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WHEN the first news of a horrible catastrophe like that of the Boyertown holocaust reaches us we become stricken with sympathetic grief for the victims and their bereaved survivors, then as we read the terrifying accounts of how the catastrophe occurred and the sickening details of the recovering and identifying of the dead from the mass of entangled humanity, we ask ourselves would such a horrifying holocaust be probable or even possible in the public places we and ours frequent. Reporters on the daily papers rush to the heads of our municipal departments seeking some solace for their nervous readers, and in turn the mayor or the head of the city building department tells them to assure their readers that all is well and that everything is being done to safeguard human life in theatres, public halls, churches, schools, factories and buildings of like nature. They may acknowledge the fact that some few places are not up to the standard, but give assurances that orders will be issued at once to have the owners comply with the requirements of the law. Members of the city councils busy themselves in looking up the municipal laws governing the construction of buildings frequented by the public, and as a result many amendments are discussed and in some cases are even recommended.

AFTERMATH OF BOYERTOWN DISASTER.

The daily press is full of interviews with city officials, architects and engineers for a few days following such a catastrophe, who tell of the reforms that should be brought about in building construction. In the meantime the victims have been given their allotted number of feet of earth, and we soon pass on to other things. As soon as the public's nerves have quieted down we move on as before, forgetting the hazardous condition of our public and semi-public buildings. Our municipal officials who become exacting for the moment have laid aside their promises for reforms and our unsafe structures stand little changed from what they were before. When another holocaust occurrs we shall again pass through the same nervous anxiety and our officials will again promise more stringent measures, but not until such a catastrophe takes place immediately in our midst will we awake to the understanding of the real necessity of taking every possible precaution against the loss of life in a fire in any of the buildings frequented by the public. We ask what is the reason for this? Why does it require such horrible lessons to force the public to insist upon the honest construction of the structures in its midst? The answer is simple: the money-mad forces that militate against the interests of the public are too strong for the people's servants, "public officials," to successfully combat.

These the makers and executors of our laws fall a prey to either political pressure or corrupt influence and it is only when some such awful calamity befalls us that public opinion becomes so strong as to force the hands of our officials in spite of these undue influences. There is not a city in Canada where the repetition of the Boyertown disaster is impossible and even improbable. The almost innumerable five and ten cent moving picture galleries that have sprung up in cities all over the Dominion, offer little or no protection for the safety of the thousands of nightly patrons that crowd within their doors. As a rule they are located in an old congested part of the city. A stage is built at the back of the building, seats are installed, the interior redecorated and the exterior is touched up with a little paint and made attractive by hundreds of incandescent electric lights. The moving picture apparatus is placed directly over the entrance and in a large percentage of cases there is absolutely no other available adequate exit than this front entrance that would be worse than useless should an accident occur to the machine that would cause the front to become ignited. Not one of these is sufficiently ventilated to carry off the gases and smoke caused by such a fire and the unfortunate inmates of such a structure would be doomed almost to a man before help from the outside could reach them. Why such places are permitted is a mystery and we believe our city officials would find it difficult to satisfy the public with an explanation in case of a catastrophe in one of them.

POLITICAL PRESSURE CORRUPT INFLUENCE.

The wonder is, not that nearly 200 persons perished in the fire and panic in a theatre at Boyertown, Pa., but that such holocausts are not more common than they are. It is the almost universal rule that the audience rooms for public meetings in villages and in all cities save those of considerable size, are located on the upper floors of buildings, are reached by narrow and often by winding stairways, have usually only a single door for entry and exit and are contained in combustible wooden structures. Lighting and heating apparatus are usually such as to involve large fire risks, and it is common to fill the rooms on occasion with booths and decorations which are as inflammable as tinder.

These things are done through pure ignorance, and without a thought of the risk that is run. Do not architects or engineers resident in such com-

munities owe a duty to the people among whom they live; and should they not use their influence for the safeguarding of all such public assembly rooms, whenever the opportunity occurs!

UNSAFE PUBLIC AND SEMI-PUBLIC BUILDINGS.

