

them; we doubt the statement that chloroform is the best known anesthetic. In most cases the manufacturing methods, because of their brevity, are of little value to the manufacturer and have no value to a teacher because they are not adapted to student laboratory work. To state that if a substance A be treated with B and C it is converted to D which on condensation with E gives F and the latter on heating is converted to G which on treatment with H gives I and on condensation with J gives K is not very enlightening to any one and could be omitted without being missed. Such statements appear frequently, another notable example being that "Thymol iodide is prepared by the action of iodine on thymol!"

The absence of American as well as other synonyms for some synthetics is noticeable. Cincophen, barbital, orphol, carbromal, calio-ben, croton chloral and others do not appear at all. Procaine, formin, holocaine, sajodin (spelled sojoidin and also sajoidin) are found only in the index or in the tables. Butesin is not described but butesin picrate is. Phenacaine is not mentioned.

The chapter on general anesthetics might be omitted since all the information given could be obtained from any good text. The most interesting new thing on this subject, the use of ethylene as a general anesthetic, is not mentioned. Only a few words are to be found on the chemistry of the large number of antimony compounds now in use. Considering the vast number of mercury compounds used in medicine the discussion of these, covering less than two pages, seems worthless. Any real information on these two topics must be sought for elsewhere. The same remarks apply to a somewhat less degree to the section on arsenicals.

Part 2, section 1, on drugs containing alkaloids presents very little if any new material. From the standpoint of the manufacturer or the teacher it would be far better for either to consult Henry, Pictet or other reference works then to depend on such an abridgment as this. Heroin and diacetylmorphine are not synonymous, heroin being the hydrochloride. The same remark applies to dionin which is not ethylmorphine but the chloride of it. The author fails to make this distinction in other places.

Part 2, section 2, deals with drugs not containing alkaloids. We have very little definite knowledge of the chemistry of such well-known drugs as digitalis and strophanthus and what

knowledge we have is in a very unsettled state. This may account for the author's formula $C_{44}H_{70}O_{13}$ for digitoxin, which does not agree with the one most frequently given and does not agree with the formula in the table on p. 152. The formulas for digitonin on p. 154 and in the table do not agree. The formula given for digitalin $C_{37}H_{58}O_{14}$ is not the commonly given one. French and German digitalin are not mentioned. Numerous other drugs are mentioned in alphabetical order about which practically nothing of a chemical character is known and many of them are of so little importance that they could well be omitted and more space devoted to such important topics as the arsenicals, antimony, and mercury compounds. Numerous animal drugs are discussed with very little reference to their chemistry, about which little is known, but in some cases extensive details of manufacturing methods are discussed which are valuable. This is particularly true in connection with insulin as much space is devoted to the commercial methods of isolation.

An appendix contains some lists of drugs with official, trade and chemical names and physiological action. These tables will undoubtedly prove of value for reference.

In addition to those mentioned above errors have been noticed as follows. The formula for salophen, page 22, is incorrect. Caffein, "hei ne," page 111, should no doubt read caffeine, thein. The formula for gaultherin, page 161, is incorrect. The formula for butyn, page 30, is incorrect and furthermore butyn is the sulphate of the base mentioned and not the base itself. The reference on p. 13 should read Rising and Stieglitz and not "Rising and Streglitz."

The book might prove of value to one who does not have access to the books mentioned in the introduction or to one who wishes to know only the structural formulas, a few of the properties, physiological action, synonyms, or who wishes only to gain some general information about certain drugs.

A. H. CLARK.

Vitamins, a Critical Survey of the Theory of Accessory Food Factors. By Ragnar Berg Translated from the German by Eden and Cedar Paul. Octavo. 415 pp. Alfred A. Knopf, 730 Fifth Ave., New York City.

