

water testing, ventilating, draining, accommodation, etc., and finally giving a series of problems on "Laying-off." These chapters are particularly clear and are written in such a way as to be essentially practical; a style no doubt evolved from the author's experience when lecturing to naval construction cadets at the Royal Naval College, Devonport.

The book is clearly written, splendidly illustrated and is undoubtedly based on an accurate knowledge of the subject.

Water Purification. By Jos. Wilton Ellms, consulting engineer, Cincinnati, Ohio. Published by John Wiles & Sons, Inc., New York; Canadian selling agents, Renouf Publishing Co., Montreal. First edition, 1917. 485 pages, 150 figures and numerous tables, 6 x 9 ins., cloth. Price, \$5 net.

The author has attempted a broad account of the development of water purification. Considerable attention has been paid to the properties of various classes of water as regards physical, chemical and biological characteristics. The relation of polluted public water supplies to water-borne diseases has received special attention, and the various steps in the purification processes, such as plain sedimentation, coagulation, filtration and disinfection are described in detail. Special chapters are devoted to water softening and to the removal of iron and manganese from the ground water supplies.

The rapid progress made in the art of purifying and clarifying turbid waters during the past quarter of a century has been notable. The evolution of the rapid sand filter from its crude beginnings to its present well-developed state is distinctly the result of research work, and it was Mr. Ellms' good fortune to have been identified with many of the earlier investigations of this problem and to have been able to follow its solution closely in actual practice throughout the quarter century. He has not hesitated, however, to draw upon the experiences of other investigators, especially those of his partner, Mr. Clifford N. Miller, of the consulting firm of Ellms & Miller, of Cincinnati, who has contributed much material dealing with the hydraulics of the flow of water through filters and with the discharge of water from waste water troughs in the operation of rapid sand filters.

The contents of the book are well indicated by the chapter headings, which are: Classification of natural waters; transmission of disease through drinking water; the effect of improved water supplies upon health; objects and methods of water purification; sedimentation; types of settling reservoirs and coagulation basins; practical efficiencies of settling and coagulation basins; filtration of water; preliminary treatment of water for slow sand filters; system of slow sand filtration; efficiency and cost of operation of slow sand filters; rapid sand filtration; general arrangement of rapid sand filter plants; details of rapid sand filter plant construction; regulating, measuring and indicating devices for rapid sand filter plants; equipment for the handling and storing of chemicals and for the preparation of solutions; apparatus and methods for applying chemicals and the preparation of solutions; power plant, pumping machinery, air compressors, air tanks, wash water tank and miscellaneous equipment; the cost of constructing rapid sand filters; rates of filtration, loss of head and washing of rapid sand filters; the physical and chemical changes produced by the application of chemical coagulants, and by the subsequent filtration of the treated water; efficiency and cost of operation of rapid sand filters; disinfection of water supplies; the removal of

dissolved mineral matter from water; the control of water purification processes; the flow of water through rapid sand filters; an approximate formula for calculating the discharging capacity of rapid sand filter wash water troughs.

At the end of each chapter is given a list of the references used in that chapter which, taken together, form a brief yet handy bibliography.

The book is eminently practical, showing actual equipment photographs, although not at all to the extent of giving the volume a catalogue appearance.

Text Book on Motor Car Engineering—Volume II., Design. By A. Graham Clark, M.I.A.E., A.M.I.M.E. Published by Constable & Co., London, 1917. 368 pages, 66 illustrations, 37 tables, 6 x 9 ins. Price, \$2.50.

"Design is one of the most interesting branches of engineering." With this statement the author commences his second volume of the Text Book on Motor Car Engineering, that on "Design," the first volume dealing with "Construction."

Written from the British viewpoint, this book deals with the design of the petrol engine and chassis, and is intended for the use of engineers, designers, draughtsmen, students and others whose work entails a knowledge of design.

In the seventeen chapters, such subjects as general considerations in engine design, determination of engine dimensions, valve gears, lubricating and cooling arrangements, frames, axles and springs, and transmission gear are treated in full, together with allied topics.

Some 27 tables are incorporated into the text of this excellent volume which is well illustrated with diagrams, profiles and photographs.

PUBLICATIONS RECEIVED

Air Compressors.—Bulletin K-300-A of the Canadian Ingersoll-Rand Co., Sherbrooke, P.Q., illustrating power-driven, single-stage, straight line air compressors, designed for motor or belt drive, for use in industrial or mining plants where units of 950 cubic feet displacements per minute or less are required.

Holt Roof Connections.—An illustrated booklet published by the Barrett Company and distributed by the Paterson Manufacturing Co., of Montreal, Toronto, Winnipeg and Vancouver. Shows diagrammatic sketches and photographs of the connection for vents and leaders and illustrations. Twenty pages; two colors.

The F-M Book.—A very wide range of goods is shown in the Canadian Fairbanks-Morse Co.'s new general catalogue, which they have called the F.M. Book. It is in convenient size for reference and contains 1,048 pages and nearly 5,000 illustrations. Twelve distinct departments are represented, namely, those handling scales, valves and steam goods, automobile accessories, engines, electrical apparatus, pumps, machine tools, wood-working machinery, transmission machinery, railway and contractors' supplies, factory supplies, safes and vaults. An interesting part of the book is a section of 64 pages, printed on yellow paper and well indexed, containing tabulated information of an engineering nature most commonly used and to which everyone has to make most frequent reference, and which is here given in very handy style. The book is being distributed gratuitously to engineers, manufacturers, contractors, etc., upon request.