

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 WHITTELEY.

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

the analysis of steel works materials on such lines as could profitably be followed in a busy works laboratory," and that they "believe that the special standpoint from which the book has been written makes it no worse a text-book for technical schools and colleges." The processes given in the books that they have seen either, "(1) are too long and laborious, (2) require too delicate manipulation, (3) are too scanty in their treatment of the newer materials of steel-making, or (4) are not sufficiently accurate."

A series of methods which are not too long and laborious, do not require too delicate manipulation and yet are sufficiently accurate, would indeed be a boon to the profession and would deserve our gratitude and win our admiration. Careful study fails to show a single original method which answers this description or one which is in the smallest degree an improvement on those in use in our American steel works.

The descriptions of the methods for the analysis of steel are generally extremely sketchy and usually lack the details which would make them useful to the student.

For the determination of carbon the authors seem to favor direct combustion of the finely divided sample at a high temperature in a current of oxygen. They recommend sieving the sample to obtain the fine portion and claim that the fine and coarse portions contain the same percentage of carbon. This is contrary to the experience of many skilled analysts. A volumetric method which consists in oxidizing the carbonaceous residue with sulphuric acid and a weighed amount of bichromate, titrating the excess of chromic acid and calculating the carbon is certainly novel. Red lead is recommended as the best reagent for mixing with refractory alloys, such as ferrotungsten, ferrosilicon, etc., although they consider that bismuth trioxide would be preferable but for the price. No description is given of the Eggertz color method. For manganese the bismuthate process is evidently favored. It is an interesting process with points of decided merit.

Many methods are given for the determination of phosphorus but the one recommended by the authors consists in separating the phosphorus as phosphomolybdate, filtering, dissolving in ammonia, acidifying with hydrochloric acid, precipitating with lead acetate, filtering and weighing the lead molybdate, from the

weight of which the phosphorus is calculated. The authors do not refer to the use of the reductor with amalgamated zinc and give no details of the titration with caustic soda, the two methods most largely in use in this country.

The analysis of "Steel-making Alloys" is treated much more satisfactorily, and supplies a want which has existed ever since these alloys have come into general use.

The portion of the book treating of the "Micrographic Analysis of Steel" is clear and well written and is illustrated by well-chosen sections.

An appendix of 145 pages contains "A Bibliography of Steel Works Analysis" by Harry Brearley, which appeared in the *Chemical News*. The references are to English journals only. The other sections of the book call for no particular notice.

The text is occasionally marred by the use of such expressions as "weigh into", and of such words as "filtrable" and "combusted".

The book is clearly printed on excellent paper and is, among works on chemistry, the most creditable specimen of the book-makers' art that has been issued from the English press for some time.

It contains a full table of contents and an index.

A. A. BLAIR.

INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE. First annual issue. CHEMISTRY. Part I. London: Harrison and Sons, 45 St. Martin's Lane. Price, 21 shillings.

The Royal Society considered, about the year 1893, the advisability of printing a complete index of current scientific literature. It was hoped to do this by international cooperation; therefore, a large number of representative bodies and individuals abroad were consulted. After several meetings of accredited representatives it was concluded to proceed with the publication of such an index. Seventeen branches of science are included in this catalogue. Each complete annual issue will thus consist of seventeen volumes. The price of the set will be about \$90. Separate volumes will be sold. The first part of Volume D, devoted to chemistry, has just appeared. It will be followed shortly by a second part. This first volume consists of three sections: (1)