

## BUILDING INSPECTION.

The following paper on "Building Inspection" was read last month by Mr. W. E. Doran, at a meeting of architects and students in the city of Montreal:

I will first treat of this question in its social aspect, as it is one, legislation upon which must necessarily be of a socialistic character; that is, it must be such as will control the actions of individuals in the interest of the public at large, and even in the interests of the individuals directly affected.

It is conceded that all matters affecting the safety and prolongation of life are proper subjects wherein the liberty of the individual is to be made subject to the interests of society. That man should live in healthy and safe habitations, and that the public buildings and places he frequents should be equally healthy and safe, is now an admitted axiom. In rural localities, self interest usually prompts the individuals building to in some measure attend to these points. The conditions of life, and the pure atmosphere in a great measure supply for any artificial precautions in regard to the former; and the simplicity of the construction to a certain extent ensures the latter.

It is then in cities, where the aggregation of large numbers of people, their overcrowding in particular localities and the consequent artificial modes of life therein adopted, render it incumbent that authority of some kind interfere as regards the habitations of men and their places of public resort. Thus building and sanitary precautions are to a large extent regulated by the state to civic control, and the power to legislate thereon delegated to municipal bodies. I may be considered as not keeping within the proper scope of my subject when I refer to sanitary matters; but having given the principles upon which cities affect to control building operations within their limits, I hold that a system of building inspection should be devised, which would be at once comprehensive of all the points upon which civic legislation is necessary, and which would secure as far as possible that such legislation be thoroughly enforced.

What is the first consideration in regard to a building? Site. Is it healthy? Is the soil capable of sustaining the structure to be placed upon it? If the answer to both these questions be "yes," then the work may proceed. If to both or either the answer be negative, then competent authority should say "The defects must be remedied or no building shall be erected." Here then I claim is the first matter which a building by-law should govern, and the first question for a competent building inspector to decide.

In connection with this I will add, even at the risk of digression, that no street should be built upon until the drainage therein is as perfect as engineering science can make it, and further, that at the time of constructing a public sewer, a connection should be made to each lot. Thus the soil would have some chance of being drained, rendering the site salubrious, and at the same time frequently converting bad into good building ground.

There is a good deal of attention paid now to the carrying off of sewage, to my mind mis-called "drainage"; whilst soil drainage is almost universally neglected, though from a sanitary point of view the latter is at least as necessary as the former. Provision should also be made for completely excluding ground air from dwellings, whenever it might in the slightest degree prove injurious; also an enactment requiring the introduction of damp-proof courses in all walls.

2nd. *Light and Air.*—The object for which the building is to be erected must determine the amount of free space which it should be imperative to adjoin it on the public street and on the property of the individual; all this should be provided for in a model by-law, and it should be the duty of the building inspector to see that its provisions were complied with before granting any permit to build.

3rd. *Materials and Modes of Construction.*—It is universally admitted that the fundamental parts of construction should be of fire-proof material, or at least of such materials as would tend to retard the progress of conflagration. In fact the first idea of civic building inspection was founded on the prevention of fire, but as the cities progressed in wealth and opulence on the one hand, and unfortunately in poverty and degradation on the other, it has become necessary to guard against such errors of construction in the more ambitious buildings as would render them, insecure, not only as regards accidents by fire, but as regards cupidity of human nature from forcing the poor to herd in unwholesome, ill-built, and ill ventilated tenements, which might at any time become fire-traps or sources of pestilence.

How can a law be framed that will cover the various and multitudinous matters that must naturally have to be decided on by the building inspector? Let it be borne in mind that no matter how competent that officer may be, to a certain extent his usefulness is marred unless the law which he is called on to administer be clear, explicit, and clothes him with sufficient authority. It is evident that to meet the requirements of our modern cities, classification of buildings must be resorted to, and for different classes, certain matters of detail must be more carefully attended to than for others. For instance: For an ordinary self-contained dwelling or small tenement, it might be sufficient that after the matter of site, light and air had been satisfactorily attended to, that a general description of the building, with details of manner and materials of construction, drainage and plumber's fixtures should be deposited with the building inspector, and that the owner should be held to notify that officer at stated periods of the work, say at its commencement, when building should be ready for plastering, and again on completion, so that officer might see that everything was in compliance with the law. More important buildings should be graded according to their future uses, their altitude, and so forth, and for these the complete plans should be deposited in the building bureau, and any details as to calculations, etc., required by the inspector should be furnished. These should be verified

and if satisfactory, a permit should be issued in which it should be mentioned the various stages at which the department would have to be notified, so that the work would be properly inspected. No deviation should be allowed from the plans without the sanction of the building bureau, and further, a very important point, no building should be used for any purpose which would require a higher classification than that for which it was built, but a justice to the designers and builders, and in deference to public safety, a building should not be overloaded after a few years by the erection of additional stories, or if designed for an ordinary store, or for light manufacturing purposes, should not be exposed to the danger of caving in, or of being converted into a warehouse of the first class, or collapsing from the vibrations of heavy machinery.