However, it is not only moving picture galleries in our cities and public halls in our country towns that require attention. Our ramshackle school houses, which close-fisted, short-sighted school boards refuse to replace with modern structures or equip with adequate fire escapes, are liable at any time to reap a harvest of young deaths.

Not over 30 per cent. of our city theatres and public halls are properly constructed or equipped to safeguard the lives of patrons in case of a fire or panic. Why is this? We answer theatres spend much money with the daily press in advertising, and the daily press is feared by public officials, therefore we have unsafe theatres.

Very few of our churches have a sufficient number of efficient exits to enable the congregation to reach the open air in case of a fire and panic. Why is this condition not remedied? We answer that pastors, deacons and elders weild an influence that might control votes.

Still worse, however, than unsafe amusement halls, theatres, public halls and churches, is the plan, construction and equippment of most of our larger retail stores that renders possible with their multitude of shoppers a holocaust which would be without parallel in history. In this connection Mr. Edmund Burke in a recent address before the Ontario Association of Architects (published elsewhere in this issue) drew a most gruesome picture of a fire or panic in one of these large establishments. He said in part:

"To our mind an enormous responsibility is involved. Thousands and tens of thousands of individuals flock to such establishments, and on special days and at certain times these throngs are so great as to be practically unmanageable. No power on earth could extricate these people in the event of a serious panic. A mere unreasoning panic would probably result in a pile of crushed and smothered humanity. No system of staircases and no battery of elevators in any known establishment could begin to relieve the situation. The floor areas are so large and so lacking in subdivision that the impact of a surging crowd would be practically irresistible, possibly overturning stair railings, and well-hole guards and precipitating hundreds to the floors below. * * * The record of terrible accidents in these days of great undertakings is appalling, and any day may see, and the possibilities and probabilities are such that the next disaster may find its location in some establishment which has neglected the self-evident precautions, the lack of which is usually at the root of most of the distressing events which face the reader almost daily in the public prints."

Does not this awful picture of a probability give us reason for thought? Does it not impress us with the criminal greed of the owners and the awful responsibility that rests upon the shoulders of our city councils.

Mr. Burke continues in his address to show how through reasonable self-evident precautions this awful risk of human life could be avoided. Still day after day thousands pass in and out under the roofs of these death traps, little knowing that every time they satisfy their desire to buy of the wares of one of these great stores they are taking their lives in their hands.

THE NEED OF SUPPORT OF PRESS AND PUBLIC.

The press could do a great service to the public in bringing about a campaign that would force these structures to be so altered and equipped as to render them suitable for the patronage of the public. But if the daily papers should undertake such a campaign they would risk having the great advertising patronage of these stores withdrawn and thereby hangs the tale.

City officials cannot be expected to carry on such a campaign unless they receive the support of the press and the public. An instance of how the press may block the work of a conscientious official in attempting to do his duty occurred in Chicago a few years ago, when the building inspector ordered the owners of one of the largest departmental stores in that city to make certain changes to comply with the city's building ordinances. They paid no attention to his repeated notices and he finally called a squad of police and forcibly closed the store during one of the busiest hours of the day. He declared that the cities ordinances must be complied with before the store could be again opened for business. The owners called their newspaper friends together who criticized the stubborn official for his "over zealous" action, under great double column headlines and brought influence to bear upon the mayor who insisted that the building inspector withdraw his order. The store was again opened and they made the required changes when they became ready

City officials can therefore only go as far as public opinion will permit them, public opinion is controlled by the press, and the press is influenced by the patronage of these great stores. Therefore, we have unsafe retail establishments.

The architects and the engineers can nevertheless exert a great influence through their prestige as technical experts on these matters, and it should behoove them to do everything in their power to force the hands of city officials and encourage and promote the safe, sound construction of our public and semi-public buildings. It is a duty they owe to their profession as well as to the public which depends upon their integrity and knowledge for the character of their buildings.

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LESSONS OF THE PARKER BUILDING FIRE.

