

20, 433 (1915); Levene and López Suárez, *Ibid.*, 25, 511 (1916); 26, 373 (1916); Levene and Senior, *Ibid.*, 25, 607 (1916);

10. Levene and Medigreceanu, *J. Biol. Chem.*, 9, 65, 375, 389 (1911); *Am. J. Physiol.*, 27, 438 (1911). Jones and co-workers, Various papers, 1904-1916; see Jones, "Nucleic Acids."

NEW BOOKS.

History of the Chemical Laboratory of the University of Michigan. By EDWARD D. CAMPBELL, Professor of Chemistry and Director of the Laboratory. 8vo. 166 pages. Published by the University, Ann Arbor.

Instruction in chemistry at the University of Michigan was inaugurated in 1844 upon the appointment of Dr. S. H. Douglas. Laboratory methods were introduced about 1853 being preceded, it would seem, by only Yale (1842) and Harvard (1851). The first building believed at the time to be unsurpassed by anything in the country was one story in height, had three rooms, and cost \$6000. The six illustrations show in a very graphic manner the method of growth by additions to the original building down to the time of entering the new laboratory in 1909. The main part of the book, 142 pages, is made up of a roster of all the men who have been on the instructional staff with a list of the scientific papers published by each. These titles from the analytical tables and classic text on qualitative analysis by Douglas and Prescott down to triphenylmethyl by Gomberg, 746 in all, bear an intimate relation to the development of the science of chemistry in this country.

S. W. PARR.

Chemical Discovery and Invention in the Twentieth Century. By SIR WILLIAM A. TILDEN, Professor Emeritus of Chemistry in the Imperial College of Science and Technology. xvi + 487 pp. Illustrated. London: George Rutledge and Sons, Ltd.; New York: E. P. Dutton and Co. Price, 7/6 net.

This extremely interesting book covers four divisions: I. Chemical Laboratories and the Work Done in Them. II. Modern Discoveries and Theories. III. Modern Applications of Chemistry. IV. Modern Progress in Organic Chemistry.

The first part includes a description of the laboratories of the Imperial College of Science and Technology, London, Harvard University, the University of Illinois, the University of Sydney, Australia, and the chemical laboratories of the Federal Polytechnic, Zürich, as illustrations of laboratories for instruction, and descriptions of the laboratories of the British School of Brewing, Birmingham, the Municipal School of Technology, Manchester, the Berlin Technology High School, Charlottenburg, and the Government Laboratory, London, as illustration of laboratories devoted to special purposes.

In the second part the Electric Discharge in Gases, Radium, Genesis and Transmutations of the Elements, Electrolysis, and Architecture of molecules, are among the topics considered.

In part three, which is devoted to Modern Applications of Chemistry, Hydrogen, Oxygen, Petrol, Dyes, Perfumes, Rubber, Explosives, and Fixation of Atmospheric Nitrogen, are among the more important topics presented.

In part four Sugar, Proteins, Natural Colors, and Enzymes are considered.

Every chemist will find in the book a large amount of interesting and valuable material, and the book has been well designed to give laymen, as well as to chemists, some idea of the marvelous developments of chemistry, both in its growing knowledge of the constitution of matter and in the almost unlimited variety of its practical applications in their contribution to the development of civilization.

W. A. NOYES.

Decennial Index of The Analyst, the Journal of the Society of Public Analysts and Other Analytical Chemists. Volumes XXXI-XL (1906-1915). Compiled by MURIEL A. BAKER. Pp. 733. Sold by Billing and Sons, Ltd., Railway Esplanade, Guilford, Surrey, England. Price, £1, 1s.

This index is divided into three parts, which are called (1) "The Authors Index," (2) "The Subjects Index," and (3) "Original Communications."

Part 3 is an author index of the papers read before, or communicated directly to, the Society of Public Analysts and other Analytical Chemists. These are also entered in Part 1.

Part 2 is not a subject index in the real sense but rather an index of words. Titles of papers and of abstracts are reproduced verbatim, entries being made for each "principal" word. Each entry has its own black-face title, which is followed by the rest of the paper or abstract title; the latter is rearranged, if necessary, to bring the word considered to be second in importance for the particular entry next to the entry title. This rearrangement is new for The Analyst indexes and is an improvement, as it considerably facilitates looking up references. It seems especially unfortunate, however, in a large index, such as this one, particularly since The Analyst is largely an abstract journal, that the "Subjects Index" should be an index of words, for word indexing has led to (1) the making of unnecessary entries under words which are not significant as far as the subjects involved are concerned, (2) the omission of entries in cases in which the titles of the papers or abstracts are indefinite or incomplete, and (3) the wide scattering of like subjects under different words with the same meaning. For example, different papers or abstracts have been indexed in some cases under "Density," in others under "Gravity," and in still others under "Specific Gravity." Similarly entries have been made under "Petroleum" and "Mineral Oil," under "Lactose" and "Milk Sugar," under "Sugar" (meaning sucrose), "Cane Sugar" and "Sucrose." Only an occasional cross reference is given as a partial remedy of this situation.

