

requirements, since neglect of such care jeopardizes the lives of the family and breaks up the serenity of the home.

Resolved, That we as an association lend every possible assistance to the health department of this city in enforcing strict sanitary laws, which will insure a diffusion of sanitary knowledge, and an active co-operation on the part of citizens to provide good sanitation.

The by-law authorizing the Kingston City Council to expend \$140,000 for improving the water works system was passed by a majority of 409 votes.

The sixth annual convention of the National Association of Master Plumbers of the United States will be held in Boston this year on June 26, 27, and 28.

The Toronto Board of Health has wisely recommended the Council to remove garbage daily during the summer months as suggested by the Medical Health Officer.

Plumbing inspector Benjamin Kirk, of this city, is ably contending for the superiority of wiped joints as against cup joints in the columns of the *Engineering and Building Record*.

From life's rich pudding may a plumb.
The ice man plucks in summer,
But in the winter time he knock-
Les down to one who's plumber.

—*Burlington Free Press.*

Mr. Mann, of Montreal, who has been erecting a garbage crematory in the city of Chicago, pointed out to the people there the danger to the public health of allowing barrels and boxes full of garbage to stand for hours and days in lanes and on the public streets. In Montreal persons are fined for placing refuse on the streets.

Mr. Henry Lamb, of Rochester, offers through the America Health Association two prizes of \$500 and \$200 respectively for the best essays on "Practical Sanitary and Economic Cooking Adapted to Persons of Moderate and Small Means." Competition is open to authors of any nationality, but papers must be written in the English language.

The London *Metal Worker* speaks approvingly of rust joints for iron pipes, the sole objection noted being their great permanency. A rough formula for making the joints is given as follows: Take clean iron fillings, mix them with a little sal ammoniac in a wet state and drive them into the joint over a gasket. Sometimes a little flour of sulphur is added.

Complaints are heard regarding the condition of some of the cow byres in the city of London, Ont. It is contended that the filthy condition of some of these places precludes the possibility of pure milk being supplied to the citizens. This is a matter that the Health Officers of London and other Canadian cities should enquire into. Pure milk is as necessary as pure water for the maintenance of the public health.

The *Sanitary News* objects to city authorities enforcing the use of water meters, on the ground that people in poor circumstances will endanger their health in attempting to economize in the use of water. Our contemporary says:—Increase your license, add to your taxes on land, if necessary, and on whisky and tobacco, but let the people have free water and the more they use, the better it will be for the community."

Mr. Frist, in the Dominion Parliament the other day, expressed the opinion that the Canadian guarantee regulations were inadequate for the protection of the country from the entrance of contagious diseases. The premier, in reply, stated that probably no system of quarantine existed which might not be improved. It is very necessary that everything possible should be done to protect the Canadian stem.

Messrs. Moffatt, Hodgins & Clarke, of Watertown, N. Y., have arranged with the Town Council of Cobourg, Ont., to put down between six and seven miles of mains and sixty-seven hydrants, certain of which may be used for street watering purposes. The town will thus be furnished with a complete system of waterworks without investing any money; they will pay an annual rental of \$3,000, with the privilege of purchasing should they at any time desire it.

competitors must have their work in by Jan. 1, 1893.

Gananoque, Ont., has by a majority of 66 decided against a five years' contract for electric lighting.

We have received from the American Public Health Association copies, in pamphlet form, of prize essays entitled "Healthy Homes and Foods for the Working Classes," by Victor C. Vaughan, M. D. Ph. D., professor in University of Michigan; "The Sanitary Conditions and Necessities of School Houses and School Life," by D. F. Lincoln, M. C., Boston, Mass.; "The Preventable Causes of Disease, Injury and Death in American Manufactories and Workshops, and the best Means and Appliances for Preventing and Avoiding Them," by Geo. H. Ireland, Springfield, Mass.; "Disinfection and Individual Prophylaxis against Infectious Diseases," by Geo. M. Sternberg, M.D. These valuable treatises may be obtained at ten and five cents each on application to Dr. Irving A. Walker, Secretary, Concord, N. B.