THERE is much food for careful thought and intelligent study in the recent fatal and costly fire in the Parker building in New York, which is but a reiteration of the lessons taught by the Toronto, Baltimore and San Francisco conflagrations. This, the first of big fires to take place in one of New York's much boasted of, so-called fireproof skyscrapers, has led to many erroneous statements on the part of the misinformed editors, many of whom maintain that it is positive proof of the fact that the word "fireproof" as applied to building construction is a misnomer and that it will serve to shake the confidence of the building public in the efficiency of modern fireproof construction. A thorough knowledge of the exact nature of the construction of the Parker building will have the very opposite effect, of convincing the architect and pros-

jective builder of the absolute necessity of using every possible precaution against fire, known to modern building science. It proves that a steel frame and brick shell does not constitute fireproof construction and that there is a vast difference between the so-called cheap attempt at fireproofing a building and making it absolutely fireproof.

We also have in this fire another warning that the mere use of certain materials, incombustible in themselves, does not constitute fireproof construction. These materials must be assembled in an intelligent manner, otherwise their effectiveness is not only impaired but a false sense of security is created and a step backward is made each time that such unscientific construction fails and inspires in the minds of the unthinking the idea that there is no such thing as fireproof construction.

The Parker building was a twelve-storey structure, 165 feet high, an average of 14 feet per floor, its ground dimensions being 150 x 121 feet. Its structural parts were of cast-iron columns, girders 15-inch, 60-pound I beams 15 feet long, and the cross beams were 12-inch, 40-pound I beams 20 feet long, and 4 ft. 6 inch and 4 ft. centres. The floor arches were of 8-inch semi-porous, side construction hollow tile, set 1 1-2 inches below the flanges of the beams, but those flanges were not covered with tile nor was there any tile protection to the girders. Neither was there any tile wall furring. The floors were of wood laid on wood sleepers, filled in with a clean cinder concrete. The circular cast iron columns were incased in a 2-inch porous terra cotta covering. Some of the partitions were of 3-inch tile blocks while some were of wood.

The floor openings comprised two sets of stairs and elevators, which were unenclosed and open to the floors except for hall partitions, which were partly terra cotta blocks and partly wood doors and plain glass. Some of the windows were protected with iron shutters. The fire appliances consisted of fire pails, a 2 1-2 inch standpipe with hose connections and a watchman.

The fact that the lower flanges of the I beams were unprotected was in itself sufficient to doom the structure. A quarter century ago, when arches of ordinary bricks between steel beams represented the best that could be done in fireproof construction, floor-beam flanges were left bare because no way was known of protecting them. It is disgraceful that the precedent of that day should be made an excuse at the present time for the erection of structures which pretend to be proof against the attack of fire and are not.

PARKER BUILDING FAR FROM FIREPROOF.

Every engineer knows that the strength of a beam depends solely on the ability of its lower side to resist tension and knows also that steel heated above a temperature of some 600 degrees rapidly loses its strength. Even below 600 degrees there is a reduction in elastic limit of about 4 per cent. for each 100 degrees rise in temperature.

It is a misnomer, therefore, to call a building "fireproof" which has a steel frame with the tension side of its floor members exposed to the attack of heat. Such a building has, of course, an advantage in that the structure itself is not combustible. If the contents of the building offer little for the flames to feed upon, such a building might possibly come through a moderate fire without serious injury, since the metal of the beam will for a time conduct heat away from the lower flange. However, the additional cost of suitably protecting the beam flanges is so small that no valid excuse for omitting it can be imagined.

The building was originally intended for an office structure, but later was turned into a manufacturing and wholesale building. It is this shifting in class of occupancy of a building which is a source of one of the bad features of both present and proposed building codes and is the cause of many of our most disastrous fires. The occupants were a billiard-table concern, an upholstering company, embroideries, rugs, book publishing, furniture, printing establishments, engravers, etc. Bales of moss and of excelsior and of hair, gas stoves, aniline dyes, and alcohol, gas blow pipes, annealing furnaces, ether, guncotton, acids, and such combustibles constituted some of the materials stored and used on the premises. The building was nearly ten years old and its wooden floors and wooden subpartitions were bountifully soaked with oil.

