a philosophical rather than a practical chemist; and to Cooper, one of the most interesting figures of the period. In 1790 Priestley wrote a vigorous letter to Joseph Banks, the President of the Royal Society, protesting against the failure to elect Cooper to membership in the Society on account of the radical political views espoused by Cooper. He evidently brought his vigorous political interest with him to this country to which he came in 1793 to see "whether it was a place fit to live in."

It would seem as if too much stress has been laid on deNormandie's analysis of the Bristow Mineral Waters and his application of quantitative methods. While the use of a balance was new in America, in Europe it was not an unusual procedure in water analysis at that time. The credit due to Lavoisier in this connection is not that he was the first to use the balance, but that he was the first to apply it to the general quantitative study of chemical reactions from the standpoint of the conservation of matter; although even in this he had been preceded by Black, whose studies, however, while classic, were brief.

Dr. Smith has cited a partial list of chemical texts which were re-published and oft-times re-edited in America. Most of these were of English origin. There might be added to the list of French works Lavoisier's Chemistry (1806), and Berthollet's "Researches on the Laws of Chemical Affinity," Baltimore, 1809. The author of "Conversations on Chemistry" referred to is Jane (Haldemand) Marcet. The volume appeared in England in 1806, and probably the first American edition was issued from

Sidney's press for Increase Cooke & Company (New Haven, 1809). This had as a frontispiece a picture of the pneumatic cistern at Yale University.[1] John Griscom, the Quaker chemist, was in Geneva, Switzerland, in 1818, and has the following paragraph in his journal: "We afterward called on Dr. Marcet and were introduced to his wife, known as the very sensible and judicious author of the "Conversations on Chemistry," and more recently a work on "Political Economy."

Would it not have been of service, if it had been pointed out somewhat more clearly in this and Dr. Smith's other most valuable volumes, that American Chemistry was not an isolated, independent development, but was simply a phase of the rapid growth that characterized science at that time in England and France. Many of the Americans had received much of their training in Paris, London and Edinburgh, and the discoveries and reports on pure and applied chemistry, for instance, of Dalton, Davy, Gay-Lussac, Thenard, Nicholson, Accum and Ure were as familiar on this side of the Atlantic as on the other. There was constant exchange of knowledge and ideas across the ocean. It is no disparagement to the work in America to realize the close scientific association with the mother country. We must admit, too, that relatively few new things were discovered in America with the exception of Woodhouse's oxyhydrogen blowpipe, and some of Hare's contributions. There was shown, however, by the American chemists an eager desire to comprehend and substantiate the new theories of chemistry, together with a constant effort to repeat the practical experiments about which they had read, to spread the knowledge of chemistry abroad among the people, and to utilize it wherever possible for the further development of technical arts. These aims, although worthy of high praise, were not epoch-making.

This volume can be heartily commended to American chemists, since there are few more interesting topics than the story of how the "Chemical Revolution" influenced the new republic. F. B. DAINS.

Essentials of Modern Chemistry. By CHARLES E. DULL. Henry Holt & Co., New York City. 1918. ix + 458 pp. 12.5 × 19 cm. $1.40.

This is another text-book intended for secondary schools. In the preface the author says that his aim has been to make the book practical and to show the relation of chemistry to daily life without neglecting the fundamental principles upon which the science is based. He has apparently forgotten that another important ideal to be ever kept in mind is to teach the scientific method of thought while considering the facts

[1] An edition called "The Second American" appeared in Philadelphia the same year containing, in place of the description of the pneumatic cistern of Yale College and a note about Davy's discovery of the alkalies, an "Appendix consisting of a description, with a plate and the manner of using of the new hydro-pneumatic blowpipe invented by Mr. Joseph Cloud, of the mint of the United States."

and principles of chemistry. The author also calls attention to the fact that the 4 chapters (XII–XV) dealing with the atomic theory, equivalent and molecular weights, valence, and equations have been grouped. To-day there are many chemistry teachers in schools and colleges who believe that the consideration of each chemical theory should be introduced only where it is really needed to explain certain phenomena. Certainly we would prefer not to concentrate our study of these most difficult topics in 4 successive chapters. But the author is undoubtedly on the right track when he discusses the principles of metallurgy by means of a few typical metals, such as iron and aluminum, instead of by a detailed description of a great variety of metals.

Will this book stimulate the average boy or girl to study chemistry? This is at least doubtful because, in the first place, it is not written in an attractive style. Its bare concise statements of chemical facts read much like the syllabus of a course in general chemistry. It would require an exceptionally live and enthusiastic teacher to make such a book go. Then, too, its mechanical construction is far below the standard set by our best modern school books. Surely there is little excuse for muddy half-tones, ragged line cuts, and broken type.

On the whole, there does not appear to be much of special interest in the book, although an experienced teacher will find here and there some clever methods of presenting certain difficult topics, such as mixture and compound, catalytic agents, combustion and fire extinguishers, fractional crystallization, ionizing agents, and the replacement series.

N. HENRY BLACK.

ROXBURY LATIN SCHOOL,
BOSTON, MASS.

The Chemical Analysis of Iron. *Eighth edition.* By ANDREW J. BLAIR. J. B. Lippincott Co., Philadelphia, 1918. 318 pp. 102 figures. 22.5 × 16 cm. $5.

In general appearance the latest edition of "The Chemical Analysis of Iron" is decidedly attractive. Its binding is good and its paper and typographical work excellent. The drawings for illustration, while not elaborate, are clear and usually show what needs to be known about a laboratory machine, or other laboratory apparatus. Without doubt the above factors have all contributed materially to the book's popularity and somewhat to its usefulness.

But these are not the main reasons why Blair's "Chemical Analysis of Iron" has so strongly appealed to chemists, and especial y to the young chemists. To these inexperienced men, the book is especially valuable, offering as it does many practical suggestions on a great variety of subjects, such as laboratory design, apparatus and chemicals. Moreover, the directions for the analytical work are generally given in detail and are frequently supplemented by reasons for the different operations. Again,

conditions leading to inaccuracies are discussed. This analytical detail and these discussions while valuable to the beginner are not so valuable to the experienced chemist. It is on this account probably that some chemists in large steel laboratories have dubbed analytical directions in this book "time killers." Sometimes many methods are given for the determination of the same substance. Since an inexperienced chemist cannot always choose wisely it might have been better in the last revision to have eliminated some which are now more or less obsolete and whose main value is historical. On the other hand, the importance of certain subjects, noticeably the electric furnace and its uses in chemical laboratories devoted to iron requires more elaborate treatment.

The value of the book both to the experienced and inexperienced chemist is in no small measure due to the thorough development of the important subject of Alloy Steel Analysis. Everything considered, the book is worth while on the shelves of any chemical library.

FRANK W. DURKEE.

TUFTS COLLEGE.