

MANUFACTURES AND MATERIALS

WHICH ARE THE HARD WOODS?

THE relative hardness of woods is calculated by the hickory, which is the toughest. Estimating that at 100, we get for pignut hickory 96, white oak 84, white ash 77, dogwood 74, scrub oak 73, white hazel 72, apple tree 70, red oak 69, white beech 65, black walnut 65, black birch 62, yellow and black oak 60, hard maple 56, white elm 56, red cedar 56, cherry 55, yellow pine 53, chestnut 52, yellow poplar 51, butternut and white birch 43 and white pine 35. According to this formula woods possessing a degree of hardness equal to only about 40 per cent., or less than that of hickory, should not be classed as hard woods. Such woods are, however, limited in quantity, and are not of sufficient importance to justify a classification, and the trade will continue to construe hard wood to mean everything except white pine.

STEEL GIRDEES.

THE substitute of steel for iron in girder manufacture appears to be making steady progress. *The Montreal des Inerts Materials* states that for the large new warehouses in course of erection at Buenos Ayres steel girders are specified, and that, as could not be advantageously obtained in Belgium, the contractors, Halot & Co., Louvain, have had to place the order with Rothe Erde Works, in Germany, a concern which makes a specialty of this kind of work. As the order is for 5,000 tons, the Belgian iron-girder rollers are asking themselves to what extent steel girders are likely to replace iron in the future, and how far their present practical mon-

opoly of the export business in large-rolled girders is threatened by this preference for steel. *The Montreal* draws comfort from the reflection, that while for the nine months ending Sept. 30 the export of steel from Belgium was only 80,000 tons, the shipments of manufactured iron reached 21,000 tons.

PAPER FOR BUILDING.

THE use of paper fabric for building purposes—by the term paper being meant, broadly, a flexible sheet made of vegetable or other fibre, which has been reduced to a pulp, and then pressed out and spread and dried—is now advocated by some builders on the following grounds: First, continuity of surface; that is, it can be made in rolls of almost any width and length, is flexible, or, by gluing several layers together, may be made stiff, and will stop the passage of air, because there are no joints. Second, it has no grain like wood, and will not split. Third, it is not affected by change of temperature, and therefore has an advantage over sheet metal as roofing material. Fourth, whereas, in its natural condition it is affected by moisture, it may be rendered waterproof by saturating with asphalt, or by a variety of other methods. Fifth, it is a non-resonant, and well fitted to prevent the passage of sound. Sixth, it is a non-conductor of heat, and can be made also of incombustible material like asbestos, or rendered fire-resisting by chemical treatment. The combination of paper with other substances, and solidifying the mass by pressure, renders practicable the production of a material capable of replacing wood for many purposes; and not the least among its characteristics of adaptability is the ease with which it may be made into sheets of any width and thickness, that will not warp or shrink from heat, cold or dampness.

E. W. Hawes, of Toledo, Ont., is about to establish a glass factory at Kingsville, Ont.

TO ARCHITECTS AND BUILDERS.

TAIT & CO.,

MANUFACTURERS OF AND DEALERS IN

Wood Mantels

— AND —

Overmantels

GRATES, TILES, Etc.

Are now prepared to fill all orders for these lines of Goods promptly and in a satisfactory manner.

Estimates given for Office and Store Fittings.

SHOW ROOMS:

231 Queen Street West,
TORONTO.

SEND FOR PRICES.



KINGSTON DRY DOCK.

Notice to Contractors.

SEALED TENDERS addressed to the undersigned, and endorsed "Tender for Dry Dock," will be received at this office until Thursday, the 28th day of March next, inclusive, for the construction of a Dry Dock at Kingston, Ontario, in accordance with plans and specification to be seen on and after Wednesday, the 6th day of March next, at the Engineer's Office, 30 Union Street, Kingston, and at the Department of Public Works, Ottawa.

Intending contractors are requested to bear in mind that tenders will not be considered unless made on the printed forms supplied, and accompanied by a letter stating that the person or persons tendering have carefully examined the locality, have satisfied themselves as to the nature of the materials to be excavated, and the foundations for the cofferdam and its probable cost. Tenders must be signed with the actual signature of the tenderers.

An accepted Bank cheque, not limited as to time of payment, for the sum of \$20,000, payable to the order of the Minister of Public Works, must accompany each tender. This cheque will be forfeited if the party de-

clines to enter into a contract when called on to do so, or fail to complete the work contracted for, and will be returned in case of non-acceptance of tender.

The Department does not bind itself to accept the lowest or any tender.

By order

A. GOBELL,
Secretary.

Department of Public Works,
Ottawa, 19th Feb., 1889.



A New and Beautiful Interior Decoration for Ceilings and Walls. (Patented.)

Must be seen to be appreciated. Costs less than the higher priced decorations. The Press speaks of it in the very highest terms of approval.

SOLE AGENTS FOR ONTARIO:

THOMSON & SONS,
364 YONGE ST.,

Painters and Decorators, Importers and Dealers in Artists' Materials, etc. References given to work done in this city.



Toronto Water Works.

TENDERS FOR SUPPLIES.

SEALED TENDERS, addressed to the undersigned, and marked "Tender for Iron Pipe," or "Tender for Special Castings," etc., as the case may be, will be received by registered post at this office up to twelve o'clock, noon, of

Monday, March 25th, 1889,

For the supply of the following materials, etc.: Cast Iron Pipe, Special Castings, 3 in., 4 in., 6 in., and 12 in. Valves; Hydrants, Pig Lead, Bar Iron and Steel, Iron Stop-cock Boxes, Rubber Packing, Stone Tops for Valve Chambers, Pipe Laying, General Stores, Drinking Fountains, Horse Troughs, Brass Work, Lead Pipe, Cylinder and other Oils, Brick Valve Chambers, Oak Valve Chamber Traps.

Specifications and forms of tender may be obtained at the office of the Superintendent. A deposit (cash or marked cheque) equal to 25 per

cent. of the amount of the contract, must accompany each tender. The lowest or any tender not necessarily accepted.

JAMES B. BOUSTEAD,
Chairman Water Works Committee.

Toronto, March 6th, 1889.

THE "EASTLAKE" SHEET STEEL SHINGLES

— ARE —

Fire and Storm-Proof,
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Our MANITOBA AND SPECIAL STEEL SHINGLING is specially adapted for Elevators, Warehouses, etc.

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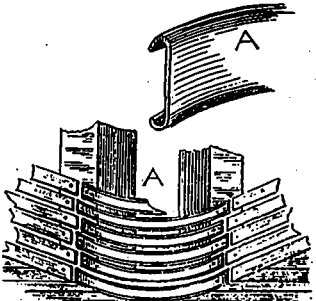
Our Goods are the heaviest and cheapest of the kind in Canada.

SEND FOR CIRCULAR.

MEFALIC ROOFING CO. (Ltd.)

82 1/2 YONGE ST., TORONTO.

Radigan's Patent Metallic Lath.



THE object of this invention is to form circular corners on stud partitions, both outside and inside, when required, or only on the outside. This has hitherto been done by making the grounds with copper laths, which, owing to shrinkage, caused the plaster to crack—but curves of any required radius may be made with these Metallic Laths, and which will form a strong and firm ground in line with the wooden lathing for plastering on, and as shown in Cut A, the laths are keyed top and bottom, thus forming a double key. The attention of Architects and Plasterers is called to this invention. Give them a trial and be convinced. Send for circulars and price list.

JOHN RADIGAN,
68 Mary Street, HAMILTON, ONT.