The fire started, it is supposed, about 6 o'clock in the evening, near the rear elevator shaft on the fifth floor but was not discovered until 8 o'clock, when it had spread to the sixth floor. It continued to extend unhindered to the upper floors, partly by way of the windows but principally through the elevator and stair shafts. At 9.30 o'clock a collapse occurred, caused by a cylinder press falling from the eleventh floor to the basement, unfortunately causing the death of three men, injuring a dozen more, and imperiling nearly fifty. In the collapse, burning debris was carried down to the basement from the fifth floor and thus completed the gutting of the entire building, the firemen being unable to get water above the fifth floor, and the fire had to virtually burn itself out.

We say it is simply a reiteration of the lessons that have been given in many of the more disastrous recent conflagrations, that should be heeded by Canadian engineers and architects upon whose shoulders rests the responsibility for the stability of the buildings of the Canada a hundred years hence. We must learn to profit by the mistakes of our neighbor to the south if we ever expect to build a nation that will become commercially great or politically strong.

LESSON FOR CANADIAN ARCHITECTS, ENGINEERS.

These recent fires have demonstrated that the mere use of incombustible materials may prevent total destruction of a building itself but if those materials, however good they may be, are not put together properly the contents of the building are doomed and the structure itself can be damaged all the way from 5 to 90 per cent. of its cost value. This building was but one step in advance of its still older brother, the steel frame and wood-joisted affair. The builders of this latest victim to a foolish economy thought to save money by leaving the steel work unprotected and not doing the other things that at that time as well as now were known to be essential in the proper construction of a really fireproof building. They succeeded in "saving" perhaps four of five thousand dollars and the insurance adjusters are at work upon a loss that will climb up to probably over $1,500,000. Wise economy, surely.

The Parker building was of one class of construction and the thoroughly fireproof building is of another but as bad as it is and partially destructible as

we know it and have seen it to be, it is yet less of a menace than the steel and wood combination, and worse still, the mill constructed buildings so plentifully scattered all about our larger Canadian cities. The fireproof building is absolutely distinct and different from structures of the Parker building type because in the first place it constitutes a fire barrier where ever it stands. It is either built of solid reinforced concrete or has every particle of steel protected against fire; each storey of the building is a separate unit and that in turn is divided into still smaller units. Or, to use the words of the designer of the Singer building, New York, Mr. Ernest Flagg. "a fireproof building has nothing about its structure that can burn and the damageable parts are in turn protected. In designing the Singer building I was unrestricted as to the materials I should specify, and I selected those that would make the building absolutely safe. The frame, the covering, the floors, the partitions, all of them are unburnable. Steel and terra cotta hollow tile, that is the combination. The window frames and trimmings are of metal, too, and cannot take fire. If by any chance a flame did start it could not get out of the room where it started. It would have nothing to feed upon."

MODERN SCIENTIFIC FIREPROOF BUILDING.

Had the Parker building had its steel frame completely fireproofed; or its elevator and stair shafts enclosed by fireproof walls, its window openings protected with metal sash and frame, glazed with wired glass and all its partitions of fireproof material; or had it been equipped with a sprinkler system; or had it been used for the purpose it was intended, such a disastrous fire would have been impossible. Anyone of these well-known, recognized precautions would have rendered the building sufficiently fireproof to have made such a fatal and costly fire next to an impossibility.

Our building departments in Canada are less active in demanding builders to conform with the scientific principles of fireproof construction than are those of the larger cities in the neighboring republic and it certainly behooves them to try to have it so that all new structures in business districts shall be of the really fireproof class, whatever the height or the purpose for which it is intended, and that the old ones of the inferior class shall be so improved and protected that as disastrous a conflagration as that of the Toronto fire of 1904 will become an impossibility.

