give any rational discussion of the theory of indicators in acidimetry. Since Ostwald's discussion of the subject has become so easily accessible, any book on volumetric analysis which does not, at least, give an outline of the principles involved, must be considered as incomplete. W. A. NOYES.

COMMERCIAL ORGANIC ANALYSIS. VOL. I. BY ALFRED H. ALLEN, F.I.C., F.C.S. With revisions and addenda by the author and HENRY LEFFMANN, M.A., M.D. Third edition. Philadelphia: P. Blakiston's Son & Co. 8 vo. 557 pp. Price $4.50.

This new and thoroughly revised edition of Vol. I of Mr. Allen's valuable work will be heartily welcomed by chemists everywhere. The second edition was published in 1885, and the present volume had become a necessity in order that it might rank in completeness with the later volumes of the work.

The subject-matter has been brought well up to date by material furnished by both Mr. Allen and Dr. Leffmann. Numerous typographical errors in the second edition have been corrected and the index has been much improved by very considerable enlargement. The arrangement of the subject-matter remains essentially the same as in the second edition which was eminently satisfactory. The methods of the American Association of Official Agricultural Chemists have been included, very properly, in the text.

The following subjects have had much valuable matter added to them; *viz.*, Specific Gravity, Kjeldahl Process, Proteids of Wheat Flour, Vinegar, Brewing Sugars, Malt Substitutes, Hop Substitutes, Secondary Constituents in Spirits, Formaldehyde, Methyl Alcohol, Acetone, Fusel Oil, Argol, Starch, Glucose, Invert Sugar, Lactose, and Wine. The addenda treat of "Detection of Gallisin in Beer," "Invert Sugar," "Outline Process for the Detection of Bitter Principles in Beer," "Method for Estimating Galactan," and the "Determination of Pentosans by Means of Phloroglucol." WM. L. DUDLEY.

LEHRBUCH DER ANORGANISCHEN CHEMIE. VON PROF. DR. H. ERDMANN in Halle. Mit 276 abbildungen und vier farbigen Tafeln. Braunschweig: Friedrich Viewig und Sohn. 1898. xxvi + 756 pp. Price, *M.* 18.

The author states in his preface that he has taken as his model in the making up of this volume the well-known "Lehrbuch der Chemie" of Gorup-Besanez, and that he would have

called it the eighth edition of that work were it not that the changed condition of the science since its publication has rendered necessary a fundamental rearrangement of the subject-matter. The arrangement adopted is that usually followed in works of this character; *viz.*, (1) eighty-one pages of an "Introduction to Chemistry;" (2) "The Non-metals (Metalloide)" of 420 pages; and (3) "The Metals," 217 pages.

Under the first division, after a very brief explanation of the Roman and Arabic systems of numbers, and of logarithms, two pages each of a four-place table of logarithms and antilogarithms are given. Then follows a discussion of the fundamental principles of the science, such as "The Three States of Matter," "The Kinetic Theory of Gases," the "Nature of Chemical Changes," the "Atomic and Molecular Theory of the Composition of Matter," "Practical Methods of Determining Molecular Weights," the laws of "Combination of Gases by Volume," etc. The discussion of these principles is well done, and is more extended than is usually found in treatises the size of this.

The author says (p. 82): "By far the greater number of the chemical elements are solid, more or less easily fusible bodies of high luster, exceedingly opaque, good conductors of heat and electricity," etc. "These elements we call metals." As the chemist in classifying the elements for his purposes places no emphasis upon these purely physical properties, it would seem better were they classed as metals or non-metals in accordance with their base-forming or non-base-forming characteristics.

In the descriptive part of the book, the name of each element is followed by its molecular formula, its synonyms, and a list of its prominent physical and chemical properties. Then follows the occurrence of the element, its method of production, properties, and the properties of its inorganic compounds, and well illustrated directions for performing the most important laboratory experiments. Thirteen pages of text are devoted to helium and argon with illustrations of the apparatus for isolating them and examining their spectra, while a supplementary note on page 756 announces the discovery of crypton and neon. The structural formulas of many compounds are given, and molecular proportions are invariably expressed in chemical equations.

The "periodic law" is discussed in less than four pages near the end of the volume, and no mention is made in the descriptive part of the book of its aid in a rational system of classifying the elements. This neglect will appear to many chemists as a mistake of the author greatly to be regretted. Electrochemistry, the theory of solution, and ionization are also very briefly treated. The volume closes with a table of various distances, wave-lengths, etc.

The illustrations are numerous and excellent, and many of them are new to text-books of chemistry. The four lithographic charts of colored spectra are much superior to those usually published.

The work, taking it all in all, is an excellent one, and will be heartily welcomed by all who are interested in a wider diffusion of a knowledge of chemical science. W. W. DANIELLS.

PRELIMINARY REPORT OF AN INVESTIGATION OF RIVERS AND DEEP GROUND WATERS OF OHIO AS SOURCES OF PUBLIC WATER SUPPLIES. By the State Board of Health. 1897–1898.

Early in the report we find the very apt remark, that the examination of one or two samples of water taken from a stream, may give but little information as to its fitness for domestic use; and that, before deciding upon a proposed source for town supply, a much more comprehensive study, extending throughout the year, is imperative.

It is gratifying to note that "the Board has begun an investigation which it hopes to continue until the condition and liability of pollution of all important sources of public water supplies in Ohio, shall have been satisfactorily examined." Would that more states followed this excellent example!

The section, by Mr. Allen Hazen, devoted to "stream pollution," shows that most of the larger streams of the state are used for public supplies; that all of them receive a notable addition of sewage, and that the waters of such streams, below the sewage outfalls, are unwholesome.

Prof. N. W. Lord contributes a voluminous report upon the chemical examination of the waters of the Scioto, Olentangy, and Mahoning Rivers, which is followed by the bacteriological examination of the same waters by Prof. A. M. Bleile. Each of these investigators resorts to the graphic form to illustrate his