From the days of the great Liebig down to the year 1910, only four classes of nutritive substances were recognized: proteins, fats,

carbohydrates and salts. It is true that Liebig already drew attention to the fact that development cannot run its normal course either in plants, or in animals, should the supply even of one of the necessary constituents of a complete diet be inadequate. Max Rubner, director of the Hygienic Institute at Berlin, took a great step forward when he proved that it is not enough to furnish a sufficiency of protein, and that our aim must be to provide the body with the requisite modicum of energy. However, in 1910 the epoch-making discovery was made that, besides the four primary food-stuffs, in addition to a sufficiency of calories, the diet must contain quantities of certain substances which are vitally necessary to growth, strength and health. Dr. Ragnar Berg, director of the Laboratory of Physiological Chemistry at Weisser Hirsch, near Dresden, a renowned health resort, in the book before us considers the whole subject of dietetics in the light of our growing knowledge of these "Accessory Food Factors." These have been named "Vitamine" in 1913 by Dr. Casimir Funk, one of the pioneers in these investigations.

As all this knowledge is scattered in thousands of fugitive essays in the periodical press, in many lands and many languages, Berg's masterwork now before us is the first comprehensive treatment of the whole subject in book form. It is indispensable, not only to physiological chemists and specialists in dietetics, but to all medical practitioners, to students of hygiene, and last, but not least, to scientific pharmacists!

Anleitung zum Glasblasen. Von Dr. H. Ebert. 5 Auflage von Dr. phil. et techn. F. Hauser. 110 pp. MK. 5—Verlag von Jok. Ambr. Barth, Solomon str. 18. b. Leipzig.

This popular Handbook of Glass-blowing was first published in 1887 by Dr. Hermann Ebert, then Professor of Physics at the Technical High School in Munich. Upon his death in 1913, the present fifth edition was revised by Dr. F. Hauser, Professor of Physics, University Erlangen.

Glass-blowing is neither very easy nor very difficult. Some operations are so easy that the youngest laboratory boy should be able to carry them out. Other operations are so difficult that years are needed to train eye, hand and judgment in order to accomplish them successfully. However, the greater num-

ber of scientific needs lie between these two extremes. Yet a surprisingly large number of laboratory workers fail even to join a glass tube or make a T piece that will not crack spontaneously. The fault is rather one of understanding than of lack of ability.

The book before us with its 110 pages and 73 illustrations will be a great help to those interested in this subject and we can highly recommend it.

Kurzes Lehrbuch der Analytischen Chemie. In Zwei Bänden. Von F. P. Treadwell, Prof. analyt.-Chemie an der Eidgenössischen, Technischen Hochschule Zürich. Verlag Franz Deuticke, Leipzig and Wien.

I. Band: Qualitative Analyse. 13 Auflage, 540 pp.

This being the 13th edition, speaks for a well-deserved popularity. The book was originally devised and written in 1885 to meet the initial requirement of Dr. Treadwell's students. It is a credit to American science that this American chemist has been professor of chemistry at a Swiss University from 1882 until his death on June 24, 1918. Since then his son, W. D. Treadwell, followed in his footsteps.

One principal advantage of the book is the tables and charts showing the separation of the different groups of cations. It is a method which Prof. Treadwell has successfully used in his laboratory practice and by which students can readily learn the separation. Volume one also contains 29 illustrations and three spectra tables.

II. Band: Quantitative Analyse. 11 Auflage, 757 pp.

After a chapter "General Remarks" of 32 pages, the text is divided as follows:

1. Gravimetric Analysis of Metals and Metalloids.
2. Volumetric Analysis: Alkalimetry and Acidimetry; Oxidation and Reduction; Precipitation.
3. Gasometric Analysis.

This volume contains 131 illustrations and a number of tables in the Appendix as: Factors, Logarithms and Antilogarithms.

Treadwell's "Brief" Textbook of Analytical Chemistry is indeed a real contribution to this field of science. Treadwell is dead but his work and especially this book will live after him. As the author was a born American, his book should also become better known in America.

OTTO RAUBENHEIMER, Ph.M.