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WHILE advocating reforms in connection with fireproof construction it is well to call attention to a much needed amendment to the building laws of all our larger Canadian cities. The building departments, of course, issue permits for all new buildings under the headings of "fireproof" buildings, second, third, fourth and other classes, but those departments should be called upon to also label all buildings within the congested business districts of cities, within certain prescribed fire limits, labeling them "fireproof," "incombustible," "third," "fourth" classes, and so on. This added responsibility would make those officers particularly keen and discriminating in how they classified the buildings.

BRAND FAKE FIREPROOF BUILDINGS.

Further, it would be well to have it enacted that it would be a grave misdemeanor and a punishable offence for an owner to call or advertise his building of a superior class when by rights it belongs to an inferior one. That would in great part eliminate one of the worst curses upon and greatest detriment to the safety of our cities. A man turns some old ramshackle of a warehouse into a theatre, puts in a few pieces of metal lath, plasters upon it and dubs it a "fireproof" theatre building; another puts a brick veneering on an old wooden house and advertises it as an "absolutely fireproof" hotel, and cases are not unknown where frame store buildings have been sheathed with galvanized iron and called fireproof. Owners exercise the greatest effrontery in this matter and obtain the confidence of people, high rentals and the storage of valuable goods under absolutely false pretences.

Thus it was to a degree in the Parker building. Its materials were of the best and are those most commonly used in fireproof construction, but they were skimped, the essentials of thorough good building were not there, the very first principle of safe construction was lacking—the perfect protection of the steel work with hollow fireproofing tile. Despite all this the building was called "fireproof" and its partial destruction simply means that the unthinking will say that there is no such thing as fireproof, for, lo and behold, the Parker building is a wreck!

By all means label the buildings properly and thus prevent "constructive lying."

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ONE of the most interesting lessons of the Parker building fire is an indirect one. The city council of New York city has for some time been considering the passage of the new building code, many of the provisions of which have been severely criticized because of the undue restrictions placed on the use of reinforced concrete in the larger class of buildings, and while it is maintained by the Merchants' Association in their appeal to the Board of Aldermen of New York for the immediate passage of the proposed code, that had the new code been in effect and its provisions complied with such a fire would have been prevented, it is nevertheless a fact that it would not have prevented the erection of a structure built according to the same principles of construction used in the Parker building. Inasmuch as this type of structure has shown itself to be far inferior in fire resisting characteristics to well constructed reinforced concrete buildings, which the proposed code, if adopted, will prevent the erection of, while permitting the construction of the former it is quite possible that the authors of the code will find it necessary to revise it in this respect before it will pass the Board of Aldermen. Thus this fatal and expensive fire may work a victory for reinforced concrete in bringing about a revision of a building code that promised to deal one of the most disastrous blows yet received by cement building construction.

PROBABLE VICTORY FOR REINFORCED CONCRETE.

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MR. CLARK, Fire Chief of the City of London, Ont., has given notice to all merchants in that city that all doors must be made so as to open outward. This is another move in the right direction and will have an appreciative effect in preventing exits from becoming jammed in case of a precipitate exodus.

A FAIR ILLUSTRATION OF WHAT IT COSTS TO BUILD OF "SHODDY" CONSTRUCTION, IN A PANORAMIC VIEW OF TORONTO'S WAREHOUSE DISTRICT AFTER THE MEMORABLE FIRE OF APRIL, 1904, WHICH SWEPT AWAY OVER SIXTEEN MILLIONS OF DOLLARS OF PROPERTY, BROUGHT ALMOST TO A STANDSTILL THE BUSINESS OF CANADA'S SECOND LARGEST CITY AND LAID RUIN CLOSE TO THE DOORS OF MANY LARGE PROSPERING BUSINESS INSTITUTIONS. SUCH A DISASTROUS CONFLAGRATION WOULD HAVE BEEN IMPOSSIBLE IN A DISTRICT OF WELL BUILT, PROPERLY PROTECTED WAREHOUSES. Photo by "Galbraith," Copyrighted.

