

or to the presence of other substances which the methods of purification thus far developed do not wholly remove.

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CORRECTION.

On page 1231, of the June number, in the first column of Table I, read "Conc. KCl" instead of "Conc. HCl."

NEW BOOK.

Qualitative Analysis. Vol. I of Analytical Chemistry, Based on the Eighth Edition in German by F. P. TREADWELL, PH.D. (Polytechnic Institute of Zürich). Translated and Revised by WILLIAM T. HALL, S.B. (Massachusetts Inst. of Technology). 4th Ed. xiii + 538 p. New York: John Wiley & Sons, Inc. Cloth, \$3.00.

The fourth edition of this well-known text on qualitative analysis merits favorable reception as a thorough and convenient laboratory guide. Treadwell-Hall always has been a favorite text, both for the student and the practical chemist, combining, as it does, compactness with sufficient detail. It is not too unwieldy for the student who wishes to go somewhat below the surface in this subject and still covers the ground sufficiently well to meet all the usual requirements of a reference text.

The scope and volume of this edition is, in general, the same as that of previous editions. The introductory or theoretical part covers 75 pages, 117 pages are devoted to the reactions of the cations, 138 to those of the anions, 32 to systematic analysis and 64 to the reactions of the rarer elements.

In revising the book for the 4th ed. Professor Hall has rewritten, and materially added to, the theoretical portion in particular. As stated in the preface, the text is not a literal translation of the German "Treadwell" although it is kept along the same general lines, and in sympathy with the views of Professor Treadwell. Other well-known texts, as Noyes, Stieglitz, Böttger and Ostwald have been drawn upon and indebtedness to these authors is acknowledged.

The theoretical portion is furnished with valuable tables (solubility products, oxidation potentials) and examples in connection with the discussion, which is clear and to the point. The present reviewer hails with pleasure the complete adoption, in this text, of the valence method for balancing oxidation and reduction equations. While there is room for discussion, in general, of the question whether oxidation can *actually* be represented by simple electronic transfer in every case, it is obvious in many cases, and probable in the majority, that this is the actual mechanism. At all events, whoever has had occasion to fight the bug-bear of oxidation and reduction reactions on the part of students, employing long-

winded and usually absolutely hypothetical component reactions, is likely to favor the much more elegant and direct valence-method which concerns itself with nothing else than the actual changes shown. With another detail of the text, namely, the adoption of specifically coined nouns for the various ions, the reviewer cannot find himself so much in sympathy. The German language, from which this usage is copied, lends itself admirably by form and custom to the coining of compound nouns such as "chlorion" and "iodion" but the English language does not lend itself in the same manner to this process and such terms as "diferrion," "triferrion" and "chlorosion" seem exotic and confusing instead of a simplification. In part this is also due to the fact that in English the ending "ion" is so frequently used in another connection. To exaggerate, a complex ion is thus logically a "complexion;" similar confusing terms are possible. This all, is, however, only a matter of personal preference, which will be decided by custom.

More space is devoted in this text to the reactions of the "acids" than to those of the "metals," which is not the usual practice, but is a step in the right direction. This portion of qualitative analysis usually receives short shrift in most texts in comparison with the importance of the material. The writer of this believes that the preponderance of attention given to the cations is the result of tradition and the difficulty of satisfactorily treating the anions, rather than a question of importance. The classification of the acids given in the text is the one most commonly used, that of Bunsen in 1878. The amount of space devoted here to the acids is perhaps an indication that in the future a satisfactory method for the systematic separation of the acids will be included in such works. One quite satisfactory scheme has already been devised by A. A. Noyes.

The mechanical details of the book are good and misprints are few (p. 35 chloride instead of chlorate, and 4 instead of 3), the type is clear and the illustrations well gotten up.

Even the most modest chemical library will find this volume a necessary addition.

H. C. P. WEBER.