by freezing- and boiling-point methods, toxicological analysis, gas analysis, oil analysis, preparation, analysis and testing of the coal-tar dyes.

When one takes into account the wealth of material compressed into a little more than 500 pages, it is obvious that the treatment cannot be critical nor the directions under each analysis sufficiently explicit to be of value to the student. It would be a good book from which to cram for an examination, and to the chemist it will be a useful book as an index, and outline of the principal processes of analytical chemistry and chemical technology. *Et praeterea nihil.* JAS. LEWIS HOWE.

FIRST BOOK OF QUALITATIVE CHEMISTRY, FOR STUDIES OF WATER SOLUTION AND MASS ACTION. BY ALBERT B. PRESCOTT, PH.D., Director of the Chemical Laboratory, and EUGENE C. SULLIVAN, PH.D., Instructor in Analytical Chemistry, in the University of Michigan. New York: D. Van Nostrand Company. 1902. 148 pp. Price, $1.50.

The plan of the authors of this, the eleventh edition of Professor Prescott's "First Book of Qualitative Chemistry," is given in the preface as follows:

"To enable the beginner in the qualitative laboratory to deal with chemical change in the light of the present studies of *water solution* and of mass action has been the main purpose in preparing this edition. With this intent the little book has been written anew throughout. It was first published by one of the authors in 1879, and designed then as now for classes taking a short course in qualitative practice."

The introduction gives 12 of its 24 pages to such topics as electrolytic dissociation, chemical equilibrium and hydrolysis. If some of these subjects could have been presented as simply as the other topics in the introduction, the book would have been less open to the criticism that the study of qualitative analysis is rendered unnecessarily difficult by presenting it from the standpoint of the dissociation theory. A number of strong arguments against this method of presentation may be given, but the question is not one that can be settled outside the laboratory. The burden of proof rests with the innovators and the present volume will be welcomed as another contribution toward the solution of the problem.

Aside from the debated question, the book has much to commend it. The matter is well arranged. The directions for the study of each analytical group, given under the heading "exercises with the ions," are admirable. They include such instructive experiments as the determination of the delicacy of the various separations and tests.

There are very few inaccuracies in the book. On page 51 in discussing the reduction of compounds of arsenic by means of potassium hydroxide and aluminum, it is stated that phosphoric acid interferes with this test for arsenic through the formation of phosphine. THEODORE WHITTELSEY.

LOGARITHMISCHE RECHENTAFELN FÜR CHEMIKER. VON F. W. KÜSTER. Dritte Auflage. Leipzig: Verlag von Veit and Co. 1902. Price, M. 2.00.

The success of this little book, as shown by the appearance of a second and third edition within a few years, is well deserved. It contains five-place logarithms and four-place mantissas; tables of atomic weights with multiples and logarithms; tables for the calculation of analyses; for the calculation of nitrogen and other gases; constants for molecular-weight determinations; a table for the determination of the volume of a flask from the weight of water or mercury which it contains at 18°; electrochemical constants; solubility of some substances at 15°; and tables for the preparation of normal solutions. The atomic weights used are the most recent, on the basis of O = 16. Unusual pains seems to have been taken to secure accuracy. W. A. N.

THE ANALYSIS OF STEEL WORKS MATERIAL. BY HARRY BREARLEY AND FRED IBBOTSON. Longmans, Green & Co. 501 pp. Price, 14 shillings.

This book is divided into thirteen parts and an appendix. They comprise: I. The Analysis of Steel; II. The Analysis of Pig Iron; III. The Analysis of Steel-Making Alloys; IV. Rapid Analysis at the Furnace; V. The Analysis of Ores; VI. Analysis of Refractory Materials; VII. Analysis of Slags; VIII. Analysis of Fuel; IX. Boiler Water, Boiler Scales, etc.; X. Analysis of Engineering Alloys; XI. Micrographic Analysis of Steel; XII. Pyrometry; XIII. Miscellaneous Notes; Appendix, Bibliography of Steel Works Analysis.

The authors state in their preface that they "have dealt with