Modern Warehouse Construction

Interesting Data Showing the Hazardous Risks Fostered by Architects and Owners Alike in Building the Modern Warehouse of "Flimsy" Unprotected Construction. What Constitutes Fireproof Construction—Its Many Advantages Shown. Three Recent Examples Illustrated and Described

IT MATTERS not how perfect in architectural design, nor how cheap or expensive in cost of construction, a commercial building is an architectural failure unless it answers with the best possible degree of perfection the purpose for which it was intended, with profit to the owner.

This statement was recently made by one of Canada's most prominent architects, in his criticism of a piece of commercial architecture. The self evident truth of this broad yet positive assertion will be denied by no one, and still it would be interesting to know just what percentage of our commercial structures are architectural successes, in the true meaning of this axiom.

Warehouse construction is one of the most important branches in modern commercial architecture, and it furnishes the architect and engineer with many perplexing problems. In reply to the question as to how well these problems have been solved in the past by our architects, and how well they have accomplished the task in producing architectural success in warehouse construction, the reader's attention is called to the accompanying illustration, showing a panoramic view of the ruins of that portion of Toronto's warehouse section swept by the fire fiend in 1904. Do the charred timbers, the partially standing walls, the twisted steel and blackened and watersoaked merchandise spell success or failure? When the flames swept from building to building, finding everywhere plenty of food, ripe and ready to be devoured, did it not impress the onlooker that something was wrong, and that in the construction of these buildings in the very heart of the city, wherein millions of dollars of merchandise were stored, and wherein were housed businesses in which millions of money was invested, many mistakes had been made.

It is a recognized fact that if the buildings in this district had been properly constructed, according to the latest approved methods of fireproof building construction, such a conflagration would never have been possible, and the millions of dollars' worth of property thus destroyed would still be standing, to say nothing of the enormous amounts lost in suspension of business that would have been saved. Still we find some of the very firms, after all they suffered in this expensive experience, erecting structures that offer little or no protection against the great red plague, when for a small additional percentage in cost they could build for themselves structures in which they could conduct their business with a sense of security. There may have been some reason for the inflammable nature of the warehouse of ten years ago, but in this age that has given us every method, material and appliance at a reasonable cost, necessary to construct an absolutely fireproof structure there is no excuse for the erection of fire-feeding traps.

Such buildings are not architectural successes, either from the standpoint of the architect, or engineer, or the owner, it matters not how perfect they may be in design, nor how cheap or expensive in cost of construction.

Many architects believe they have produced a success in the construction of a building when they have accomplished the task of giving the owner just what he wanted. Suppose the owner insisted upon a certain plan, the architect gave it to him, and when the structure was finished the owner would find his plan did not work out as he had anticipated, the building would be pronounced a failure, in spite of the fact that the architect gave his client just what he wanted. This is as true with reference to the methods of construction and materials and appliances used as it is with the plan. It is immaterial what the owner's ideas are as to the advisability of the adoption of certain methods, or the use of certain materials or appliances. The work of the architect is measured by the finished building. It is the architect or engineer, and not the owner, who should know the comparative merits of methods and materials adapted to suit certain requirements or conditions. It is incomprehensible why so many architects, who talk so much of professional dignity, permit their clients, however foolishly inclined the latter may be, to build of "shoddy" con-

struction in erecting commercial structures for their own occupancy.

It is contended by some that the architects are not to blame, and that their authority is not to be compared with that of a doctor. A doctor diagnoses the ailment of his patient and "orders" him to do thus and so. Most men obediently follow directions, believing that life or death depends upon that obedience. Not so with the architect. He is not hired to "order" his client; he is his willing, obsequious and ever obedient servant. This is granted. Often he is even so afraid that the aforesaid client will get away from him that he will put the cellar on the roof of the house and the attic in the basement. But if the architect, through his own poor management of affairs, has brought himself to that pitiful state of servitude, he should still have sufficient professional pride and manliness, if he can not "order" his client, at least to labor with him and point out the inevitable advantages of building well rather than shoddily. Architects should stand their ground and insist upon plan, arrangement, and the use of materials and appliances that will insure a successful structure.

