Misprints are remarkably few in number and insignificant in kind. The absence of these faults, so common in a first edition, is but another indication of what is apparent throughout, that no labor has been spared. It is therefore surprising that the index is deplorably poor. When one finds "sulphocyanates, see thiocyanates" and then finds "thio-, see sulpho-" he is apt to become discouraged. Moreover, it ought to contain at least twice as many titles as it does, to facilitate reference to the great quantities of information. It is to be hoped that the second edition, which will probably not be long in coming, will contain an index worthy of the rest of the book.

It is a serious question whether Smith has not carried a good thing a little too far, whether he has not, after all, developed his general physical chemical principles beyond what is advisable for beginners. For example, the mathematical expression of Ostwald's dilution law and the integrated expressions for reactions of the first and second order, to determine the reaction constants, really belong in a more advanced course. In the opinion of the reviewer the book contains somewhat more than the maximum amount of information which can be introduced into the minds of the average university Freshman in a course consisting of three lectures and two two-hour laboratory periods a week extending through one college year. But the use of large type for the most important portions, and of small type for the less important, the prominent headings, the summaries of principles and the lists of questions and problems at the ends of chapters, will make it easy to select topics and utilize the book in shorter courses.

For some, the adoption of this book will necessitate a thoroughgoing revision of lectures, and a good deal of hard work. But it is to be hoped, for the sake of the subject of chemistry, that this may not delay its coming into general use. The reviewer gladly acknowledges that he has derived much profit from the careful study which he has given the book. It is a most admirable text and one destined to become a standard.

S. LAWRENCE BIGELOW.

AN ELEMENTARY LABORATORY COURSE IN CHEMISTRY. By FRANK B. KENRICK, Lecturer in Chemistry, and RALPH E. DE LURY, Fellow in Chemistry, University of Toronto. Toronto: Morang & Co. 1905. vi+90 pp. Price, $1.00.

"The course of Practical Chemistry outlined in this book is

intended for students who are beginning the subject and .... [are] taking a course of lectures on general chemistry." The titles of the main sections are as follows: Solution and Crystallization; Separation by Solution; Experiments with Air; Combustion of Magnesium; Properties of Magnesium Oxide; Chemical Substances; Composition of Water; Weight of Hydrogen Evolved when Magnesium Dissolves in an Acid; Law of Reacting Weights; Properties and Composition of Acids; Acids, Bases and Salts; Solubility; Separation by Volatilization; Properties of Aqueous Salt Solutions; Quantitative Separation by Solution; Precipitation of Copper; Proportion of Copper in Copper Oxide; Chemical Reaction in Solution; Measurement of Liquids; Volumetric Analysis; Law of Reacting Weights in Solution; Volume Relations of Gases; Some Experiments to Illustrate the Influence of Conditions on Reactions; A Reversible Reaction; The Mass Law; Applications of the Mass Law; Dissociation of Salts in Water; Some Experiments on Dissociation; Application of Mass Law to Dissociation; Separation and Identification of Substances; Solubility Tables; Principles of Qualitative Analysis; Separation of "Group I;" Separation of "Group II B;" Analysis of a Silver Coin.

Part II deals with elementary qualitative analysis, and in an appendix some additional explanatory paragraphs, containing also a few experiments, are given.

The old style of laboratory manual dealt almost exclusively with descriptive chemistry, and the work based upon it contributed nothing to the student's knowledge of the laws and principles of chemistry and therefore little to his mastery of the subject as a science. The great majority of existing manuals are still of this one-sided kind. A few make a more or less definite attempt to teach the science as it is. The present work is noteworthy in that, as may be seen from the titles of the chapters, it is arranged entirely with a view to emphasizing the principles of experimental chemistry. Much of the subject-matter of descriptive chemistry will be found in it—more than forms the whole content of many other manuals—but it is all arranged primarily to illustrate the principles. The directions, remarks, and questions, which, with the practical work and the head work of the pupil that they demand, constitute a clear study of each topic, are all elaborated with an admirable ingenuity which leaves nothing to be desired. Teachers of general inorganic

chemistry will find the book a most instructive and suggestive one.

In matters of detail some criticisms will occur to the reader. For example, the quantitative experiments on the composition of water and on the weight of hydrogen displaced by a given weight of magnesium give, in the hands of beginners, results so inaccurate that their usefulness is thereby largely destroyed. Again it is unfortunate that arbitrary words like *hydrogenion*, *cupricion*, and *leadion* should be employed when a logical system like Walker's is already in use by chemists. But these details do not materially obscure the very pronounced merits of the book. A. S.

THE CHEMISTRY OF PAINTS AND PAINT VEHICLES. By CLARE H. HALL, B.S. New York: D. Van Nostrand Co. 1906. 134 pp. Price, $2.00.

This is a book written by a chemist engaged in the manufacture of paints and colors, and gives what, in the judgment of the author, are the best methods for determining the various substances which practically occur in ordinary paints. As a rule only one method is given for each substance, and a good working knowledge of analytical methods is assumed. The book would be better if more details were given, or if there were references to standard works; but on the whole it may be said that the book is useful, indeed valuable, to any one engaged in such work. Probably any other chemist will believe some method not given here better than the one given; but by being rigidly confined to one method for each substance, the book is made compact and intelligible. In the judgment of the reviewer, some valuable methods are omitted, *e. g.*, McIlhiney's method for separating turpentine, etc., and the use of the polariscope and refractometer in detecting adulterations in liquids; also Langmuir's method for shellac. On the whole, the book is a good book and would be better if there were more of it. The most common failing of the specialist is that of forgetting that what is well-known to him is not familiar to his readers; because no book is written for specialists only. A. H. SABIN.

RECENT PUBLICATIONS.

ELECTROCHEMISTRY OF ORGANIC COMPOUNDS. By Walther Löb. Trans. from the author's enlarged and revised third edition by H. W. F. Lorenz. New York: J. Wiley & Sons. 1906. 10+308 pp. $3.00.