

business interests of the community would not suffer nearly so much, and we would have less destitution during the winter and early spring months. It is possible that if the building trades were consolidated, so that one strike would answer instead of twenty, we would not be troubled with any. The interests would be so great, and the result of a strike of such consequence, that there would be more desire shown to arrive at a settlement before resorting to the last alternative. It would certainly be much easier to bring outside influence to bear in the settlement, and arbitration could more easily be used to secure a quiet and satisfactory adjustment of all disputes.

**T**HE rebuke administered to the Montreal City Council by leading citizens, who turned out with picks and shovels to put the streets in a passable condition, was a cutting one indeed. A great deal of apathy is displayed by the taxpayers in towns and cities regarding the management of civic affairs, yet we are pleased to see that there is a limit beyond which neglect and incompetency will not be tolerated. The streets of Montreal of late would certainly disgrace a city of much less pretensions, and unless an improvement takes place now, the position of the gentlemen composing the Board of Works will be anything but pleasant when election time comes round again.

**T**HE Royal Canadian Academy Exhibition and Art Fair will be held in the Granite Rink, Toronto, in the second week in May. The building, which is very large, being the new northern rink building of the Granite Club, will be divided into two parts. The smaller portion will be used for the exhibition of paintings, sculpture and architectural drawings. The larger portion will be used as an Art Fair and for the purpose of giving scenic representations of art, commencing with the Egyptian period, and coming down through the Grecian, Roman and middle ages to the present time. This will be done by tableaux, accompanied with singing and dancing. Canadian art will be represented by winter and summer scenes of forests, rivers, lakes, water falls, etc., in which will be introduced Indians, tobogganers, skaters, snow shoers and lacrosse players. On alternate evenings will be given representations of old English customs, cheap-jacks, Punch and Judy shows, etc. There will also be stereoscopic views of all the important buildings and statuary in the world. The Art Fair will be held throughout the week. Bric-a-brac, china, beautiful fans, rare races, etchings, engravings, etc., will be disposed of at stalls representing those in use in the middle ages. There will also be stalls for the sale of flowers, candies, cigars, etc., and which will no doubt be liberally patronized. Refreshments may also be had in rooms specially arranged for the purpose. The musical department has been placed in charge of most capable masters. The exhibition will be opened by Lord and Lady Lansdowne on the evening of the annual assembly, Monday, May 7th. Sir John and Lady Macdonald and many other distinguished persons will be present. It is expected that the Exhibition will be the best so far held. A number of the members of the Academy spent the summer among the Rockies, and we may expect a number of works picturing the grand scenery of those regions. Many valuable works from Great Britain and the United States are expected to be exhibited. We hope that this Exhibition will result in a financial success, and that the benefits from the artistic side may also be very great. There are people who require to be taught that while they themselves may be very deficient in artistic knowledge, there are some living amongst them who, while they are not Michael Angelos, are able to do good artistic work if their clients would but furnish sufficient funds.

**T**HE new plumbing by-law passed by the Toronto City Council at its last meeting is in some respects a loosely constructed ordinance, and the wisdom of some of its provisions is open to question. It cannot be said to be as evident an improvement on the former by-law as persons interested in its provisions had a right to expect. Time is required to perfect a measure of this kind, and perhaps if more time had been given to consideration of some of the clauses of this new by-law, its meaning and the justice of certain of its provisions could be more easily discovered.

A very objectionable feature of the by-law in our opinion, is the refusal of a license to any plumber who is not a Canadian by birth or naturalization. This clause was inserted we understand because some cities in the United States have a provision of that kind in force. This, however, is no reason why such a regulation should

be adopted here. If our American neighbors choose to exhibit their narrow-mindedness, that is no reason why we should follow their example. To exclude any man who has the means and the ability from engaging in a legitimate business is unjust, unworthy of this enlightened age, and detrimental to the progress of the city and country. Why make this discrimination in regard to plumbers? Why not include manufacturers, storekeepers, bakers, butchers and all other lines of business?

The by-law provides that within three days after notification has been given that work is ready for inspection the City Engineer "shall call for either the peppermint, water or smoke test, and record the result of such inspection in the City Engineer's office." Who is to make this test? The by-law does not say. Shall the City Engineer "call for" the plumber who does the work to make the test? In that case what guarantee is there that his report will be a correct one? Again, if the plumber is to make the test, he should be told definitely which method of testing will be required, as the difference in the cost of the several kinds of tests varies considerably—the water test, for example, being much more expensive than the peppermint test. This clause is altogether too indefinite.

Another clause which is open to objection is the one compelling the plumber to stamp his name upon every water-cock, bibb, tap, etc., which he connects to the water service. The plumber should not be held responsible for the proper construction of a cock or tap of which he is not the maker. Why not put the responsibility upon the manufacturer, where it belongs? The water works department should do the inspecting and stamping of plumbers' goods, and should charge the manufacturers a fee to cover the cost of the work. This is the system which is in successful operation in Manchester and other large cities, in England and it is certainly preferable to the one embodied in the new Toronto by-law.

In rule 2 of section X it is stated that "no lead, waste or vent pipes shall weigh less than the following," etc. This may be very clear to the framers of this by-law, but we think that it had been worded "that no waste or vent pipes constructed of lead shall weigh less than the following" it would have been very much clearer to those who will have to interpret it. Just below the above clause is another which states that "air pipes may be constructed of wrought iron pipe, but not of sheet iron." Now, we would like to know what are air pipes? Are they the pipes venting taps, or are they the ventilating pipes from the closet space or from the rooms. Let us have a definition, for we confess we are very much in doubt, notwithstanding we thought we knew something about such matters.

