

Full attention is given in the revised work to many comparatively modern problems and processes such, for example, as the "cementing value" of soils and to the practical carrying out of the cementation tests; also to the increased use of the centrifugal machine in accelerating sedimentation, with a description of the most approved forms of machine. The importance of soil acidity in its influence on crop-producing power is also discussed, as well as the quantity and determination of phosphoric acid in soil waters. These are but a few of the newer topics treated.

The wonder is, however, not so much at the newer processes that have replaced the old during this twelve-year period between the two editions, but rather at the large number of old standard methods that have remained practically unchanged and are still in vogue.

The mechanical make-up of the revised work is much more convenient than the old, especially the feature of references by foot-note on the same page, rather than by being obliged to refer to the ends of chapters for authorities, etc.

ALBERT E. LEACH.

THIRD TREATISE ON THE EFFECTS OF BORAX AND BORIC ACID ON THE HUMAN SYSTEM. BY DR. OSCAR LIEBREICH. Translated from the German. London, 1906. J. and A. Churchill. Philadelphia: P. Blakiston's Son & Co. 70 pages, paper, \$1.75.

This pamphlet, as the title page explains, is called a "Critical Review of the Report of Dr. H. W. Wiley, Chief of the Bureau of Chemistry of the U. S. Department of Agriculture, to the Secretary of Agriculture," and is intended to throw doubt on the value of the experiments on the use of borax and boric acid as food preservatives, carried out some three years ago by the Department of Agriculture.

The author of the pamphlet has himself written several papers in which he defends the use of the borax preservatives, and his attitude in the present publication is distinctly hostile. The translation is said to have been made in the interests of the commercial concerns exploiting the use of borax and for this reason loses some of the value it might otherwise possess. It is possible that the translator is responsible for the peculiar arrangement and wording of the table of contents.

J. H. LONG.

NITRO-EXPLOSIVES: A PRACTICAL TREATISE CONCERNING THE PROPERTIES, MANUFACTURE AND ANALYSIS OF NITRATED SUBSTANCES, INCLUDING THE FULMINATES, SMOKELESS POWDERS AND CELLULOID. BY P. GERALD SANFORD, F. I. C., F. C. S. 2nd Ed. Revised and Enlarged. D. Van Nostrand Co. New York. Price, \$4.00 net.

This is a revised and large edition of a work which is well known by all workers in the explosives industries. Not only has the work been revised and enlarged, but it has also been considerably improved. The older edition was becoming out of date on account of the rapid developments in explosives. In the new edition the subject has been brought

well up to date, and the work will be welcomed by those interested in nitro explosives. Descriptions are given of the more important as well as the latest processes and apparatus. The entire work is remarkably free from errors.

Unlike most authors on technical subjects involving chemistry and chemical terms, the author has revised the chemistry as well as the technology of his subject. On p. 14 he calls attention to the correct name for "nitro-glycerine," namely **glycerol-tri-nitrate**. The green spots mentioned on p. 18 have been noticed in nearly all other glycerol-nitrate explosives; the reviewer has seen a number of glycerol-nitrate smokeless powders which were covered with green and white spots, the latter representing a later and more developed stage of decomposition; such powders would show, by the usual stability tests, their instability long before there is any indication of the spots.

Nikolajczak's statement (p. 41) with reference to glycerol di-nitrate has lately been confirmed by Dr. Volpert (*Z. ges. Schiess-Sprengstoffw.* May 15-07-p. 167.) who says his factory at Dortmund has succeeded in producing glycerol dinitrate pure and in large quantities and it is now used as a valuable basis for explosives.

On p. 50 the author calls attention to the correct chemical name for nitrated cottons, namely, **cellulose-nitrates**. On account of the many different formulas adopted for cellulose, and the fact that no relation sufficient for classification purposes, exists between solubility and per cent. of nitrogen, there is great confusion today in the classification and naming of cellulose nitrates. In a paper read before the Franklin Institute in 1903, the reviewer called attention to this confusion, and proposed the plan of classifying cellulose-nitrates according to their solubility in ether-alcohol and their nitrogen content; e. g., the designation "pentanitrate" is meaningless, unless we are also told that cellulose is meant with 12 carbon atoms: for practical purposes, the designation "**cellulose nitrate, 99 per cent. solubility ether-alcohol, and 12.75 per cent. nitrogen**" is a complete description and as a matter of fact is used in many specifications.

