(which it is devoutly to be hoped may not gain a foothold in this country), but it is held in the background and is not utilized effectively.

Many details are highly commendable. There are numerous excellent problems and the historical sources are often mentioned. This adds interest, and simultaneously teaches a little of the history of chemistry. The Latin and Greek derivations of new words are always given,—without doubt the best way to impress their meaning on the memory. The line drawings of apparatus are unusually clear and instructive, and there are but few misprints; the reviewer noticed only three. A fairly good index completes a book well worth reading. S. LAWRENCE BIGELOW.

Die Chemische Affinität und Ihre Messung. By DR. OTTO SACKUR, Privatdozent, University of Breslau. Vieweg & Sohn, 1908. viii + 129 pp.

This volume is one of the monographs of the series called "Die Wissenschaft" and is intended to present the problems of chemical affinity and the methods for attacking them in a form convenient, compact and intelligible to all classes of chemists. The treatment of the subject on the basis of the rigorous definition and formulation of chemical affinity as a thermodynamic entity (van't Hoff's definition making the maximum work which a reaction can produce the measure of the affinities involved) is up-to-date, thorough and perspicuous. To any one interested in this most fascinating field, containing one of the ultimate goals of all chemical effort, the present book will serve as good introduction to, and will give a convenient survey of, the subject.

On p. 71, line 18, in the calculation of the equilibrium constant for potassium sulphate and potassium carbonate in contact with the corresponding barium salts, by a printer's error the concentrations of the non-ionized potassium salts are spoken of instead of the ionized parts. The degrees of ionization should also have been calculated with the aid of Arrhenius' theory of isohydric solutions. J. STIEGLITZ.

Laboratory Manual of Qualitative Analysis. By WILHELM SEGERBLOM, A.B., Instructor in Chemistry at the Phillips Exeter Academy. Longmans, Green & Co., 1908. xiii + 136 pp.

This manual presents the method of teaching qualitative analysis that is said to have worked well with the classes at the Phillips Exeter Academy. The analytical methods are the standard ones in general use, the best works on this part of qualitative analysis having been ably and conscientiously used. The directions are clearly stated, with full details. The theoretical treatment of the subject is extremely meagre and unsatisfactory. No use is made of the rôle played in analytical reactions by the laws of equilibrium or of the application to analysis of the conclusions of the modern theories of solutions. The insight into the chemistry of the reactions is necessarily defective, as a consequence.

Many pages are devoted to reaction equations, which should in the most part have been left to the student to work out. There seems to be little to stimulate the chemical imagination of the student, or to arouse any eager desire for a more advanced and penetrating study of chemistry, all of which could and ought to be accomplished in qualitative analysis without any loss, but rather a gain, of reliability. The personal influence of the instructor may accomplish in part, at least, what appears to be missing in the spirit of the book. J. STIEGLITZ.

Outlines of Qualitative Chemical Analysis. By FRANK AUSTIN GOOCH, Professor of Chemistry in Yale University and PHILIP EMBURY BROWNING, Assistant Professor of Chemistry in Yale University. New York, Wiley & Sons; London, Chapman & Hall, Limited, 1906. vi + 145 pp.

This book, according to the preface, forms "a brief outline of methods in qualitative analysis, the outcome of many years' experience in teaching college. While it has been prepared to meet the requirements of that larger class whose concern is chiefly with the disciplinary side . . . . . the needs of the specialist in exact analysis have likewise been considered." As a short text on systematic analysis, a book emanating from the above authors could not be other than reliable, exact and clear in practical detail: Some interesting departures from common procedure seem worthy of more general adoption and some methods have been made more exact and reliable in execution. The theoretical treatment is exceedingly slim and is practically limited to a brief introductory chapter, in which it is satisfying to find emphasis laid on the reversibility of analytical reactions and the rôle played by the law of mass action in developing a correct analytical procedure. But the student will look in vain for any detailed application of the law on the basis of the modern views concerning the nature of solutions. It is the experience of some that such a theoretical treatment not only greatly increases the interest of the student and enlarges his chemical horizon, but it also enhances very much the disciplinary value of the study by the greater demand made on a student's thinking power and logic, rather than on memory alone. In the proper hands, with a better scientific understanding, gain rather than loss in analytical reliability should also follow.

Pages of equations are given in the book which, to a very large extent, should better be left to the student to work out on the basis of general theoretical instruction. J. STIEGLITZ.

Qualitative Analysis, vom Standpunkte der Ionenlehre. DR. WILHELM BÖTTGER, Privatdozent und Oberassistent am Phys. Chem. Institut der Universität Leipzig. Second revised and much enlarged edition. With 24 illustrations, a table of spectra, and separate tables for use in the laboratory. Leipzig: Wilhelm Engelmann, 1908. xvi + 524 pp. Price, 10 marks.

In this book we have a very thorough and elaborate presentation of the subject of qualitative chemical analysis. It includes both the