The type is large and good. In the references the year is given instead of the volume number, which should be a convenience to some. The fact that *The Analyst* publishes a considerable number of excellent abstracts and book reviews, in addition to original papers, greatly increases the value of this index as a reference book.

E. J. CRANE.

Handbook of Chemistry and Physics. A ready-reference pocket book of chemical and physical data. Fifth edition. Compiled from the most recent authoritative sources. The Chemical Rubber Co., Cleveland, Ohio. 414 pp. Price, \$2.00.

This handy book contains data in part of the same sort as those which are given in "Chemiker-Kalender," including Five-place Logarithms, Logarithms of the Trigonometrical Functions, Wire Tables, Comparison of Customary and Metric Units, Physical constants of inorganic and organic compound, Gravimetric factors, Densities of acids, bases and alcohol, Definitions and formulas of physical chemistry and physics and many other valuable tables of physical and chemical properties. It has the advantage over the "Chemiker-Kalender" that all is bound with a single cover. As the book is sold to Clubs of students at \$1.00 it should have a very wide sale in chemical laboratories.

W. A. NOYES.

Photographs of Crystallizable Chemical Salts. By ARTHUR W. DOUBLEDAY. Research Publishing Co., Boston, 1916. Price. \$6.00.

Extracts from the preface and the foreword show the author's purpose. "The photomicrographs shown between these covers were made as one of the steps in an endeavor to work out a method of determining the crystallizable chemical salts found in evaporated saliva during a salivary diagnosis, by means of microscopical comparison of known salts, evaporated from known chemical solutions, with unknown salts found in the evaporated saliva. No attempt has been made to exhaust the possible chemical combinations but rather to present typical crystalline forms of various salts known to exist in the body tissues and fluids under normal and pathological conditions, thereby placing at the disposal of the student of research auxiliary help toward the characteristics which confront him through the microscope."

There are fifty-seven plates containing one hundred and fourteen large photomicrographs, including those of many compounds which are used as reagents but not found in the body. Many of the plates are very good illustrations of the compounds specified, for example, those of sodium urate; on the other hand in that of ammonium chloride made by the reaction of ammonium carbonate and sodium chloride the principal objects seen are the crystals of sodium chloride. The magnification is chiefly 100 diameters but in some cases, as that of uric acid, it would seem that a higher one would have been better. Taken as a whole, however, the book may prove useful to the microscopist in the field for which it was planned.

E. W. ROCKWOOD.

Household Chemistry. By HERMANN T. VULTÉ, Ph.D., F.C.S., Assistant Professor of Household Chemistry in Teachers College, Columbia University. Easton, Pa.: The Chemical Publishing Company. 1915. Price, \$1.50.

This edition is much larger than the previous ones because of the inclusion of a larger amount of descriptive matter. It seems to the reviewer far more valuable than its predecessors. It is full of matter of great interest to the student of the science of the household whether his point of view be that of a member of a school of home economics or that of a chemist or that of a mere(?) householder. But "it is designed to meet the needs of secondary schools and colleges," evidently as a text book in a specific course covering one semester or an entire year. And it is perhaps an open question whether such courses are advisable. The author of this book advises that "a course in general chemistry of the most modern type" be required and one in organic chemistry advised as a preliminary to the course in Household Chemistry. Where both of these are taken, the need for the third course is questionable. The subject matter of the chapters on atmosphere, water, metals, glass, fuels, carbohydrates, fats, proteins, cleaning agents, analysis, and reagents is often quite fully given in such courses; that of the chapters on fruits, baking powders, tea, etc., ferments and preservatives, in the first food course. Even in high schools, where less chemistry is given, the facts herein contained can, to a large extent, be given as illustrative material in courses in chemistry and in food.

Some discussions are disappointingly brief, *e. g.*, that of hard and soft coal, which are dismissed with one sentence each; the ways of distinguishing cast and spun aluminum and differences in the usefulness of the two and of wrought and cast iron are not given, nor the changes in pectin, which is said merely to "gelatinize;" there is no warning about the dangers in the use of wood alcohol as a fuel and in home water filters; and no mention of the ways of obviating the flat taste of distilled water.

The advocacy of discontinuing the use of the word carbohydrates because it has lost its significance seems unfortunate. We still say oxygen though we know it is not "the acid former." There are too many duplicate words now. Heat *and* energy (p. 8) is especially unfortunate. Other such slips might be mentioned but the book as a whole is readable and full of matter valuable as illustrative material to teachers of chemistry and of food in high schools and colleges alike; and especially valuable as additional reading for students in such courses. RUTH WHEELER.