

**THE PROPERTIES OF DOUGLAS FIR.**

It is learned from the Engineering Record that the properties of Douglas fir have recently been studied by Mr. Edward Mohun, M. Am. Soc. C. E., who has compiled the results of a number of earlier studies and deduced constants for use in the various formulas for beams and pillars of this material. For timber of the best quality, such as would be accepted by an inspector for bridge or trestle work, he adopts an ultimate tensile stress of 14,000 pounds with a factor of safety of ten for obtaining the safe working stress, 5,000 pounds for the ultimate crushing strength endwise with a factor of five, 500 pounds for the ultimate crushing stress sidewise with a factor of three, 6,000 pounds for the ultimate skin stress with a factor of three, 1,400,000 for the modulus of elasticity, 400 pounds for the ultimate shearing stress with the grain, with the factor of four, and 40 pounds as the weight per foot. The ordinary life of a structure of such material designed with the factors of safety mentioned is believed to be about twelve years. Mr. Mohun has prepared some valuable tables, giving not only various formulas based on these constants, but also the safe loads of Douglas fir beams and a comparison of the results which have been obtained by different investigators of the properties of this important material.

**HARDENING PLASTER OF PARIS.**

A German patent has been granted for the treatment of articles of plaster of paris with an aqueous solution of ammonium borate, for the purpose of hardening them and rendering them insoluble in water. A simple and efficient process for accomplishing this object would be

highly desirable, as it would serve to greatly prolong the life of plaster paris casts, which, being quite soft and not entirely soluble, sooner or later become superficially defaced, and washing specially wears down the outlines of the object. The process above referred to is said to give results decidedly superior to anything that has heretofore been proposed. The hardening liquid may be either mingled with the plaster in the act of moulding, or may be applied on the surface of the finished casts with a brush. The solution is prepared by dissolving boracic acid in warm water and adding thereto sufficient ammonia to form the borate which remains in the solution. The manner of using the solution is thus described: The saturation of the gypsum or painting of the plaster of paris is carried out in the cold. The objects are subsequently rinsed off and dried. The surface becomes very hard after two days and insoluble in water, while the induration in the interior advances more slowly. By means of the fluid described, gypsum floors can be hardened and rendered more durable and impervious to the influence of the weather. Saturating with ammonium borate is said to be especially useful on exterior walls of buildings, barracks, &c; on the latter, because experiments have proved an antiseptic action of the liquid.

Messrs. Baker & Co., 38 Cathcart street, Montreal, have lately issued an attractive catalogue in which are illustrated the many styles of architectural and decorative relief ornaments which they manufacture as well as ratchet joint plaster board and patent plaster partition blocks.

The Luxfer Prism Co., Toronto, has been reorganized with increased capital, the officers being as follows: President, Mr. Thos. W. Horn; vice-president, Mr. E. B. Osler, and secretary-treasurer, Mr. F. W. Barrett. Work is already well forward in the erection of a new and extensive factory in rear of Nos. 98 and 100 King street west.

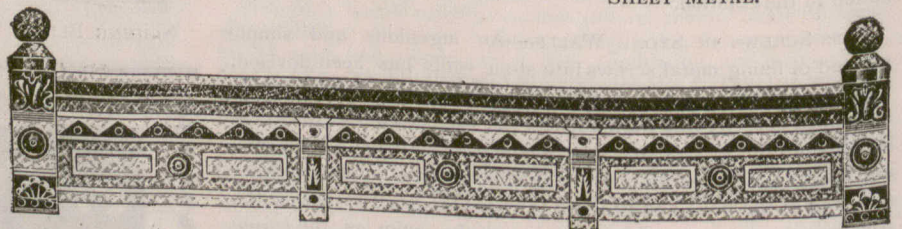
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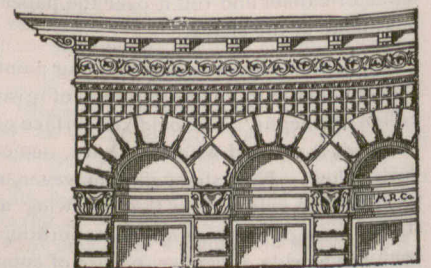
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