

Part I. was published about four years ago and covered problems of machine design. The present volume contains problems selected from various branches of hydraulics, in the solution of which it is necessary to use calculus and analytic geometry. The remainder of the work is comprised of three other volumes on thermodynamics, mechanics of materials and electrical engineering.

The contents include chapters on Water Pressure on Submerged Surfaces, Depth of Immersion of Floating Bodies, Time of Discharge of Liquids from Vessels, Form of Liquid Jet Problems for Water Supply, Best Form of Channel Section, an appendix and a list of reference works.

The book will probably receive its widest use among engineering students.

Power Transmission by Leather Belting. By Robert Thurston Kent, M.E. Published by John Wiley & Sons, Inc., New York City. First edition, 1916. 114 pages, 37 illustrations, $5\frac{1}{2} \times 8\frac{1}{4}$ ins., cloth. Price, \$1.25 net. (Reviewed by S. C. DeWitt, Federal Engineering Co., Toronto.)

We have read this book very carefully and find compiled in a comparatively small space an extremely large amount of useful information. For the mechanic, Chapters 3, 5 and 6, as well as the tables in back of the book, will be found of great service.

Chapter 4, which deals with the theory of transmitting power by belting, is beyond the ordinary mechanic, but to those who have had a fair education in lower mathematics this article will prove interesting. The chapters on Belt Maintenance, Fastening Belts, and Belt Dressings, are useful to everyone and are well worth studying by the belt user. The book is very complete and those who will take the time to read it carefully will find that for a small outlay in the cost of the book they can save many dollars in the plant.

Steam Power. By C. F. Hirshfeld, M.M.E., formerly professor of Power Engineering, and T. C. Ulbricht, M.E., M.M.E., formerly Instructor, Sibley College, Cornell University. Published by John Wiley & Sons, Inc., New York; Canadian selling agents, Renouf Publishing Co., Montreal. 420 pages, $5\frac{1}{4} \times 8$ ins., 232 figures, cloth. Price, \$2.00 net. (Reviewed by Prof. Robert W. Angus, Toronto University.)

This book is an elementary one dealing with the generation of power by means of steam. It is elementary in that it does not go into the mathematical discussion to any extent, nor does it deal with the theoretical principles of thermodynamics, but the discussions on the various points are fairly complete and the book covers the entire field of steam power.

After giving some general physical ideas and briefly discussing the properties of steam, the author enters at once upon the discussion of the steam engine, which he deals with quite fully in about nine chapters, discussing the diagrams, compounding, the slide valve, regulation, etc., and devoting one chapter to the turbine. The entropy diagram has also been briefly touched on, but is beyond the scope of this treatise.

Following a chapter on condensing apparatus the book deals with the subject of combustion, treating fuels, boilers and recovery of heat waste, completing the work by a discussion of feed pumps and auxiliaries.

The book should be readily understood by the more intelligent class of power house men and should also be

of value to those wanting a general knowledge of steam power, and it is for these classes that the book has been written. It would not be of help to the specialist particularly, as the treatment is too general.

Gas, Oil and Petrol Engines. By A. Garrard. Published by Whittaker & Co., London. 221 pages, 112 illustrations, $5 \times 7\frac{1}{2}$ ins., cloth. Price, \$1.50 net. (Reviewed by Alfred S. L. Barnes, Ontario Hydro-Electric Power Commission.)

In this little book clear descriptions of various well-known types of internal combustion engines are given.

Chapter 1 deals with history and development. Many readers will be surprised to find that the gas engine was proposed as early as 1678, the idea being to use the explosive force of gunpowder as a motive power.

It appears that coal gas was originally produced with the idea of using it in a gas engine, and that its employment for lighting purposes was a later development. Further on in this chapter the author refers to the late B. H. Thwaite, whose energies were devoted to the employment of blast furnace gas for driving gas engines. Mr. Garrard, however, omits to relate that after having made many vain attempts to induce the steel manufacturers of Great Britain to take up his idea, Mr. Thwaite finally went over to Germany, where it was adopted successfully on a very large scale in many instances, and it was only after several years, when the British firms could be shown the advantages which the German steel companies had gained from the adoption of this scheme, that Mr. Thwaite was able to make any headway in Great Britain. Since then a good deal has been accomplished.

Chapter 2 treats of general principles and describes in simple terms, by the aid of diagrams, the two and four-stroke cycles, etc.

The middle portion of the book is devoted to a description of Crossley, Mather & Platt, Oechelhauser and other gas engines. Several makes of petrol or gasoline engines are described, and in Chapter 7 the Diesel and semi-Diesel engines come under review.

There is a short section devoted to producer gas plant and the Humphrey explosion pump is briefly described, although the latest development of this last very unusual type, utilizing a solid piston for high head, has come on the market too late for inclusion in this book.

A chapter on ignition, including descriptions of several types of magnetos, closes this book.

This publication should be useful to the engineering student or apprentice, and to anyone who desires to obtain a general knowledge of the types of engines dealt with.

Engineering Applications of Higher Mathematics—Part III., Problems of Thermodynamics. By V. Karapetoff. Published by John Wiley & Sons, Inc., New York. Canadian selling agents, Renouf Publishing Co., Montreal. First edition, 1916. 113 pages, 23 illustrations, $5\frac{1}{4} \times 8$ ins., cloth. Price, 75c. net. (Reviewed by Prof. Robert W. Angus, Toronto University.)

Anyone who has had to do with the study or teaching of thermodynamics recognizes the difficulty of the subject, and also that a good deal of the difficulty arises from the lack of mathematical preparation on the part of the student. Any book, therefore, which will assist in this way will be welcome.

The author has divided his book into six chapters, dealing with problems on perfect gases, saturated steam, entropy and heat transfer in boilers and in each of the chapters has dealt with a few of the problems that arise,