

Water Supply for Country Houses. By Dr. W. P. Gerhard, C.E. Published by Review of Reviews Company, 1914. 51 pages, illustrated, 6 x 9 ins., paper binding. Price, 40 cents.

The writer first deals with points to be borne in mind for the search for an adequate and suitable supply of water for domestic use. He treats of volume necessary, pressure required, etc., and deals with the various sources as rainfall, lakes, rivers, springs, etc. In Chapter 2 he refers to appliances for distributing water, power for machinery required, and lays out as an ideal system a compressed air pumping station.

First Course in Engineering Science. By P. J. Haler, B.Sc., and A. H. Stuart, B.Sc. Published by the University Tutorial Press, Limited, New Oxford Street, W. C., London, First edition, 1915. 191 pages, 159 illustrations, 5 x 7 ins., cloth. Price, 40 cents.

This book treats of the material laid down for certain technical school requirements in England. It describes experiments that may be performed on ordinary apparatus, the great difficulty in many institutions being the lack of suitable laboratory equipment for carrying out prescribed work.

The book has two parts, the first dealing with stresses, strains, moments, parallel forces, work, energy, power, velocity, acceleration, etc. The second deals with fluid pressures, heat, specific heat, conductivity, radiation, etc. It also treats in general way of the simple steam engine and boiler.

Examples in Magnetism. By Prof. F. E. Austin, B.S., E.E. Published by the author. First edition, 1915. 90 pages, 27 illustrations, 5 x 7 ins., flexible binding. Price, \$1.10.

This book should be a favorable guide for students in elementary electrical engineering. As the author states, it is not a book of problems, but a carefully compiled volume of information dealing with physical laws underlying various problems, with the systematic tabulation of data relating thereto, with the process of solution and finally, in every case, with a problem properly worked out. The book does not enter into the analytical derivation of equations. These are taken for granted and the mathematical processes involved in their application to problems are dealt with.

Land and Marine Diesel Engines. By Giorgio Supino. Translated by A. G. Bremner and James Richardson. Published by Charles Griffin & Co., London. 309 pages, 380 illustrations, 19 plates, 6 x 9 ins., cloth. Price, \$3.50 net.

This is an acceptable translation of the work of an Italian engineer of high repute. It deals with the development of the oil engine on the continent of Europe where the practice is considerably in advance of that of the United Kingdom and America. Part 1 involves six chapters relating to Diesel engines of both stationary and marine type; to fuels, thermodynamic cycles, efficiencies and the calculation of cylinder dimensions. Part 2 deals with engine design to which is devoted five chapters, and in addition there are supplementary chapters upon engine room accessories, fuel regulation, marine installations, tests, etc.

While calculations in the original work were based upon the metric system, the translators have added the British units where they tend to a readier understanding of the text. Calculations themselves are left in the metric system, and a conversion table is added.

The book has a very comprehensive index, list of illustrations, tables, etc.

Water Power Engineering. By Daniel W. Mead, Professor of hydraulic and sanitary engineering, University of Wisconsin, Consulting Engineer. Published by McGraw-Hill Book Co., New York. Second edition. 843 pages, 430 illustrations, 6 x 9 1/4, cloth. Price, \$5.00 net. (Reviewed by T. H. Hogg, C.E., assistant hydraulic engineer, Hydro-Electric Power Commission of Ontario.)

The first edition of this treatise appeared in 1908, and in the past eight years has come to be recognized as a standard authority on hydraulic engineering, the advances in the art of which have been very great during this time. The new edition is therefore amply justified.

Chapter 1 gives a concise resumé of the history of water power engineering covering the improvement in design of water-wheels, both reaction and impulse, together with a short discussion on conservation and its effect on water power development.

Chapter 2 discusses the different losses in any plant, unavoidable and otherwise, and gives a list of units used in the analysis of conversion of energy.

Chapter 3, entitled "The Load," deals with load factor and the load curve and their significance as related to the efficiency and general design of waterpower plants. The chapters on "Rainfall," "Run-off" and "Stream Flow" of the first edition have been omitted, as not sufficiently complete.

Chapters 4 and 5 deal with the flow of streams and the measurement of stream flow. In these chapters are discussed the various formulæ for the losses in channels and conduits, and the various conditions influencing the flow of streams, together with a description of the standard methods of measurement of stream flow.

Chapters 6, 7 and 8 fall into a group dealing with the hydrograph in its relation to power plant design, the effects of pondage and storage, and the study of the power of a stream as affected by head. The author's use of the hydrograph is particularly to be commended. As he states, the graphical method is of great service in attacking many phases of the problem.

Chapters 9 to 13 deal with turbines, details and appurtenances, hydraulics of the turbine, testing and analysis and selection of turbines. This section, which is perhaps the most valuable of the treatise, has been re-written and a uniform nomenclature is used throughout. The treatment of turbine analyses is most concise and discusses the subject in the clearest possible way.

Chapters 14 to 18 take up speed regulation of turbine water-wheels, the governor, arrangement of reaction wheels, selection of machinery and design of plant; also examples of water power plants. The discussion of speed regulation is good. It is to be regretted, however, that more space is not given to the discussion of water, hammer, or pressure change. Joukowsky's analysis is given, but no mention is made of the more recent work of Allievi, and of Warren. Joukowsky's formula gives results which may be far from the truth when the time of the governor is taken into account.

The surge tank is treated in rather a perfunctory manner, the simple tank formulæ only being given, while inaccurate statements regarding the differential surge tank are made. A number of these tanks are in commercial operation, and the criticism that the sudden drop in the riser is opposed to good speed regulation is proved to be wrong. These tanks show remarkable results under operating conditions, and it is therefore unfortunate that the theory is not presented.