The Examining Board is to consist of the City Engineer, Assistant City Engineer, Superintendent of Water Works, two practical master plumbers to be chosen by the Master Plumbers' Association, one practical plumber to be chosen by the Journeymen Plumbers' Association, and one architect or sanitary engineer practising in Toronto. This Board is unnecessarily large. The work would be better performed by three men whose ability and integrity were above question. The by-law, while making provision for the appointment of all the other examiners, does not say by whom the architect or sanitary engineer shall be appointed. The appointment of the examiners, who, above all others, should be chosen for his knowledge of sanitary science, is thus left to the City Council. Those who know how appointments by the Council are made, will not hesitate to declare that some more satisfactory method should have been provided.

We have neither time nor space this month to go fully into the consideration of all the provisions of the new by-law. We have simply tried to point out a few of its defects. In a future article we may revert to the subject again. In the meantime there is cause for congratulation in the fact that although the by-law is open to improvement in many particulars, the importance of sanitary regulations is apparently receiving a considerable amount of attention at the hands of the aldermen.

A new pneumatic stone dressing machine consists of a gun metal cylinder in which works a loose piston, one end of the cylinder being provided with a nozzle in which bits and chisels may be inserted. The stem is pressed inward and receives blows from the piston, which is shot backward by air at a pressure of 40 pounds per square inch, and makes, in the smallest machines, 15,000 strokes per minute. The stones thus treated are much superior to those dressed by hand, the surface being beautifully smooth and even.

## THE LINTEL.

John Ruskin, in discussing the lintel in architecture, says: "The principal distinctions between existing styles of architecture depend on their methods of roofing any space, as a window or door for instance, or a space between pillars—that is to say, that the character of Greek architecture, and of all there is derived from it, depend upon its roofing a space with a single stone laid from side to side; the character of Roman architecture, and of all derived from it, depends on its roofing spaces with round arches; and the character of the Gothic architecture depends on its roofing spaces with pointed arches or gables. I need not, of course, in any way follow out for you the mode in which the Greek system of architecture is derived from the horizontal lintel; but I ought perhaps to explain that by Roman architecture I do not mean that spurious condition of temple form which was nothing more than a luscious imitation of the Greek, but I mean that architecture in which the Roman spirit truly manifested itself, the magnificent vaultings of the aqueduct and the bath, and the colossal heaping of the rough stones in the arches of the amphitheatre; an architecture full of expression, of gigantic power and strength of will, and from which are directly derived all our most impressive early-buildings, called, as you know, by various antiquaries, Saxon, Norman, or Romanesque. Now, the first point I wish to insist upon is that the Greek system, considered merely as a piece of construction, is weak and barbarous compared with the two others. For instance, in the case of a large window or door, if you have at your disposal a single large and long stone you may indeed roof it in the Greek manner, as you have done here, with comparative security; but it is always expensive to obtain and to raise to their place stones of this large size, and in many places nearly impossible to obtain them at all, and if you have not such stones, and still insist upon roofing the space in the Greek way—that is to say, upon having a square window, you must do it by a miserable feeble adjustment of bricks. You are all aware of course, that this latter is the usual way in which such windows are now built in England; you are fortunate enough here in the north to be able to obtain shingle stones, and this circumstance alone gives a considerable degree of grandeur to your buildings. But in all cases, and however built you cannot but see in a moment that this cross-bar is weak and imperfect. It may be strong enough for all immediate intents and purposes, but it is not so strong as it might be; however well the house is built, it will not stand so long as it had been better constructed, and there is hardly a day passes but you may see some rent or flaw in bad buildings of this kind."

## MORTAR.

Lime or cement paste, says C. H. Haswell, is the cementing substance in mortar and its proportion should be determined by the rule that the volume of the cementing substance should be somewhat in excess of the volume of voids or spaces in the sand or coarse material to be united, the excess being added to meet imperfect manipulation of the mass. Hydraulic mortar, if re-pulverized and formed into a paste after having once set, immediately loses a great portion of its hydraulicity, and descends to the level of the moderate hydraulic limes. A great destruction of the hydraulic principle, therefore, results from any disturbance of the molecular arrangement of the mortar after crystallization has commenced. This is what occurs with the intermediate limes, which take initial set promptly and firmly, but which are subsequently thrown down by the slaking of the impure caustic lime which they contain. All mortars are much improved by being worked or manipulated, and as rich limes gain somewhat by exposure to the air, it is advisable to work mortar in large quantities, and then render it fit for use by a second manipulation. White lime will take a larger proportion of sand than brown lime. The use of soft water in the composition of mortar injures the adhesion of it. When a small quantity of water is mixed with slaked lime a stiff paste is made, upon becoming dry or hard has but very little tenacity; but, by being mixed with sand or like substances, it acquires the properties of a cement or mortar. The proportion of sand that can be incorporated with mortar depends partly upon the degree of fineness of the sand itself, and partly upon the character of the lime. For the rich limes the resistance is increased if the sand be in proportions varying from 50 to 140 per centum of the paste in volume; beyond this proportion the resistance decreases. Stone mortar—325 pounds cement, 120 lime and 24.67 cubic feet of sand. Brick mortar—326 pounds cement 120 pounds lime and 12 cubic feet of sand. Brown mortar—Lime one part, sand two and a small quantity of hair.