

# THE Canadian Contract Record

A Weekly Journal of Advance Information and Public Works.

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## THE CANADIAN CONTRACT RECORD,

A Weekly Journal of Advance Information and Public Works.

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The purpose of this journal is to supply Contractors, Manufacturers and Dealers throughout Canada, with advance information regarding contracts open to tender, and to furnish Architects, Municipal and other Corporations with a direct medium of communication with Contractors.

Information from any part of the Dominion regarding contracts open to tender will be gratefully received.

### ADVERTISING RATES ON APPLICATION.

At its Convention held in Toronto, Nov. 20 and 21, 1889, the Ontario Association of Architects signified its approval of the CANADIAN CONTRACT RECORD, and pledged its members to use this journal as their medium of communication with contractors with respect to advertisements for Tenders.

The publisher of the "Canadian Contract Record" desires to ensure the regular and prompt delivery of this Journal to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so, should give both old and new address.

### USEFUL HINTS.

The expansion of wrought iron pipe under the varying degrees of temperature to which it will be subjected in ordinary use, may be calculated by multiplying the length of pipe in inches by the number of degrees increase of temperature to which it may be heated, and divide by 150,000, which will give the amount of expansion in inches. The expansion of cast iron pipes may be calculated in a similar way by dividing by 162,000.

In the *Memoires de la Societe des Ingenieurs Civils*, some particulars are given of the oscillation of a chimney stalk near Marseilles, 35 meters (115 feet) high, with an exterior diameter at the top of 1.22 meters (four feet). During a severe storm it was determined, by observing the shadow of the chimney, that its greatest oscillation was half a meter (nearly one foot, eight inches). It was further observed that a chimney set in motion by a gust of wind oscillates from four to five times backwards and forwards until it is at rest again. M. E. Burg asserts that should this momentum during the oscillations of a chimney repeat itself in such a manner that its direction coincides with that of oscillation, the overthrow of the chimney may be expected. This is the explanation given for the destruction of many a chimney constructed in accordance with sound principles of stability. In the case of a chimney near Vienna, 50 meters (164 feet) high, and constructed of concentric hollow rings, with an inner diameter to the top of two meters (6½ feet), which is exposed to considerable gusts of wind, the oscillations were most carefully and repeatedly measured with a theodolite, when the observations showed an extreme oscillation of only 16 centimeters, (16½ inches) during severe storms.

### STRENGTH OF MATERIALS.

Some time ago, says the *Lumber Trade Journal*, we gave a tabulated statement of the crushing strength of various materials, and, though very incomplete, owing to the lack of material at the time, the result commanded a great deal of attention. The following table shows the tensile strength--the amount of cohesion existing between the atoms of a mass, or the tenacity with which the fibers of a body, the particles, resist separation. The tensile strength of a body, then, is therefore in proportion to the number of its fibers, or rather to the area of its section. The following results of wood and some metals may be considered a fair average, and should be preserved for future reference. It would cost not less than fifty dollars to have these tests made regularly by any one competent to make them. One square inch of material used to tear asunder requires of:

Copper, wrought	34,000
Copper, cast	19,000
Copper wire	51,200
Gold, cast	20,000
Iron, cast	27,000
Iron wire	103,000
Iron, best bar	72,000
Iron, medium bar	60,000
Iron, inferior bar	30,000
Lead	880
Platinum	53,000
Silver	40,000
Steel	120,000
Tin	5,000
Zinc	3,500
Brass	42,000
Ash	16,000
Beech	11,400
Birch	15,500
Box	20,000
Cedar	11,400
Chestnut	10,000
Cypress	6,800
Elm	13,800
Fir, strongest	12,500
Fir, American	8,000
Lignum vitae	11,000
Locust	20,800
Mahogany	21,500
Maple	10,500
American White Oak	11,500
American White Oak, seasoned	13,600
Pine, Yellow	6,870
Pine, Pitch	7,600
Pine, Fat	7,200
Sycamore	13,000
Walnut, White	7,000
Walnut, Black	6,800
Willow	13,000
Poplar	12,300
Basswood	12,000
Tamarac	8,000

The foregoing list comprises about all the woods used manufactured into lumber by a cleavage like cuts, and also tells about all the difference, so far as practical utility is concerned, between one lumber and another, in fact, tells which is the strongest.

Doubtless the next question of importance is which kind of wood will wear the longest, when simply exposed to atmospheric influences and not subjected to any particular stress or treatment. In general dealings and usage the more open the grain the better the lumber will decompose, inasmuch as the moisture from the atmosphere can easily penetrate and find lodgment among the elements of putrefaction, cellulose and gluten, causing a more rapid decay. This rule, however, will not apply to all varieties, for some of the most opened grained of all woods