

by G. Upmann, and on Explosive Bodies and Fireworks, by E. von Meyer, published in Brunswick in 1874, and which were translated, revised and enlarged by E. Désortiaux in the admirable work published in Paris in 1878. Following Désortiaux's plan, Volume I. of Guttman's work is devoted partly to a description of the sources, methods of production and properties of the raw materials used in the manufacture of explosives, and partly to the manufacture, properties and the chemical and physical tests of 'Black Powder,' while Volume II. treats of gun-cotton, nitro-glycerin, dynamite, blasting gelatine, nitro-substitution explosives, smokeless powders, caps, detonators and fuses; considerable space being given to the description of apparatus for testing the velocity, pressure and power of explosives, and to the discussion of methods for their storage and transportation and the construction of factories. There is in addition some seventeen pages of a bibliography which is far from being exhaustive.

From his occupation, for many years past, as a builder of works and inventor of apparatus for use in the manufacture of explosives, Mr. Guttman has had unusually good opportunities for becoming familiar with the art, but owing to his confidential relations with his clients, it is not to be expected that much will be published that has not already been made accessible in periodical literature or patent publications, so that the work is to a large extent historical and suggestive. As a consequence of his occupation there is a lack of perspective in the work, his own inventions being given undue prominence.

Notwithstanding that Mr. Guttman has been for many years the abstractor in this subject for *Dingler's Polytechnische Journal*, he shows a singular lack of familiarity with American methods and products, which differ materially from those in vogue in Europe, but as a treatise on European practice this work is a sound and trustworthy one. It is probably because of this lack of acquaintance with America that when the author is treating of the history of compressed powders, Professor Doremus, of New York, becomes transformed into General Doremus of Russia.

The chapter on smokeless powders is especially to be commended as probably the most detailed and exhaustive description of the processes of manufacture in use extant, but it is in error as regards indurite.

The style is usually clear but sometimes involved, as when, in discussing the errors of Kopp's Volumenometer and Say's Stereometer, the author says "so that the results obtained with this apparatus only show the atomic weight of the proportions of the various kinds of powder;" there is a lack of uniformity in the use of the chemical nomenclature which is likely to prove confusing; there is an uncertainty at times regarding the constitution of organic substances which is likely to prove misleading; and there are occasional errors, notably where the author after stating that nitro-glycerin freezes at  $+8^{\circ}\text{C}$ . ( $46.4^{\circ}\text{F}$ .) says "some experiments made by the author showed that pure nitro-glycerin, if suddenly exposed to a temperature of  $25^{\circ}\text{C}$ . ( $13^{\circ}\text{F}$ .), produced by a freezing mixture, was not frozen even after some hours," yet on the whole the work is a very good one, and it is most liberally illustrated with 328 well executed cuts.

CHARLES E. MUNROE.

COLUMBIAN UNIVERSITY.

#### NEW BOOKS.

*Humphrey Davy, Poet and Philosopher.* T. E. THORPE. New York, The Macmillan Co. 1896. Pp. vii+236. \$1.25.

*Elements of Geology.* JOSEPH LE CONTE. 4th edition, revised and enlarged. New York, D. Appleton & Co. 1896. Pp. xiv+670. \$4.00.

*Biological Lectures Delivered at the Marine Biological Laboratory of Wood's Holl, in the Summer Session of 1895.* Boston and London, Ginn & Co. 1896. Pp. 188.

*The Nursery Book.* A complete guide to the multiplication of plants. L. H. BAILEY. 3d edition. New York and London, The Macmillan Co. 1896. Pp. xi+365. \$1.00.

*Report of the Commissioner of Education for the Year 1893-1894.* Volume I. Washington, Government Printing Office. 1896. Pp. xlvii+1061.