

high value set on "teachableness" is due, sometimes, as much to consideration for self as for students.

But the reviewer does not wish to be misunderstood, the good points of the book overbalance those which do not happen to coincide with his own, perhaps peculiar, notions, and the proof of his appreciation is that he intends to recommend it as one of the two or three best elementary texts known to him.

S. LAWRENCE BIGELOW.

**Die Kathodenstrahlen.** By G. C. SCHMIDT. Prof. Phys. Univ. Königsberg. Second edition. Braunschweig: F. Vieweg und Sohn. 1907. 127 pp. Price, Mark, 3.60, bound.

This monograph, which forms No. 2 of the collection, *Die Wissenschaft*, gives a clear and concise account of our knowledge of the electric discharge in evacuated vessels. The book is intended for the non-specialist; the use of mathematics is almost wholly avoided; yet, by means of well chosen illustrations and ingenious analogies, the reader is easily led to an accurate understanding of this most fascinating subject. The topics treated include the nature of light and the luminous ether; the cathode rays, their production and behavior, together with an excellent critical discussion of the various hypotheses regarding their nature; the nature of the electron or corpuscle, its velocity, charge and mass; the Zeeman effect; the canal rays, etc. This little book is a welcome addition to the semi-popular literature of the corpuscle, the primitive unit of which all matter seems to be built up. HERBERT N. MCCOY.

**The Microscopy of Technical Products.** From the German of Dr. T. F. Hanausek. Translated by Andrew L. Winton, Ph D., with the collaboration of Kate G. Barber, Ph.D. New York: John Wiley & Sons. 1907. Svo, xii + 471 pages, 276 illustrations. Price, \$5.00.

This book which has enjoyed a well established reputation in the original is now presented to English readers in the work of Dr. Winton. While not dealing with chemical methods of identification, except incidentally, it nevertheless must possess no little interest for those chemists who are engaged in various lines of expert testing work in which recourse to the microscope is often absolutely necessary. The portion of the book which will be found the most useful to analytical chemists are the chapters on the starches, stems and roots and fruits and seeds. These are clearly written and illustrated.

The rapid extension of the national and state food and drug laws makes the kind of knowledge contained in this book especially valuable at the present time. The translator is at the head of the Government Food and Drug Laboratory in Chicago and has had a long experience in the line of work discussed in the book. From this practical experience he has been able to make more than a translation of it, as the numerous notes attest. The illustrations, essential in a work of this character,

are especially good. On the whole, the book can be heartily recommended.

J. H. LONG.

**Introduction to the Theory and Practice of Qualitative Analysis by Solution.** By F. W. MARTIN, PH.D., Lynchburg, Va. J. P. Bell Co. 1907. pp. 64. Price, \$0.75.

In this small guide to qualitative analysis the first three chapters are devoted to general matters related to the theory of solutions, such as osmosis, vapor pressure, ionization, chemical equilibrium, hydrolysis, etc. The fourth and fifth chapters deal with the classification of the bases and acids into groups. A few reactions of the members of each group are given. Chapters 6 and 7 give the systematic procedure for the identification of acidic and basic ions. Chapter 8 contains a list of 27 exercises to be carried out according to the directions given in the preceding chapters.

The appendix contains a list of reagents with brief directions for making them. It is not intended that the treatise should be used without the personal instruction of the teacher. As the author says in the preface, "He (the instructor) is the one indispensable feature of a laboratory."

EDWARD H. KEISER.

**Electro-Analysis.** By EDGAR F. SMITH. 4th edition revised and enlarged, with 42 illustrations. Philadelphia: Blakiston's Son & Co. 1907. Price, \$2.50 net.

Since the last edition of Professor Smith's book was published in 1902, the rotating electrode has been introduced into electro-analysis, with the result that in many cases the time required to complete an electrolysis has been reduced from hours to minutes. The present work is the first to give full details of the conditions under which satisfactory results may be obtained with this new tool, and is thus the only really "up-to-date" treatise on electro-analysis in existence.

Many of the new methods have been worked out in the laboratory of the author, and their accuracy and speed are attested by numerous trial analyses; particularly interesting are those in which both anion and cation are determined in a single operation with mercury cathode and silver anode.

In many instances, no doubt, the slower methods will still remain in use—to leave the current on over night is a very easy method of making an analysis—and the author has done wisely in retaining the descriptions of the older methods side by side with those of the new. One hundred and thirty pages have thus been added to the book; if in a future edition it should prove necessary to economize space, it might be a good idea to cut out the pictures on pages 64 and 97 in which a milliammeter worth thirty dollars or so is represented as tilted against an accumulator cell filled with sulphuric acid. There are laboratories where a student could get himself into trouble by attempting to carry this suggestion into practice.

W. LASH MILLER.