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NEW BOOKS.

The Strains in Framed Structures, with numerous practical applications for cranes, bridge, roof and suspension trusses, braced arches, pivot and draw spans, continuous girders, etc., also determination of dimensions and designing of details—specifications and contracts—complete designs and working drawings. By A. Jay DuBris, C.E., Ph. D., etc., etc. (New York, John Wiley & Sons), 1883.—Price \$10.

The aim of this work is to treat the subject of "Strains in Framed Structures" in such a complete manner as to render its principles intelligible to any one acquainted with elementary mechanics and easy of application to questions of practical importance. The first part of the book is divided into two sections. Section I is subdivided into four chapters giving a full account of the resolution of forces and of the method of moments both from a graphical and analytical point of view.

Section II sets forth the practical application of the methods of the preceding section to various structures and is subdivided into nine chapters of which the first eight deal with *Roof and Bridges Trusses, Continuous girders, Swing Bridges, and Braced Arches*, which are well illustrated with examples but which do not present any striking novelty in the mode of treatment. In Chapter IX the subject of the *Suspension Bridges* is taken up and the greater part of the discussion seems, as is claimed by the author, to be entirely new. In the interests of simplicity, it might have been well to have inserted, in addition to the analytical proof, the geometrical proof of the fact "that the curve of a flexible string uniformly loaded is a parabola," which at once follows from the conditions of equilibrium."

As regards the theory of the *Stiffening truss*, the author repudiates the ordinarily accepted one since it is based on the untrue assumption that the effect of the stiffening truss is to distribute a partial load uniformly over the cables. Neglecting the slight increase of length in the suspenders so that the "deflections of truss and cable at any point are equal," he

finds the differential equation of the new cable curve, which is also a curve of equilibrium. The moment of the entire distributed cable load at any point is then found, and hence the differential equation (of the 4th degree) of the elastic curve of the truss, which can be easily integrated in an exponential form.

The second part of the book deals with the "important topics of cross-sectioning and designing of details and connections," and although necessarily far from exhaustive in its treatment, it will be found of much value and interest to the engineer.

The book is excellently printed and illustrated, and is a valuable addition to engineering literature, but we would suggest that an edition of smaller size would better meet the needs of the ordinary student.

Explosive Compounds, Machine Rock Drills and Blasting,—BY HENRY S. DRINKER, E.M., (New York: John Wiley & Sons, 15 Astor place, 1883, MONTREAL: Dawson Bros.)

This work is an abstract from the Author's valuable treatise on Tunnelling of those portions relating to Explosive Compounds, Rock Drills, and Blasting. Beginning with an historical account of rock excavation, tunnelling, blasting, rock drilling, and explosive compounds, the Author in Chapter III. discusses the latter more in detail, and gives the chemical composition and method of manipulation of all the most important. Chapter IV. commences with a description of various fuses, tamping, drills, expanding borers, the hammer, and the advantages of electric firing; which on page 112 are summarized into:—

- (a) Simultaneous firing of different charges.
- (b) Premature escape of any of the gas developed absolutely avoided by close tamping.
- (c) No smoke or gas from fuses.
- (d) Greatest safety.
- (e) Rapidity of work.

The remainder of the Chapter consists of a discussion as to the "Principles of Blasting," and the estimates of the volumes thrown out in blasting and of the cost of extraction. Chapter V. is subdivided into two parts, the first dealing with air compressors and machine rock drills, while the second gives the history and characteristics of the latter. Chapter VI. is subdivided into six parts, and illustrates the practical appli-