

CANADIAN MAGAZINE

OF
Science and the Industrial Arts.

Patent Office Record.

Vol. 12.

NOVEMBER, 1883.

No. 11.

Communications relating to the Editorial Department should be addressed to the Editor, HENRY T. BOVRY, 31 McTavish Street, Montreal.

The Editor does not hold himself responsible for opinions expressed by his correspondents.

No notice will be taken of anonymous communications.

NEW BOOKS.

The Elasticity and Resistance of the Materials of Engineering.
by Wm. H. Burr. C.E. (New York: John Wiley & Sons,
Montreal: Dawson Bro's.)

Prof. Burr's work will be heartily welcomed not only by technical students but also by the purely practical engineer. It is divided into two distinct parts, each complete in itself. In the First Part the author sets forth the general Theory of Elasticity in amorphous solid bodies, and deduces the equations of motion and equilibrium which he applies in the investigation of the thickness of thick hollow cylinders and spheres and also of torsion, concluding with a statement of the general Theory of Flexure. This First Part will probably, as the author anticipates in his preface, be of little interest to the merely practical engineer, and requires a thorough acquaintance with the higher Mathematics, yet it must be borne in mind that a correct knowledge of the strength of materials can only be obtained by a determination of their elastic properties. The practical engineer, however, will find the second and larger part of the work full of valuable information. Numerous Tables are given of the tensile, compressive and shearing strength, the co-efficient of elasticity, the elastic limit, etc., of wrought and cast iron, steel, timber, cement, mortars, etc. Chap. VII. is devoted to an interesting and instructive dissertation on the strength of columns, and the last treats of factors of safety and working stresses as used in practice, and are contained in extracts from a number of specifications of works now completed. It has been the aim of the author, as he says, "to represent truly and completely the great variety of both quantitative and qualitative phenomena exhibited by material under test; to shew not only the variation in products of different mills but the variation in different products of the same mill; to exhibit the variations due to difference in size, shape, relative dimensions and condition of specimens; to shew that specimens apparently identically the same may even give con-

siderable diversity in results, and to prove the difference between the finished member and its component parts, as well as to indicate the direction in which further investigations may most profitably be prosecuted."

Much labour and care must have been expended in the preparation and arrangements of the matter, and the work may be cordially recommended to every engineer.

The Mechanics of Engineering and of Machinery, by Dr. Julius Weisbach, (New York, John Wiley & Sons; Montreal, Dawson Bro's.)

Under the above title Dr. Weisbach has issued a series of valuable engineering manuals, and the reputation of the author is alone a sufficient guarantee of their worth. The volume before us, viz., Vol. III. Part I., Section I. treats especially of the Mechanics of Machinery of Transmission. In Germany the second edition was issued in a revised and greatly enlarged form under the editorship of Prof. Gustav Herrmann. This edition, by permission, has been translated by Prof. Klein, and published by Messrs. Wiley & Son. The work commences with a lucid statement of the principles of Kinematics, i. e., a statement of the principles of motion, without any regard to cause or forces. The remainder of the work is divided into three chapters dealing respectively, with the strength and dimensions of Journals, Shafts, Couplings and Bearings, in Chap. I, the various kinds of gearing,—circular, bevel, and skew-wheels, trains of wheel-work, pulleys, etc.—in Chap. II. and rods and their guides—including parallel motions, pantographic and other linkages, etc.—in Chap. III.

Kinematics, by Charles William MacCord, (New York, Wiley & Sons; Montreal, Dawson Bro's.)

This work is a "treatise on the modification of motion as affected by the forms and modes of connection of the moving parts of machines." The author introduces his subject by a general statement of the Principles of Motion, the Modes of Transmission, etc., and in Chaps. III., IV. and V. treats of the determination of the velocity-ratio in the case of various elementary combinations, and also in that of rotation by rolling contact with axes both parallel and oblique, specially referring to link, band, and contact motions, toothless, circular and lobed wheels, rolling cones, (pitch-surfaces of circular and elliptical bevel wheels), conical lobed wheels, rolling hyperboloids (pitch-