

# The Engineer's Library

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## BOOK REVIEWS.

**Elements of Mechanics of Materials.** By C. E. Houghton, B.A., M.E., Associate Professor of Mechanical Engineering, New York University. Published by the D. Van Nostrand Co., New York. Second edition, 1915. 213 pages; 94 illustrations; cloth. Price, \$2.00 net. (Reviewed by Eric P. Muntz, B.A.Sc., New Welland Ship Canal.)

For the purpose for which this book is intended—an elementary text book in conjunction with the usual engineering courses in colleges and universities—it covers the necessary ground in a clear-cut and concise manner, which should appeal to the average college student and to anyone endeavoring to master the elementary principles of design.

In the opening chapter the different stresses are explained, together with the meaning of unit deformation, coefficient of elasticity, elastic limit, resilience, etc., working stresses and factors of safety. This is followed by the application of these terms and stresses to bars of uniform strength, thin pipes, cylinders and thick pipes with a discussion of riveted joints and stresses due to temperature.

Chapter 3 deals with the "bar" of Chapters 1 and 2 in a horizontal position supporting loads perpendicular to its axis; i.e., as a beam. The various bending moments and shearing forces are explained as well as section modulus, moment of inertia, etc., with their application to standard sections. Shear and moment diagrams and the effect of moving loads are explained.

Derivation of formulæ for tension is taken up in Chapter 4. Twist, relative strength and horse-power of shafts and shaft couplings are covered.

The equation to the elastic curve is derived, also formulæ for the deflection of beams, and the effect of restraining or fixing the ends of beams. Long columns are taken up with a review of Rankine's, Ritter's, the parabolic and straight-line formulas.

Combined stresses are covered in Chapter 7, and Chapter 8 takes up compound bars and beams, which is followed by the final chapter touching on reinforced concrete. Beams of rectangular and T-beam section are taken up. Their shearing and bond stresses are gone into. Web reinforcement necessitated by diagonal stress is also brought in, which revives the much-discussed question of the utility of *vertical* stirrups as web reinforcement. Their spacing, at all events, should be less than the distance from the centre of gravity of the steel to the neutral axis and not so great as  $\frac{3}{4}d$ , as allowed in the book.

A very useful feature of the book is the large number of problems presented at the close of each chapter, occupying altogether fifty pages.

**Altitudes in Canada.** By Messrs. James White, Assistant to Chairman and Deputy Head, Commission of Conservation, Canada, and George H. Ferguson, Assistant Engineer. Published by the Commission. 603 pages, 8 maps and profiles, 6 x 9 ins., cloth.

The first edition of this work was published in 1901 when Mr. White was Chief Geographer, Department of the Interior. The present is the second edition, in which the information has been brought up to date and considerably enlarged upon. It is a very comprehensive compilation of altitudes and will be found exceedingly useful as the best possible interpretation of the conflicting evidence available respecting the elevation of many points in the Dominion. Its value as a work of reference in relation to climate, health, railway location, atmospheric pressures in machine design and construction, irrigation and pipe-line construction, etc., is self-evident in addition to the necessity of such information in geological and geographical problems.

**Pocket Diary and Year Book, 1916.** Published by Emmott & Company, Limited, Manchester and London. 428 pages, 4 x 6 ins., illustrated, cloth. Price 25 cents.

The 29th annual publication of the "Mechanical World" series, contains a collection of useful engineering notes, rules, tables and data. Many parts of the volume have been re-written and much additional information introduced.

**Concrete Silos.** By E. S. Hanson. Published by the Cement Era Publishing Co., Chicago. First edition, 1915. 174 pages, illustrated, 5 x 7 ins., cloth. Price, \$1.00.

This is a very complete little treatise on concrete silo construction dealing first with the nature of the material, its suitability, and with instructions as to how to build according to the various systems in use. These systems of construction are many, and those which have been proven thoroughly reliable and practical are described in detail.

The book has eighteen chapters and a catalogue section. It is illustrated by numerous half-tones and line drawings.