

NOTE.

*A Convenient Method for Maintaining Reduction of Ferrous Solutions*¹.—My reasons for calling attention to this method for maintaining reduction in ferrous solutions are, that it is economical, convenient, and effective, and so far as I have been able to ascertain, new, in this particular application.

Various methods have been used to keep ferrous solutions reduced, such as the introduction of zinc and sulphuric acid, and the addition of sirups, gums, sulphurous acid, or sulphuric acid. These are either unnecessarily expensive, or ineffective, as they may interfere with the uses of pure ferrous solutions, and I have not been able to obtain as satisfactory and permanent results with them, as with the method which I have made the subject of this note; namely, the addition of ten per cent. of concentrated sulphuric acid and a suitable amount of iron in the form of small wrought iron nails, to a ten per cent. solution of ferrous sulphate. The acid under these conditions liberates hydrogen very slowly, and yet fast enough to nullify the oxidizing action of the air, even when the solution is exposed in an open beaker.

I have found that ferrous solutions thus made up will keep for more than a month in a practically unchanged condition, while solutions made up with sirups, gums, or with free acids and similarly exposed, were very largely ferric at the end of the period, and acidified ferrous ammonium sulphate, $\text{FeSO}_4(\text{NH}_4)_2 \cdot \text{SO}_4 + 6\text{H}_2\text{O}$, was in very little better condition.

When one requires a large amount of ferrous sulphate for qualitative classroom work, for example, an open beaker full of the reagent always in good condition, is very useful in saving time, and is of great convenience, and in these respects has been so satisfactory to me, that I venture to present the method to the members of the society.

WILLIAM S. MYERS.

Rutgers College, June 3, 1898.

NEW BOOKS.

ELEMENTS OF GENERAL CHEMISTRY WITH EXPERIMENTS. By JOHN H. LONG, M.S., Sc.D. Chicago: E. H. Colegrove. 1898. Price, \$2.00.

This is a compact text-book, filling only 408 pages, underta-

¹ Read before the New York Section, June 3, 1898.

king to give an introduction to the main principles of chemical science, an outline of the descriptive chemistry of the elements and their leading inorganic combinations, accompanied with directions for simple experiments by the student. In its preparation the author has used a part of his work "Experimental and Analytical Chemistry," now out of print, and has added new subject-matter, making it all anew as a text-book of elementary general chemistry, preparatory to the work of analysis.

Only the phenomena of physical and chemical change are presented in the introductory chapter; volume proportions are brought forward in the chapters upon oxygen, hydrogen, and chlorine, and it is not until following chapters that the atomic theory is broached, which is done with an excellent summary of its historical development. Still later on the subject of valence is presented, and some uses of structural formulas are set forth. Throughout the book the uses of equations and of constitutional formulas are quite carefully guarded against abuse, but as aids to study they are not by any means neglected.

In respect to solubilities the facts of saturation, precipitation, and crystallization are clearly distinguished in the very beginning of the book, but electrochemical theories of solution are not introduced at all.

The periodic system is brought forward when the metallic elements are taken up, together with further treatment of the subject of valence and of the determination of atomic weights. After this the periodic arrangement of the elements, well termed the *natural* arrangement, is observed through the remainder of the book.

In all the chemical descriptions, illustration is drawn from the relations of organic life and from the manufacturing arts, with justice to the present state of industrial chemistry.

The directions for experiments, distributed through the work, extend to 173 numbers. The author states that these experiments represent the work required in his classes during the past ten years' work, as it would appear, "repeated by the student in the laboratory" after like demonstration by the teacher in the classroom. Such exercises, following those of the lecture-table, undoubtedly serve, as the author says, to fix, as by repetition, the subject-matter of the lectures in the memory and mind of the

learner, with great advantage. But it may be doubted whether initiative exercises of this order will serve to develop the independent power of the student as well as a series of laboratory exercises planned expressly for the student, distinct from the order of the lecture course though on the same subject.

It remains to mention what is best about this book; namely, its personality, clearly recognized in every page by those who know the author and by those who have read his contributions. Personal qualities can be known more easily than named, but it can be said that the authorship of this little book is characterized by simplicity in description, directness in statement, breadth of view in science, caution in adoption of theory, care against misinterpretation, and experience with the applications of chemistry at the present time.

A. B. PRESCOTT.

INTRODUCTION TO CHEMICAL-TECHNICAL ANALYSIS. BY PROF. F. ULZER AND DR. A. FRAENKEL, Directors of the Testing Laboratory of the Royal Technological Museum in Vienna. Authorized translation, with an appendix by the translator, HERMAN FLECK, Nat. Sc.D., Instructor in Chemistry, University of Pennsylvania. Philadelphia: P. Blakiston's Son & Co. vii + 188 pp. Price, \$1.25.

This book is apparently an effort to teach the student "something of everything" while the "everything of something" is left to the special treatise. Unfortunately the methods described under the different branches of technical work are generally very sketchy and few of them are capable of execution by the student without assistance.

The subjects treated include Products of Technical Chemistry, Cement and Clay, Metallurgical Industry, Alloys, Fertilizers, Sugar Industry, Fermentation Industries, Fats, Waxes and Mineral Oils, Mordants and Tanning Materials, Textile and Dyeing Industries, Products of the Coal-tar Industry, and in an appendix, White Lead, Manganese Dioxide, Bleaching Lime, etc., Asphalt and Food Stuffs.

The subjects most satisfactorily treated are the "Mordants and Tanning Materials" and the "Textile and Dyeing Industries." The one most unsatisfactorily treated is the "Metallurgical Industry."

The appearance and printing of the book is good and the index is well made, but the cross references in the body of the book