

in a popular way many of the main features of modern English locomotives, which are not familiar to the ordinary layman. It is illustrated with some twenty-five cuts, among which are several half-tones of English locomotives.

VADE MECUM GUIDE. A Popular Guide to Mineral Collections. With a Chapter on the Development of Mineralogy. By L. P. Gratacap, A.M. New York: The Broadway Press, 1904. 12mo.; pp. 178.

This is of a convenient size to slip into the average coat pocket, making it an especially handy and useful reference book for the frequenter of collections. The writer observes the order followed by Dana in the fifth edition of his "System of Mineralogy," supplementing the discussion with an index of minerals alphabetically arranged, so that any required description may be readily found. There are a number of full-page plates of crystals from notable American collections, and numerous figures illustrative of the methods of classification.

TWENTIETH CENTURY HANDBOOK FOR ENGINEERS AND ELECTRICIANS. With Questions and Answers. By C. F. Swingle, M.E. Electrical Division by Henry C. Horstmann and Victor H. Tousley. Chicago: Frederick J. Drake & Co., 1904. 12mo.; pp. 500; 300 illustrations. Price, \$2.50.

The "Twentieth Century Handbook," phrased in simple language and lavishly illustrated, aims to aid the man of limited education in increasing his practical knowledge and extending his usefulness. There are chapters of practical instruction in the care and management of steam engines and boilers. Problems and calculations in hydraulics are worked out in plain figures, without resorting to the use of algebra, and simple arithmetical rules are given for the solution of these problems. Particular attention has been paid to indicator work, and to evaporation tests. The electrical chapters deal with the principles, construction, and operation of dynamos, motors, lamps, storage batteries, etc. There are tables that will, in many instances, do away with the necessity of figuring. In a word, the papers give, thoroughly, and yet in as simple a manner as possible, just that knowledge of electricity which a steam engineer is apt to find himself in need of. The volume is bound in full leather, pocketbook style, the back cover being extended to form a protecting flap with snap fastening.

MINERAL TABLES FOR THE DETERMINATION OF MINERALS BY THEIR PHYSICAL PROPERTIES. By Arthur S. Eakle, Ph.D. New York: John Wiley & Sons, 1904. 8vo.; pp. 73. Price, \$1.25.

This book of tables was compiled in order to aid students in the natural method of identifying minerals, namely, by noting their peculiarities of color, luster, hardness, specific gravity, and the like. The tables include all the common minerals and a few others of local prominence, which are generally considered as rare. The minerals are arranged primarily according to streak and color, while under each color the arrangement is according to hardness. The chief difference between these tables and those of Welsbach is that in the present book luster is regarded as an unimportant division. Various mineralogical works were consulted in preparing the tables, which will be found quite complete and valuable.

POINTS FOR BUYERS AND USERS OF TOOL STEEL. By George W. Alling, M.E. New York: David Williams Company, 1903. 8vo.; pp. 224. Price, \$2.

This book was primarily written for the benefit of those who have not a technical education. It is designed chiefly for the use of the mechanic and tool maker; and while it does not go into details as far as percentages of carbon and chemical construction of steel are concerned, it should help the mechanic to avoid many of the difficulties found by every tool maker, who has to make numerous kinds of tools from the many varying sorts of steel which he obtains from the steel makers. Chapters on defects in steel, how produced, and how detected; how to test the quality and uniformity of steel; preparing steel for hardening, and hardening and hardening appliances, are among the most valuable in the book. Some sixty illustrations of samples of steel and of tools add to the value of the book, while a number of useful tables are contained in an appendix.

ELEMENTS OF INORGANIC CHEMISTRY. By Harry C. Jones. New York: The Macmillan Company, 1903. 8vo.; pp. 343. Price, \$1.25.

This book, which is considered as an elementary textbook, treats the science of chemistry in an up-to-date manner, and while the older generalizations have been thoroughly discussed, those generalizations which have been more recently made are incorporated in the text. Thus, while the atom is still used as the smallest indivisible particle of matter, the ion, which is a later conception of an atom as carrying an electrical charge, is also thoroughly discussed. Another generalization which is treated is that concerning the law of Faraday as the basis of chemical valence. The physical properties of substances are treated more fully than in earlier textbooks, and are described in every instance after the chemical properties. The experiments on each substance are placed at the end of the chapter describing

said substance, and are followed by the problems to be solved. Such portions of the author's "Principles of Inorganic Chemistry" as were considered adapted to the beginner are also contained in this book, which will be found an admirable textbook for the use of beginners in chemistry.

A LABORATORY GUIDE TO QUALITATIVE ANALYSIS WITH THE BLOWPIPE. By F. W. Martin, Ph.D., Analytical Chemist. New York: John Wiley & Sons, 1903. 12mo.; pp. 41. Price, 60 cents.

Believing that the use of the blowpipe, which has long been recognized as an indispensable apparatus in the study of mineralogy, has been largely restricted to that science, and been used to a very limited extent in other branches of analysis because there has been no manual on the subject treating of its use with compounds in general, the author has prepared this small volume for use as a laboratory guide by students of qualitative analysis, and as a work of reference by practising chemists. A systematic course of analysis for a long list of elements and compounds is succinctly given in these pages.

