

CITY ENGINEER FOR OTTAWA.

The City Council of Ottawa, Ont., decided, on Monday last, to appoint Mr. John Galt, C.E., of Toronto, to the position of City Engineer; at a salary of \$3,500 per year. Mr. Galt is a native of Scotland, and took his C.E. and M.E. degrees at Glasgow and London universities. For several years past he has been practising as a consulting engineer, and his services have been called upon by many municipalities throughout the Dominion. At the present time he is engaged on plans for a large amount of municipal work, including water works and sewerage systems for Oshawa, Stayner and Prescott. Having given much attention to the design and construction of sewerage and waterworks systems, his experience is certain to be of great value to the city of Ottawa, where a drainage system involving an expenditure of more than half a million dollars is about to be undertaken. In connection with his duties as city engineer, Mr. Galt will in all probability superintend the carrying out of this important work.

THE QUALITY OF MORTAR.

Nearly all of our modern masonry constructions, and certainly all brickwork, is built on the assumption that the individual blocks, whether brick or stone, are to be imbedded in a matrix of mortar, uniting the whole into a homogeneous mass. As a matter of fact this assumption is rarely perfectly correct, for the reason that the mortar, though forming the key to the strength of the whole wall or pier, and, consequently, of extreme importance as a factor in building operations, very often fails to receive the proper care, and a scientific knowledge of the properties of the material is often sadly lacking, on the part of our builders. It is, however, encouraging to notice how much advance has been made in a comparatively few years in the uniformity of the product which is used in our more important buildings. The old-fashioned way of preparing mortar was to burn the lime in a more or less crudely-constructed kiln, and to mix the materials as they were required on the job in small batches, the lime being partly slaked and then being immediately covered with a blanket of sand, theoretically to keep the heat in, but practically checking the thorough slaking of the particles. Then the mortar, whether with lime or cement as a base, was worked over by hand on a board close to the wall, and the brickwork was laid up with very little attention to anything except to get the material in place.

MACHINE-MIXED MORTAR.

The necessities of modern building operations, no less than the scientific study which a few of our best builders have devoted to the subject, have resulted

in a modern compound specifically known as machine-mixed mortar, which is so far ahead of the average product which we were formerly obliged to depend upon that, though it has not achieved perfection, and the results are not as good as were brought about by the Roman methods of centuries ago, it is a vast improvement over the average hand-mixed mortar. Unfortunately this machine-mixed mortar cannot be obtained in all cities. It has been used a great deal in New York, and to a certain extent, we believe, in the other large cities, but as far as we know it has not been found practicable to ship it to any great distance without increasing the cost over hand-mixed mortar, though if considerations of the quality of the work were to be put above a matter of a few cents per cubic yard in cost, it would be far better for the builders in our small towns to have the machine-mixed mortar shipped to them. The cost is claimed to be some 25 cents per 1,000 bricks less than the average cost of hand-mixed mortar, while it is claimed that an additional saving of 22 cents per 1,000 can be effected in the labor of laying the brick.

ECONOMICAL CONSTRUCTION.

It is extremely satisfactory to feel that a good material, which is a decided improvement upon old methods, results not only in a better construction, but in a distinct saving of money. We should be inclined to look upon it in another way, and urge that even if the cost were 30 cents or 40 cents per 1,000 bricks, it would be well worth the difference to use machine-mixed mortar. This, of course, is on the assumption that the quality of the mortar is uniform and is kept up to high standard. It is much easier to do this mechanically than by trusting to manual labor. Anyone who has watched the ordinary laborer mix mortar will undoubtedly appreciate

how very variable the quality is. A brick-layer will try to judge of the mortar by the way it feels under the trowel. We know of one instance where an attempt was made to ascertain how much value could be placed upon such means of judgment. Three mixtures were made, one with two parts of sand to one part of Rosendale cement; the second with three parts of sand to one of cement and half a portion of ordinary loam; the third mixture was one part cement, one part of loam, and four parts of sand. The color of the mortar in each was so nearly the same as to be difficult to distinguish. Three bricklayers, to whom these batches of mortar were submitted, united in declaring that the one with equal parts of cement and loam was the best, their judgment being based simply upon the smoothness with which the mortar could be laid in the wall.

(To be Continued.)

The mordants used for dyeing with sumac are either tin, acetate of iron, or sulphate of zinc. The first gives yellow, the second gray or black, according to strength, and the third greenish-yellow.

Many times it is very convenient to make an article of cast iron that needs to be finished, and which should be very hard. Cast iron can be hardened as easily as steel, and to such a degree of hardness that a file will not touch it. Take one half pint vitriol, one peck of common salt, ½ lb. saltpetre, 2 lb. alum, ¼ lb. prussiate potash, and ¼ lb. cyanide potash; dissolve in ten gallons of water. Be sure that all the articles are dissolved. Heat the iron to a cherry red and dip it in the solution. If the article needs to be very hard, heat and dip the second and even the third time.

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