A contemporary remarks that in ceiling decoration all strong colors should be definitely separated from each other by light lines, fillets or small moldings. If the cornice presents any small flat surfaces, a simple conventional flower or geometrical pattern can often be used to great advantage, care being taken not to make it too prominent, and in no way to form a dark molded frame for a mass of light tinted ceiling. It is not a very costly matter to lay on to a ceiling having small wood moldings formed into panels, and painted, paper fitting the panels, and filled in with some very light diaper paper of stencil enrichment fitting the panels.

The following are combinations of colors in certain choice flowers, which may suggestively aid combination of hues in decorative work: Vermilion, suffused with scarlet, and penciled with dark tints; ground of deep crimson, shaded with bronze; lavender, with undulatory margin of white; white, with carmine feathered markings; brilliant pink, margined white, blotched with maroon; bronze red, with white margin and deep chocolate-colored spots; lilac color, blotched with maroon; bronze red with deep chocolate-colored spots; intense deep crimson, with black spots; deep rose purple, with maroon, feather-like splashes.

PERSONAL.

E. Rogers & Co., plumbers, London, are going out of business.

Messrs. Platam Bros., plumbers, of London, Ont., are reported to have made an addition.

Mr. E. O. Graydon has been appointed assistant city engineer by the London, Ont., City Council.

Hon. James McShane, Minister of Public Works in the Quebec Provincial Cabinet, has resigned.

Mr. Fred. Henry, late Assistant City Engineer, of London, Ont., has left that city to practice his profession in New York.

Mr. W. J. Gibson, who for fifteen years was connected with the water works department of this city, died a fortnight ago.

Mr. Wm. Lyons, contractor, has entered a suit against Woodrow for \$500 extra work on Bruce Avenue sewer, which will be tried at the spring assizes. The towns offered to settle the claim for \$150.

The wife of Sandford Fleming, the well-known engineer, died recently at Ottawa, aged 57 years. She was a daughter of the late Mr. James Hall, Sheriff of Peterboro', and was highly esteemed for her Christian qualities.

The Master Carpenters' Association, of Toronto, has unanimously rejected the following officers for the ensuing year:—President, J. J. Withrow; Vice-President, Geo. Mober; Treasurer, William Ross; Secretary, William Simpson; Committee, Wm. Forbes, William Simpson, Queen street west, C. R. S. Dinicoff, Geo. Gall, George Bury.

The *West of March* contains a biographical sketch of Mr. Sandford Fleming, C. E., L. L. D., C. M. G., from the pen of Rev. Principal Grant, of Kingston. Mr. Fleming was born in Scotland, where he spent the first eighteen years of his life. At that age he came to Canada, where he has lived for forty-three years. During this period he has been connected with many important public undertakings. Mr. Fleming has also attained considerable prominence as a writer.

Sir Alexander T. Galt is projecting a railway bridge across the St. Lawrence from Prescott to Ogdensburg, and asks for incorporation as the Grenville International Bridge Co., for construction purposes.

Amongst the signs of the improved class of buildings now going up and projected in the larger cities of Canada is the greatly increased employment of rolled iron joists, which are now generally specified for all first-class buildings, both public and mercantile. Besides the advantage of greater strength, and occupying far less space than timber, the immunity from danger from fire is appreciated as of the utmost importance. The improved methods of manufacture has now brought down the price so as to freely compete with the present prices of timber. Mr. G. L. Green, of Montreal, who has successfully carried out some of the largest contracts with the Government and railway corporations, solicits correspondence from architects and builders as per his notice in another column.

COMPOUND FOR PATCHING STONE.

THE restoration of some of the most important stone structures in Paris has been mainly accomplished by means of a metallic cement invented by Professor Bruze. It consists of a powder and a liquid, the first composed of two parts by weight of oxide of zinc, two of crushed limestone of a fine nature, and one of crushed grit, the whole intimately mixed and ground, ochre in suitable proportions being added as a coloring matter. The liquid employed consists of a saturated solution of zinc in commercial hydrochloric acid, to which is added by weight of hydrochlorate of ammonia, equal to one-fourth of the dissolved zinc, and this liquid is diluted with twenty times its bulk of water. In using the cement, one pound of the powder is mixed with two and a half pints of the liquid. The cement hardens very quickly and is of great strength.

