

the depth is increased to 4 feet 8 inches. Between the open cast-iron parapets, which are 4 feet high, the width of roadway is 17 feet, but no provision is made for foot-paths. The main arch is to be faced with brickwork. The spandrel arches are 5 feet span. The composition of the concrete to be used in this work is as follows, the proportions being by volume:—Cement 1, sand 2½, and broken stone 5.

ADULTERATION OF CEMENT.

In a recent article on slag cements Professor W. K. Hatt makes reference to a possible method of determining the presence of slag adulteration in Portland cements. This method appears likely to prove of practical value to cement users. The article points out that the characteristic color shown by a water-hardened pat or briquette of slag cement, when fractured, is green, but that upon drying by exposure to air this green color bleaches to white. This change of color is due to the presence in slag cements of from 1 to 1½ per cent. of sulphides, which, upon exposure to air, are oxidized. A similar coloration and bleaching action is witnessed when a Portland cement has undergone faulty calcination, because there was not a sufficiently oxidizing flame in the kiln. The fact, therefore, that a Portland cement briquette hardened in water bleaches from green to white upon exposure to air, is only presumptive evidence that slag adulteration has been practised; it may be the result of faulty calcination. In either case the fact is one whose determination is of value to the engineer, since it gives him warning that the character of his cement supply is open

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to suspicion. The use of ground slag as an adulterant of Portland cements is well known, particularly in Europe, where cement users have been compelled to take stringent measures to protect themselves from the fraud. In America far less tendency has been shown by cement manufacturers to practise adulteration, but it is nevertheless certain that it is sometimes done.

MAKING ARTIFICIAL WOODS.

A process has just been patented for making artificial woods out of pulp, so as to imitate such costly kinds as mahogany and rosewood. Indeed, the inventor claims to be able, by the help of his machine, to reproduce the appearance of quartered oak, curly maple, birds-eye maple, or practically anything else that grows in the forest, so perfectly as to deceive the trained eye. Obviously such an achievement should be of high commercial value, inasmuch as the more expensive woods are luxuries within reach only of people of means, the rarest of them coming from distant tropical countries.

The process does not reproduce the texture of wood, but merely their appearance. The pulp is thrown upon a cylinder by an airblast projected through a number of pipes, and an irregular distribution of the particles is obtained by various devices such as varying the intensity of the blast and causing the pipes to vibrate. In this way the knots and grain of the natural woods are said to be counterfeited with surprising success.

Artificial woods of this kind are available for use as veneers, the employment of which is so extensive at the present time. Nearly all of the imported natural woods as sold as veneers. They are cut in extremely thin slices, because they are too costly to be used solidly. Mahogany, rosewood, curly ash, figured birch, satinwood, and Circassian walnut are most in demand, and veneers made from them bring from three-half pence to five pence a

foot. Some veneers are worth ten pence a foot, though mere shavings, and a single log of rare wood is sometimes valued at as much as £500.

NOTES.

The town of Carleton Place, Ont., has just purchased a 12 ton steam road roller. The first steel bridge in Middle Yukon has been formally opened for traffic. It spans the Klondyke river about a mile and a half from Dawson. The main span is 154 feet long, and rests on steel caissons filled with cement and strengthened with crib and rockwork. The total cost of the bridge in position was \$30,000.

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