

book as a whole, and all who expect to find an up-to-date treatise are bound to be disappointed. Much of the first volume is the unaltered translation of Johnson and Allen; indeed, many of the plates used in this volume are those used in an edition purchased in 1883, while many of the cuts are very badly reproduced, being inferior to those in earlier American editions. It would seem strange, if not inexcusable, to find in a work bearing the date 1904 on its title-page a cut of an old charcoal furnace referred to as "a common combustion furnace" (p. 75, Vol. I), and equally surprising to find no reference to such a determination as that of zinc in the form of phosphate, were it not that this edition must be regarded as a reproduction of an honored (but decidedly old) treatise. As such it is to be commended, and it is very much to be regretted that the publishers have found it necessary to place an almost prohibitive price upon this edition, since it would otherwise doubtless find its way into the library of many of the younger generation of chemists for whom it still has much value as a reference work.

Doubtless the index to the earlier American editions has served to chasten the moral character of many a chemist; nevertheless it is a relief to contemplate the results of the translator's labors in this department. He has earned the gratitude of all users of the volumes.

H. P. TALBOT.

A THEORETICAL AND PRACTICAL TREATISE ON THE MANUFACTURE OF SULPHURIC ACID AND ALKALI WITH THE COLLATERAL BRANCHES. BY GEORGE LUNGE, PH.D., Professor of Technical Chemistry at the Federal Polytechnic School, Zurich; formerly manager of the Tyne Alkali Works, South Shields. Third edition, revised and enlarged. Vol I in 2 parts—Sulphuric Acid. London: Gurney & Jackson. 1903. Svo. xxvii + 1214 pp. Price, 2£ 12s. 6d.

The second edition of the first volume of this work appeared in 1891 as a volume of 911 pages. An appendix to Vol. III brought the work down to 1896. Since then the development of the contact process, as well as of the old leaden chamber process itself, has made a new edition necessary, and this the author has prepared with characteristic industry. The volume before us is practically a new book, since much of the material is entirely new and all of it has been carefully rewritten. It is to be hoped that this is not to be, as intimated in his preface, the

last edition to be prepared by Dr. Lunge, who has done so much for the subject. Among Dr. Lunge's qualifications are knowledge of the subject as a manufacturer and teacher, wide acquaintance with technical men on the Continent and in England and America, and an indomitable industry in the collection of material. Among other sources of information, Dr. Lunge speaks of the "United States Census Bulletin No. 210, compiled by Messrs. Munroe and Chatard, and issued in June, 1902, contains much that is welcome to all practical men, over and above the completest and most carefully worked-out statistics ever published in that line."

Under the heading, "Raw Materials of Manufacture," we are informed that in February, 1902, sulphur was still being extracted by the Frasch process in Louisiana, at the rate of 100 tons per day, with a boiler capacity of 2100 horse-power, which was to be increased to 4300 horse-power. During the year 1900-1901 147,094 tons sulphur were exported to the United States from Sicily, 98,455 tons to France, 85,210 tons to Italy, and 30,549 tons to Germany; the total exports from Sicily were 521,497 tons. Much of the pyrites used comes from Spain and Portugal, where large deposits of rich ore, containing copper, are found. In Germany, Meggen pyrites, containing zinc, is used. [The zinc sulphate, contained in the ash, is sometimes extracted and used in the manufacture of lithophone.—Reviewer.] France produces most of its pyrites. Large deposits are found at Falun, Sweden, and in Norway. In the United States pyrites are found in New Hampshire, Massachusetts, New York, Virginia and Georgia.

Dr. Lunge appears not to have heard of the deposits of nitrate of soda in Death Valley, Cal., though a recent bulletin, by Bayley, estimates the total to be upwards of 22,000,000 tons. Under nitric acid manufacture it may be noted that nitric acid is only occasionally made for use in the manufacture of sulphuric acid. Generally it is made for the manufacture of mixed acids to be used in the nitroglycerin or nitrocellulose industry. The weak tailings so obtained, only, are used in the production of sulphuric acid. Dr. Lunge's treatment of this subject, therefore, is not altogether satisfactory. The object of the nitric acid manufacture, in nine cases out of ten, is to obtain the largest output, of greatest strength, lowest in oxides of nitrogen, in the smallest time, with the least plant and smallest fuel consumption. So great is **the**

demand for strong acid that at some works, as in those of the California Powder Co., at Pinole, Cal., the niter is melted before charging in order to drive off all the water. The introduction of the contact process for sulphuric acid will undoubtedly modify, to some extent, the position of the nitric acid producer.

Herreshoff's burner for pyrites fines is noticed in this edition for the first time, and a new plate illustrates the Rhenania zinc blende roaster. A brief description, without diagrams, is given of the Meyer tangent system of chambers, which the author considers a doubtful improvement. Additional information is given on the use of liquid water in place of steam; methods for the mechanical production of draught are also described. Herreshoff's modification of the Glover tower, one of the greatest of modern improvements, is dismissed in eight lines and no figure is given. His method of distributing the acid for this tower is not mentioned. One of the greatest improvements in concentration, that of L. Kessler, is fully described and illustrated.

The greatest interest will be felt by most readers in the description of the various contact processes, which contains a careful digest of the published and some unpublished information in 133 pages. This process bids fair to effect a complete revolution in sulphuric acid manufacture and to greatly modify many dependent industries, as it seems to be a cheaper method of manufacture than the chamber process.

Dr. Lunge could scarcely expect to add to his great reputation, but a careful examination of this new edition amply justifies the closing sentence of his preface: "But nobody can do more than is in his power, and such readers as know (or think they know) this or that thing better, and who may be inclined to sharp criticism, had best ask themselves the question whether *they* would come up to the ideal if they had to write such a book, and whether they cannot derive some valuable information even from this imperfect performance."

EDWARD HART.

**COSMETICS.** A Handbook for the Manufacture, Employment and Testing of all Cosmetic Materials and Cosmetic Specialties. BY THEODOR KOLLER. Translated from the German by CHAS. SALTER. London: Scott, Greenwood & Co., No. 19 Ludgate Hill, E. C. 1902. New York: D. Van Nostrand Co. Price, \$2.50 net.