BRIDGING.

BRIDGING floors is not only to prevent the joist overturning, but is principally to distribute the weight resting directly on one joist over the others immediately adjoining, and in that way to considerably stiffen the floor as a whole. The places of timber, by which the bridging is composed may, and do set either as ties, or struts, according to the manner in which the load is entered, and in the case of a moving load, and of a person passing over the floor, will not alternately as ties and struts in quick succession. The strutting being placed obliquely to the joists, the strain is practically neither that of a direct tie, nor of a direct strut, that is, neither simple compression nor simple tension in either case, but is in both modified by a cross strain. There is some tendency for the joists to turn over, which augments the cross strain, so that, of the three struts, the cross strain is of most importance.

Now, it is a very well-known rule, that the strength of a beam or a piece of timber subjected to a cross strain is directly as its breadth and as the square of its depth, and it will be obvious, therefore, that the system of placing the bridging with its greatest scantling vertical is the proper one, and is a good deal stronger than the system usually employed. In the first system the bridging is reversed alternately so that the pieces may butt against the joists at points directly opposite one another, which tends to further strengthen and stiffen the floor.

The only advantage in the second system over the first is, that it does not necessitate a man turning round to nail the pieces alternately as he comes to them, and therefore is saving of a small amount of time, but when it is considered how much additional strength is obtained by the first method, it will be seen that the saving of time under the circumstances is by no means a wise economy.—*Building.*

STRENGTH OF BUILDING MATERIALS.

MR. J. B. JOHNSON, in an article in the *Journal of the Engineering Society*, gives some interesting points in regard to testing the strength of building materials. Speaking of tests of brick and stone, he says: "Most tests on substances have been in cubes, but such results are uniformly too weak. In the case of a brick, a crushing test made flatwise, on one brick, is very misleading. From three series of tests on standard St. Louis brick as many manufacturers, fifty brick being tested for each firm, I have included that a brick, crushed endwise, will always carry considerably more than the same brick will stand in a wall. I took 24 brick graded from medium red to paving, and tested them endwise, and then 24 brick similarly graded cut into halves, and four half bricks piled into a column with thin joints of neat Portland cement and laid to harden for three weeks. The average strength of the endwise test was 3,520 pounds to the square inch, and of the flatwise column test, was 2,635 pounds to the square inch, and showing that the endwise test gave a strength about one-third more than a flatwise test, piled four high. All these brick were dry pressed, one lot hydraulic pressed, one mechanically pressed and one made with a hammer blow. Those made by the mechanical pressure were considerably stronger than the other, and those by the hammer blow the weakest."

Stone and brick lose a large part of their strength when thoroughly wet. If their strength is required in foundations, or where they receive their full load when water-soaked, then they should be tested wet. If they are to withstand the action of frost then the amount of absorption is important, anything over 12 per cent. being objectionable, and liable to disintegrate from freezing.

"Any beam, whether of wood or iron, is as much stronger when placed on its edge as when on its side, as the width is greater than the thickness. Thus the stick or bar of iron one inch by three inches, when used as a beam, is three times as strong when placed on its edge as when on its side. This is true only within limits. It would not be true of a piece of boiler plate, on account of the flexibility."

The atmospheric influences producing disintegration of bricks, tiles, etc., are noted by the *Chronique Industrielle* as being much less active and destructive in a season of continuous humidity than during alternately wet and dry periods. Their action also is obviously affected by the chemical and physical composition of the bricks and the degree of burning. An excess of sand destroys cohesion, and calcareous matter is reduced in burning to lime, which will be cracked by exposure to moisture, and, by the expansion which follows, causes disintegration.

The king of the Belgians has offered a prize of 25,000 francs (about \$5,000) for the best work, in manuscript or print, on the means of procuring in abundance and at small cost the best quality of portable water for large cities, especially for Brussels and its suburbs, "regard being had to the future increase of population." French, English, Flemish, Italian, German or Spanish may be used, but for-

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