

The translation has, obviously, been made with much care. Some hours of turning the pages have discovered no mistranslations more serious than optional for arbitrary; vaporization for boiling; and anthracite for bituminous. "Boron occurs only trivalent," and "simpler constructed," are samples of the worst of the not too numerous faults of style. It is chiefly in the connections between two sentences or parts of sentences, in the use of but, or however, or on the contrary, that translation betrays itself. This is by no means faint praise; the translator is to be congratulated on having successfully and well completed his task.

Errors of fact are few. The temperature at which water has a density the same as at zero is made 9° instead of 8° ; the density of ice at zero is made 0.93, which is a survival. Such trifles are inevitable, and that there are no more is high praise. But there is one respect in which the translator should revise the language of the original. Wherever ratios and proportions are mentioned, as in discussions about the atomic theory, or about densities and molecular weights, statements are made, some of which are erroneous and some vague and obscure; this, too, in regard to a subject where the utmost clearness and accuracy are none too much for the student. Page 13, "Only a definite quantity by weight * * * can take part, etc." This is too obscure a way of saying that the quantities of the two elements bear a definite ratio to each other. Page 11, "These proportions by weight * * * are always a whole multiple of the lowest quantity by weight, etc." A proportion or ratio is made a multiple of a weight, and the phrase *integral* multiple excludes ferric oxide from the list of compounds. Page 26, ammonia "has the specific gravity 17.07 with respect to oxygen taken as unity"; and in other sentences the molecular weight of oxygen is said to be the unit of molecular weights. It is, of course, intended that the molecular weight of oxygen is the *basis* and that one-sixteenth of the molecular weight of oxygen is the *unit* of molecular weights. It is to be hoped that a second edition will soon give opportunity to revise statements of the kind described.

The printer has done his work well. The page is attractive, the type clear and the paper satisfactory.

EDWARD W. MORLEY.

TRAITÉ D'ANALYSE DES SUBSTANCES MINÉRALES, PAR ADOLPHE CARNOT.
Tome second. Metalloïdes. Paris: V^o Ch. Dunod, Éditeur. 1904.
821 pp.

The first volume of this work, which appeared in 1898, was devoted to an unusually detailed discussion of the methods of quali-

tative chemical analysis and of those types of procedure in quantitative analysis which are of general application. The present volume deals with the specific methods of determination of the metalloids under which the author includes hydrogen, oxygen, nitrogen in its various compounds, the argon group, carbon, its oxides and other important compounds, the halogens, sulphur, selenium, tellurium, phosphorus, arsenic, boron, silicon, titanium, tantalum, niobium, tungsten, molybdenum and vanadium. For each of these elements, and for most of the compounds, there is also given a statement regarding the occurrence in nature, the methods of qualitative detection and, in the case of the elements, the properties of the principal compounds, especially of the oxides.

The value of a treatise upon analytical chemistry of the magnitude of the present work should lie largely in the assistance which it affords the analyst in the selection of reliable methods from the bewildering variety presented in the manuals and journals, as well as in the readiness with which it directs the reader to original sources of information. Of the importance to chemical literature of Professor Carnot's work there can be no question, and the present volume presumably represents his preferences with respect to methods which, as the result of his experience, are surely entitled to respect. One can hardly escape the impression, however, that there is an over-preponderance of French authorities among those cited, or avoid the wish that the author had been willing to discuss the procedures somewhat more critically, and that, instead of giving only the name of the investigator to whom special procedures are to be ascribed, specific references to journals or manuals had been more frequently given. The omission of any authority for the table of densities and contents of sulphuric acid (page 447), or any statement as to whether the gravities are referred to water at 4° or 15° is surely unfortunate. Cross references throughout the volume itself would also add much to its usefulness. For example, one finds on page 421 a procedure for the determination of sulphur in pyrite by an oxidation method, but the difficulties encountered in the precipitation of barium sulphate in the presence of iron are not discussed until page 453 is reached and then under the heading "Soluble Sulphates." The work of Lunge is there referred to only briefly, and one is surprised to find no reference to that of Küster and Thiel. Indeed, no application of the ionic hypothesis appears to have been made throughout the volume.

But the impressions of painstaking thoroughness and evident mastery of his subject, displayed by Professor Carnot, in the first volume of this treatise are also evident in this, its successor, especially in the wide range of procedures presented and their applications to minerals and mineral products. Both volumes constitute valuable additions to our authoritative reference books and it is to be hoped that the author will find the time and strength to complete the third volume in the near future. H. P. TALBOT.

DIE CHEMIE DER ZUCKERARTEN. DRITTE VÖLLIG UMGEARBEITETE AUFLAGE. VON PROF. DR. EDMUND O. VON LIPPMANN, Direktor der Zuckerraffinerie Halle zu Halle. Braunschweig : Friedrich Vieweg und Sohn. 1904. Price, bound, 34 marks.

The third edition of this standard work appears in two volumes, numbering in all about 2,000 pages, which is nearly twice the size of the older work of 1895. Comparing the two editions one is impressed with the large amount of new material which has been added to our knowledge of sugars during the past decade. The work of revision and enlargement has been most thoroughly accomplished, bringing the work completely abreast of the times.

The author has accorded the chemistry of the different sugars his usual exhaustive treatment, approaching the subject from all standpoints—the general, analytical, physical, biological and industrial. The work will, therefore, possess an interest, not only for the specialist in sugar chemistry, but also for those engaged in other fields. The food chemist, the mycologist and bacteriologist, the agricultural chemist, and those interested in the technical sides of the sugar and fermentation industries will find the work invaluable.

The general method of treatment, laid down in the previous editions, has been followed throughout, the author holding fast to the principle of making the book purely a treatise on sugars, giving only such attention to allied compounds and derivatives as may be necessary to a thorough understanding of the subject. While this plan of treatment is not so comprehensive as that adopted in some other works, such as Tollens' "Handbuch der Kohlenhydrate" and Maquenne's "Les Sucres," where the various alcohol and acid derivatives of the sugars are given individual attention, the limitation is nevertheless a wise one. In a work of such special character the boundary lines must necessarily be closely drawn.

The first volume of the new book is devoted entirely to the monosaccharides, beginning with the dioses and passing up the