On p. 180 it should be noted that the U. S. Navy makes most of its powders at Indian Head, near Washington. The composition of Maximite (p. 191) is a secret; it contains a nitro-compound, but not gun cotton as its base; it is the principal high explosive of the U. S. Army, and together with "Explosive D" (so named after Major Dum, U. S. Army) deserves perhaps more than mere mention.

The "aliquot part evaporation" method (p. 214) for determination of solubility is not used in U. S. Ordnance laboratories; there are too many chances for error and it is extremely difficult to dry a colloid to constant weight without causing decomposition. At present solubility determinations are made indirectly by direct determination of insoluble and un-

nitrated cottons. The section on stability or heat tests is perhaps not as complete as the importance of this subject warrants. The official or government tests of France, Germany and U. S. are barely mentioned. The 115° test credited to the reviewer (p. 269) is officially used and known as "the Ordnance Department 115° Test." As a whole the book is excellent; the reviewer has used it repeatedly and with satisfaction, both for reference and as a working guide in the laboratory.

ALBERT P. SY.

RECENT PUBLICATIONS.

ABEGG, R. THE ELECTROLYTIC DISSOCIATION THEORY. Translation by Carl L. von Ende. New York: J. Wiley & Sons. 1906. 7 + 180 p. \$1.25.

BEAN, P., AND SCARISBRICK, F. THE CHEMISTRY AND PRACTICE OF SIZING: A Practical Treatise on the Sizing of Cotton Yarns, Tape Sizing, etc. Manchester, Eng. 1906. 597 p. \$8.40.

BIRCHMORE, WOODBRIDGE HALL. THE INTERPRETATION OF GAS ANALYSIS: Explicit directions for making the deductions needed for utilizing the information given by a Chemist's report of an analysis of illuminating gas, in respect to the problems daily demanding solution in business life. New York: D. Van Nostrand Co. 1906. 16 + 75 p. \$1.25.

BUSKETT, EVANS W. FIRE ASSAYING. A Practical Treatise on the Fire Assaying of Gold, Silver, and Lead, including description of the Appliances used. New York: D. Van Nostrand Co. 1907. 105 p. \$1.25.

BOEKMANN F. LE CELLULOÏD. CAMPHRE, CELLULOSE. NITROCELLULOSE. CELLULOÏD. Traduit de l'Allemand et augmenté d'un chapitre sur la Soie artificielle par G. Klatz. Paris: 1906. 126 p. M. 4.

CELSUS, A. C. ÜBER DIE ARZNEIWISSENSCHAFT, in acht Büchern. Uebersetzt und erklärt von E. Scheller. 2 Auflage. Braunschweig: 1906. 40 + 862 ss. Mark 18.

DANNEEL, HEINRICH. ELECTROCHEMISTRY. I Theoretical Electrochemistry and Physico-chemical Foundations. Translated by Edmund S. Merriam. New York: J. Wiley & Sons. 1906. 7 + 181 p. \$1.25.

DAVIS, WILLIAM M. FRICTION AND LUBRICATION. 2nd Edition. Easton, Pa. The Chemical Publishing Co. 1906. 265 p. 69 illustrations \$2.00.

EKECRAUTZ, T. KART LAROBOK I ORGANISK KEMI. Stockholm: 1906. M. 6.

FINDLAY, ALEX. PRACTICAL PHYSICAL CHEMISTRY. New York: Longmans, Green & Co., 1906. 12 + 282 p. \$1.20.

GENTELE, J. G. LEHRBUCH DER FARBENFABRIKATION. Anweisung zur Darstellung, Untersuchung und Verwendung der im Handel vorkommenden Malerfarben. 3, umgearbeitete und vermehrte Auflage. Band I: Die Erdfarben. Braunschweig: 1906. 8 + 157 ss. M. 5.

GERTZ, O. STUDIER ÖFVER AUTHOCYAN. LUND: 1906. 82 und 412 pg. M. 10.

GOERENS, P. EINFÜHRUNG IN DIE KETALLOGRAPHIE. Halle: 1906. M. 10.

GUTTMANN, O. HANDBUCH DER SPRENGTECHNIK. 2 Auflage. Braunschweig: 1906. 11 + 99 ss. M. 6.

HAMMARSTEN, O. LEHRBUCH DER PHYSIOLOGISCHEN CHEMIE. 6, völlig umgearbeitete Auflage. Weisbaden: 1907. 8 + 836 ss. mit 1 Spektraltafel. M. 19,60.

HEALD, WALTER. THE ABSORPTION OF HYDROGEN BY METAL FILMS. Lincoln, Neb., University of Nebraska. 1906. 283-291 p. 8vo. \$1.00.