

What is given on enlargement and reduction takes up practical details more fully than is true of other parts of the book and appears to be well-written and useful. On the whole the work can be heartily recommended to the class for which it is written.

J. H. LONG.

ANLEITUNG ZUR DARSTELLUNG CHEMISCHER PRAPARATE. Ein Leitfaden für den praktischen Unterricht in der anorganischen Chemie. VON PROFESSOR DR. H. ERDMANN in Halle. Zweite Auflage, mit 15 Abbildungen im Text. Frankfurt a. M.: H. Bechhold. 1899. viii + 92 pp.

The first edition of this book has won for itself a wide-spread reputation as a text-book for the preparation of chemical compounds. Dr. Erdmann is an exception to the general rule of German chemists. He is a firm believer in the supremacy of inorganic chemistry, and the methods he has introduced in the study of this subject will be acknowledged by most teachers as a progressive step. The author carefully points out in his preface to this edition that previous to the appearance of his book very little time was devoted in laboratory instruction in the preparation of inorganic compounds. Although it has always been recognized that the study of organic chemistry is best carried out by the preparation of a number of typical compounds, yet the experimental study of inorganic chemistry has mostly been limited to test-tube reactions. Dr. Erdmann has been a very active factor in changing this point of view, and the chemists of the inorganic schools both here and in Germany are requiring a more and more thorough drill in chemical preparations. Such a method brings out the manipulative skill and causes the student to exercise his experimental ingenuity more than any other thing in the study of chemistry. If students were required to make their chemicals on a scale sufficiently large for practical use, the majority of them would be better chemists. And it is not in the preparation of fanciful chemicals that the best education is obtained, but in the making and purification of the common substances which are met with every day. Another point which the author insists upon is the use of raw materials in sufficient quantity to give the student a good idea of the comparative amounts of final products obtained in each case; and this is a point which should not be overlooked, for production is a very essential factor in such a course. A

student who cannot obtain more than a one or two per cent. yield in the preparation of chemically pure sodium chloride, for example, will never make his living as a chemist. The synthesis of inorganic compounds is just as important a subject in that field as the synthesis of compounds in the organic field, but strange to say there are few very satisfactory text-books on this subject. We are overcrowded with volumes relating to the analytical side of inorganic chemistry, and but few teachers seem to have considered the other. But sometimes it requires more chemical knowledge and skill to build up a compound than it does to analyze it. The author has chosen his synthetic examples with good taste, and in most cases he gives methods which are of a practical nature. Another point of convenience and instruction which makes this volume something more than a mere recipe book is that the description of every preparation is accompanied by a clear explanation of the chemical reactions entering into the process, together with simple tests by means of which the purity of the compound obtained may be ascertained. There is one feature, however, which might be somewhat improved upon, and that is, references to the literature of the subject. In this edition, these are very limited, and consist for the most part of references to the author's own text-book on inorganic chemistry. Of course the majority of the methods described in this book, especially with regard to the details of precautions and the manner of manipulation, are original; but, nevertheless, there are other methods and other ideas on the same subject which should not be ignored, and a larger enumeration of references to the latest chemical literature would render the book more valuable and useful.

But on the whole, Dr. Erdmann has given us a book full of valuable matter, and his practical suggestions scattered so lavishly throughout the description of each preparation will be welcomed with delight by both teacher and student, and the volume deserves its title of "guide" in every sense of the word.

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ERRATUM.

In the July (1889) issue, page 624, in lines 10, 7, and 4 from bottom, for "s=" read "S=".