MODERN MICROSCOPY. By M. I. Cross and Martin J. Cole. Chicago: W. T. Keener & Co., 1903. 8vo.; pp. 285; 76 cuts. Price, \$1.50.

This handbook is designed to give to the novice information and advice in choosing his microscope and accessories, and to direct him as to the proper way of using them. The book, which has reached its third edition, is in three parts. The first part, by Mr. Cross, treats of the microscope and accessory apparatus, and gives instructions for their use; the second part, by Mr. Cole, treats of microscopic objects, and tells how to prepare and mount them; while the third part, which is the new part of this edition, and which was specially prepared by Mr. G. West, of the Botanical Laboratory at Edinburgh, is on the choice and use of microtomes, or machines for cutting microscopic sections. All three parts are clearly and concisely written, and the book as a whole forms a complete handbook for the tyro microscopist.

TESTING OF ELECTRO-MAGNETIC MACHINERY AND OTHER APPARATUS. By Bernard Victor Swenson, E.E., M.E., of the University of Wisconsin, and Budd Frankenfield, E.E., of the Nernst Lamp Company. New York: The Macmillan Company, 1904. 8vo.; pp. 420. Price, \$3.

This book is the first of two volumes which are intended for use as a college textbook and as a work of reference for engineers. The first volume deals with direct-current electromagnetic machinery and apparatus, and it is almost exclusively confined to dynamo-electric machinery. It has been the aim of the authors to impart a thoroughly practical knowledge of dynamo machinery and apparatus to the student, and the book can be used as a textbook for a practical dynamo laboratory course. For this reason the numerous experiments which the book describes are divided into (1) a review of the theory; (2) to the particular experimental method involved; and (3) to practical applications of the particular subject. Questions which bear directly on the subject are asked at the end of many of the experiments, with the object of stimulating independent thought and observation. These questions bear upon important, though less evident, relations of the phenomena involved. The book contains a complete list of references to other works on the subject.

THE LAYOUT OF CORLISS VALVE GEARS. By Sanford A. Moss, M.S., Ph.D. New York: D. Van Nostrand Company, 1903. 24mo.; pp. 108. Price, 50 cents.

This small volume, which is a reprint from the American Machinist, with revisions and additions, treats of the Corliss valve gear from a theoretical point of view. The "single eccentric" motion is treated from a rational standpoint, and a complete discussion is given of the theoretical principles underlying the kinematic design or "layout." Explicit instructions are given for making a layout on the drawing board. These instructions are so simple that a layout can be made by anyone at all familiar with the common slide valve and other valves for steam engines. The book is theoretical in character, the kinematic features rather than the constructive features of the valve gear being described.

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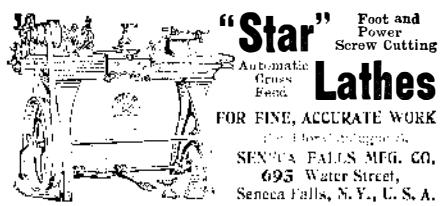
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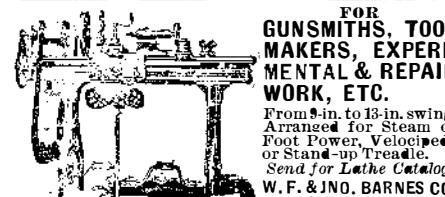


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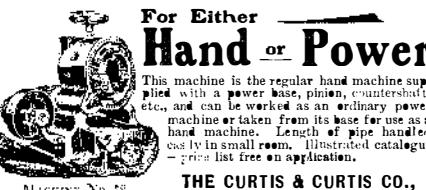
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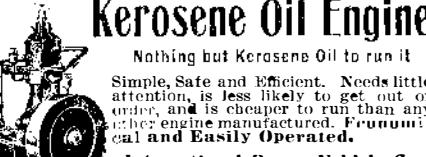
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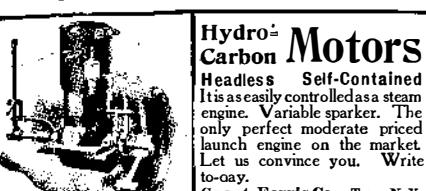
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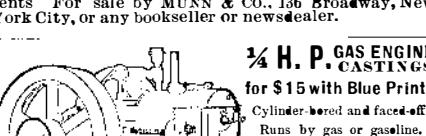
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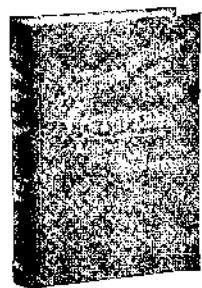
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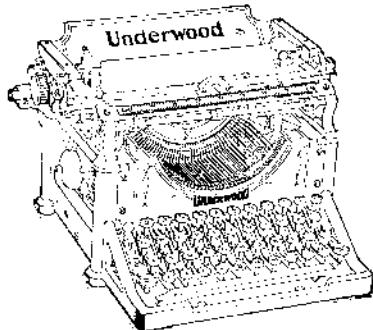
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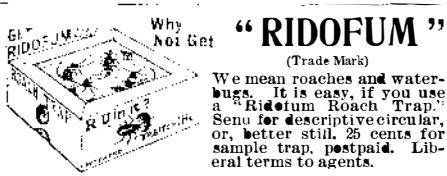
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