

others and points out the conditions under which various by-products are formed. Attention is called to the complexity of several reactions usually described in the text-books as comparatively simple. It is interesting to note in this connection the large number of cases in which ethyl alcohol is produced.

The book is not intended to be more than a suggestive compilation of results scattered through the recent literature, but as pretty full references are given it will be found useful to chemists and bacteriologists who desire to gain an insight into this important field of investigation, to which the author himself has made several valuable contributions.

J. H. LONG.

G. BUNGE'S TEXT-BOOK OF PHYSIOLOGICAL AND PATHOLOGICAL CHEMISTRY. Translated by F. A. STARLING and edited by E. H. STARLING. Philadelphia: P. Blakiston's Son and Co. 1902.

Bunge's text-book still remains the most popular book on the subject. The fourth German edition, from which the second English is translated, is not much enlarged over the previous editions of the work. However, Bunge's aim was to give the general principles of the chemical side of animal physiology and pathology, and in this he succeeded most brilliantly. There are only a few questions that the author discusses in greater detail, but those are chapters of such general interest, that every biologist will read them with great pleasure, whether he does or does not accept the conclusions of the writer. Such are the chapters on vitalism and mechanism, also the chapter on alcohol. The importance for the animal organism of the mineral constituents of food is discussed by Bunge more than it has been by any other writer. The book as a whole presents in a very interesting and comprehensive form the most obscure problems of physiology, and can be recommended to those who desire to gain a general knowledge on the subject.

P. A. LEVENE.

ELECTRO-CHEMICAL ANALYSIS. BY EDGAR F. SMITH. Philadelphia: P. Blakiston's Son and Company. 1902. 199 pp.

The earlier editions of Professor Smith's work on electrochemical analysis are so widely and favorably known as to render unnecessary any extended notice of this third edition, further than to call attention to the changes and additions that have been made by the author.

The chapters on sources, reduction and measurement of cur-

rent have been slightly changed, and descriptions of new forms of apparatus have been added. Several pages are then devoted to a most interesting and suggestive description of an electrochemical laboratory. Only a few alterations have been made in the historical section, but in the special part devoted to the determination of the metals the treatment has been greatly expanded. The references to literature that are here given under each heading have been brought down to date, and many new methods and improvements of old methods have been incorporated in the text. The chapter upon the separation of the metals has been entirely rewritten, and this part of the subject is presented in a most clear and systematic form.

Both the press work and the illustrations show decided advance over the earlier editions.

It is to be regretted that in a work otherwise so complete specific mention is not made of methods for the separation of certain of the metals through the maintenance of a constant voltage, for while it is true that up to the present time such procedure has not been so far developed as to be of material assistance to the analyst, it would yet be well to call the attention of the student to the work that has been done in this field and to the possibilities of its extension.

L. M. DENNIS.

A COURSE IN QUALITATIVE CHEMICAL ANALYSIS. BY F. P. VENABLE. Fourth edition, revised by ALVIN S. WHEELER. New York: University Publishing Company. 1902. 54 pp. Price, 60 cents.

The only novelty that the present edition of this book offers is the absence of any reference to recent theories of solution and chemical action. The authors believe, evidently, that qualitative analysis may be taught effectively in the old way.

The directions for the systematic examination of substances are given, clearly, but so concisely, that, without the constant help of an instructor, the student will fail to secure satisfactory tests and separations. This remark applies as well, however, to larger and more pretentious text-books, and the difficulty that it points out can not be easily avoided. An index would enhance the value of the book.

L. B. HALL.

RECIPES FOR THE COLOUR, PAINT, VARNISH, OIL, SOAP, AND DRY-SAL-TERY TRADES. Compiled by an Analytical Chemist. London: Scott, Greenwood, and Co. 1902. 336 pp. Price, \$3.50 net.

Books of this class serve two purposes: they supply information