

order that the most essential features shall be presented. He is evidently a master of the whole science, and not an amateur content to explain the familiar portions and to overlook the difficult topics needful to make the sketch symmetrical. Wisdom is also shown in the classification and description of the minerals. The thoroughly scientific arrangement by chemical character, of use to the learned, is laid aside for the following practical scheme: First, the rock-forming minerals, such as are world-wide, and extend through the whole crust; second, the ores; third, the salts and useful minerals supplementary to the ores; and fourth, the gems and precious stones. Under the first head there is presented the important distinction of those that have been formed secondarily in contrast with those that were original. We think the author might wisely have devoted three or four pages, instead of a brief paragraph scarcely exceeding fifty words, to the hydro-carbons. No effort is made to describe the phenomena connected with refraction and polarization, nor to the microscopic structure, nor to petrography.

Notes and Examples in Mechanics. By IRVING P. CHURCH. New York, John Wiley & Sons, 1892.

THIS work, as stated in the preface, is "a companion volume to the writer's 'Mechanics of Engineering,' and contains various notes and many practical examples, both algebraic and numerical, serving to illustrate more fully the application of fundamental principles in mechanics of solids; together with a few paragraphs relating to the mechanics of materials, and an appendix on the "Graphical Statics of Mechanism." A knowledge of the elements of trigonometry and calculus is assumed.

The work is clear and practical. Many problems are first treated analytically, then by assuming numerical values for the several algebraic quantities. English units are used. Engineering data are drawn from well-known and reliable authorities.

Among the structures and machines discussed (after the necessary exposition of general principles) are the bell crank, simple

and compound cranes, wedge, roof truss, pendulum, weighted piston with steam, I-beam, box-beam, fly-wheel, locomotive, jack-screw, ore-crusher, etc.

The work is abundantly illustrated with cuts.

Light. By SIR H. TRUEMAN WOOD. London, Whittaker & Co., 1891.

THIS elementary Treatise belongs to Whittaker's "Library of Popular Science." The undulatory theory is presented in clear and non-mathematical language, and the various phenomena of common observation are explained on this theory.

In a very lucid and attractive style, the author discusses such topics as reflection, refraction, color, optical instruments, the chemical action of light (as in photography), polarization, and fluorescence. The cuts are abundant and well drawn.

The appendix contains an annotated list of elementary works on light, color, spectroscopy, etc.

Chemical Calculations, with Explanatory Notes, Problems, and Answers. By R. LLOYD WHITELEY. London and New York, Longmans, Green & Co. 1892.

A WIDE range of topics is included in these hundred pages; as metric system, thermometric scales, density and specific gravity, percentage composition of compounds, calculation of empirical formulæ, volume of gases, calculations depending on chemical equations, combination of gases by volume, calculation of the results of quantitative analysis, atomic weight determinations, gas analysis, absorption of gases by liquids, molecular weights, calorific power and calorific intensity.

The problems on molecular weights are not confined to vapor densities; but the more recent methods of freezing points (Raoult) and boiling points (Beckmann and Wiley) are duly explained.

The table of atomic weights is based upon O = 16, and agrees, for the most part, with Ostwald's "Outlines of General Chemistry;" thus H = 1.003, in accordance with the older determina-

Publications Received at Editor's Office.

- DAY, DAVID T. Mineral Resources of the United States. Washington, Government. 8°. 678 p.
 GARNER, R. L. The Speech of Monkeys. New York, Charles L. Webster & Co. 8°. 233 p.
 JACKMAN, WILBUR S. Nature Study for the Common Schools. New York, Henry Holt & Co. 12°. 448 p.
 MERRILL, GEORGE P. The Materials of the Earth's Crust. Washington, Government. 8°. Paper. 87 p.
 SALTER, WILLIAM M. First Steps in Philosophy. Chicago, Charles H. Kerr & Co. 12°. 155 p. \$1.
 U. S. DEPARTMENT OF AGRICULTURE. Insect Life. Washington, Government. 8°. Paper. 90 p.
 "WATERDALE." Researches on the Dynamic Action and Ponderosity of Matter. London, Chapman & Hall. 12°. 309 p.
 WATKINS, J. E. The Log of the Savannah. Washington, Government. 8°. Paper. 30 p.
 WELLS, CHARLES R. Manual of the Natural Movement Method in Writing. Syracuse, C. W. Bardeen. Sm. 4°. Paper. 44 p. 25 cts.
 WILLIAMS, SAMUEL G. The History of Modern Education. Syracuse, C. W. Bardeen. 12°. 403 p. \$1.50.

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