In no particular should building inspection be more stringent and severe than in the matter of alterations and additions to old buildings, and if the details of the buildings to be raised or altered do not exist, and unless it can be clearly shown that the possibility of such alterations and additions was provided for in the original construction; careful examination, and if necessary, tests, should be made before the proposed improvements should be sanctioned, and in no case should the factor of safety be diminished.

Special provision should also be made as to public buildings in case of fire, modes of egress, etc. There in fact are pretty generally attended to, but there is one point that is generally neglected, viz., provision to enforce proper systems of ventilation, particularly in school buildings, where children are often found to breathe for hours a vitiated atmosphere. To this cause may be traced many diseases, the origin of which oftentimes puzzles physicians.

And the modern tall building, does it not call for some special attention? Is it to be allowed to tower above the reach of fire apparatus, unless constructed all girth and absolutely fireproof? Are elevators to be allowed to daily carry up and down precious loads of humanity without frequent inspection and tests? A prompt mode of dealing with existing structures which may become dangerous is also much needed, so that no one could defy the law, and one would not read as we often do after a disaster, "that the structure was condemned some years ago by the building inspector, but was nevertheless suffered to exist."

A building law should provide carefully for all these and many other details. Now how is such a law to be framed? Certainly not by a committee of aldermen with no technical knowledge, aided by an attorney of more or less legal ability, with a medical gentleman thrown in for the health points; after sitting down and making one or a half dozen conflicting by-laws on the subject, accepting such suggestions as they might find fit from their inspector. Can they hold that gentlemen responsible for anything that may occur in any building, old or new, through the length and breadth of a great city, whether he had any notice of his attention being wanted in a particular locality or not, or the authority to interfere if he is aware that certain structures are dangerous? On the contrary, such a law would need long and careful study from competent men, and in its framing, our profession should certainly be consulted. I have purposely avoided anything savouring of local criticism, but I cannot resist the temptation of recording the fact that in one so-called by-law to regulate the construction of buildings in a certain city (you all know what city) no reference is made to the existence of an architect; it is altogether the owner and the builder whom the inspector is to deal with and ask for explanations. The authorities of the same city consulted the plumbers about a proposed sanitary by-law, but not the architects, who are supposed and expected to govern the former. I do not know if the same implicit contempt for architects exists elsewhere, but I think I can safely assert that only with their assistance can a practical by-law be framed, which men of ability could accept, and which would be of service to those who wish to build honestly. It would also intimidate those willing to risk the lives of their fellow citizens for the sake of a slight saving of materials or labor, as it should be a penal offence to disregard in building anything which might be injurious to health or dangerous to life.

As to the officials of the building bureau, large cities should be districted, and an inspector appointed for each, who should be a thoroughly trained and experienced architect. All the necessities of building, both for sanitation and for safety, should, I claim, be under one bureau, and though the details of interior drainage might be left to special inspectors, still these should be subordinates of the building inspector, and under his control. The latter should be an official in the city engineer's department. All matters relating to building, such as the giving of lines, levels, permits, etc., should be attended to at the one office, so that information or plans once given by intending builders should serve for all these purposes.

I have said that building inspection as a general rule comes under civic control, but there is properly one exception. The state must necessarily exercise a supervision over factories, and in fact should over all public buildings where no local inspectors exist. However, in cities and towns possessing building inspectors, all general laws should be enforced by them, and the provincial or county inspectors should deal with the public only through them.

There is one point which I wish to emphasize, that is the public should not suppose that the building inspector is an architect employed by a paternal government, to take the place of the regular practitioner, and that he was obliged to give his services gratis to any one too mean to employ an architect. It should be clearly understood that the duty of a building inspector is to examine plans submitted to him, not to prepare, or give instructions for preparing them; that he has to approve or condemn, not to suggest or instruct. It is true when reviewing plans wherein some minor defects would be apparent, he might point these out, and suggest some