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, spectroscope, 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.

tions of the ratio O : H. For many of the problems, however, the atomic weights are rounded to whole numbers, except Cl = 35.5.

The work is recommended as a well-planned text-book of the subjects indicated.

Mechanics for Beginners. Part I. Dynamics and Statics. By J. B. LOCK. London and New York, Macmillan & Co., 1891.

THIS is a carefully-prepared elementary text-book, presenting the subject in the following order: rectilinear motion, motion in one plane, forces acting at a point, parallel forces, machines (including friction), uniform motion in a circle, energy, the pendulum. The definitions are clear and examples abundant. The demonstrations presuppose a knowledge of trigonometry.

English units are employed throughout. The following terms are convenient (in the absence of metric units), but not very familiar in this country: *velo*, the velocity of one foot per second; *celo*, the acceleration of one *velo* per second; *poundal*, a force producing one *celo* on one pound; and *foot-poundal*, the work done by one *poundal* acting one foot.

While this work shows marks of thoroughness, it seems a great pity to ignore the international system of weights and measures.

Elementary Lessons in Heat. By S. E. TILLMAN Revised Edition. New York, John Wiley & Sons, 1892.

THESE lessons, prepared as a short course for the U. S. Military Academy, present the most essential and practical aspects of the subject, in a clear and descriptive manner. The language of trigonometry and differential calculus are scarcely introduced, even in discussing the conduction of heat. English units are employed, for the most part. The various kinds of thermometers and other instruments required by observers are explained; and the last two chapters are devoted to meteorology.

Forty-six numerical problems are added in this edition, illustrating thermometric scales, linear and cubic expansion, properties of gases, specific heat, latent heat, relative humidity, and mechanical equivalent of heat.

AMONG THE PUBLISHERS.

THE September number of *The Mother's Nursery Guide* contains medical articles on "Natural and Artificial Feeding of Infants," "A Short Talk about Disease Germs," "Some Common Nervous Diseases," etc. Other subjects are: "A Mother's Duty in Mental Child-Training," "Kindergarten-at-Home Stories," "A Child's Vocabulary," etc.

— All teachers and those interested in the eduction of young children will wish to read the article in *The Atlantic Monthly* for September by Horace E. Scudder, entitled "The Primer and Literature." This paper proves in a very logical, clear, and interesting manner that "the time has come when the . . . statement may be made that there should be no break in the continuity of literature in the schools; that from the day when the child begins to hold a book in his hands until the day when he leaves the public school he shall steadily and uninterruptedly be presented with genuine literature; that the primer itself shall serve as an introduction to literature." The paper will well repay careful reading and discussion.