The next question is what constitutes an architecturally successful modern warehouse? Past experience answers: a structure planned to meet the requirements of the business of the proposed occupant, one which is well lighted and properly ventilated. The materials of which it is constructed must be of as nearly an incombustible nature as possible. It must be so planned, built and equipped to afford the maximum amount of protection from fire from without as well as within, and inasmuch as fire insurance on a warehouse and its contents is an important item, it should be so constructed to secure the minimum rate.

It is not sufficient that inflammable materials should be eliminated from its construction. The warehouse of to-day should have its elevator shafts enclosed with fireproof walls; the openings in the shafts at the different floors should be equipped with fire doors glazed with wired glass; it should have metal window sash and frame glazed with wired glass; enclosed fireproof stairways, with fire doors to close off one floor from another; fireproof partitions should divide off as many compartments on each floor as possible, with openings equipped with automatic fire doors. Where the columns, beams or girders are of wood, or when the contents of the building are to be of a highly combustible nature it should be equipped throughout with a sprinkler system.

Reinforced concrete, steel encased in concrete over expanded metal, or steel fireproofed with hollow tile, are by all means preferable to mill construction, but if the latter is used it should be of the best standard type, and every possible precaution should be used to allay the spread of fire or to prevent the ignition of the exposed timbers.

A building of reinforced concrete, steel frame and hollow fireproofing tile or of structural steel encased in concrete, costs but a fraction over ten per cent. more in first cost than does the usual fame of wood with wooden joists and studs. The life of such framing is infinitely longer than the old wood affair, the cost of maintenance is less, so is the insurance rate and, all in all, in a very few years' time, good construction not only means safety, but an actual economy. The enclosing of stairways and elevator-wells, the protection of windows and sky-lights with wired glass, the making of a building fireproof in design costs nothing more in money than the cheap fire-traps, but is merely the expenditure of a little agitation and intelligent application on the part of the architect.

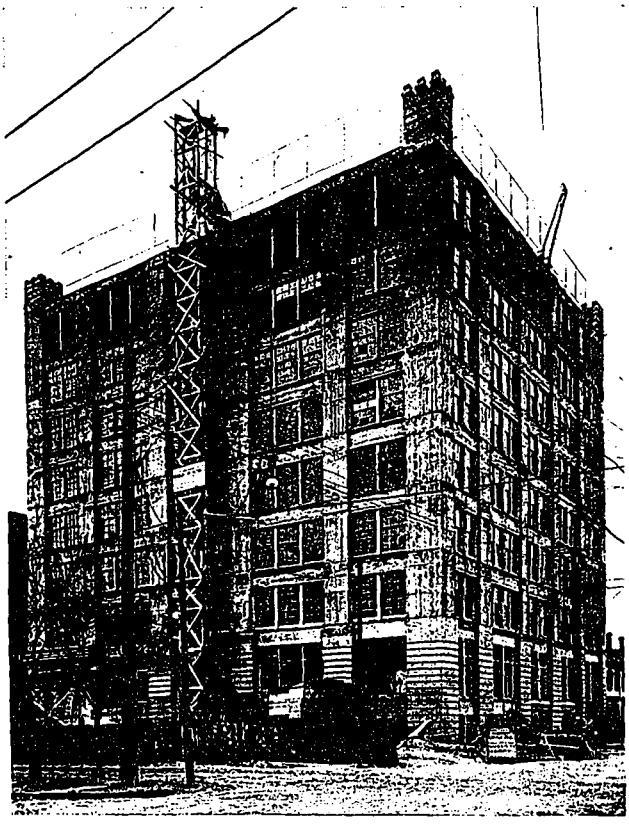


Fig. 1—WAREHOUSE LATELY ERECTED BY ANDREW DARLING CO., TORONTO. A GOOD EXAMPLE OF MODERN WAREHOUSE CONSTRUCTION IN REINFORCED CONCRETE. IN PLAN, ARRANGEMENT AND CONSTRUCTION THE STRUCTURE IS ABSOLUTELY FIREPROOF AND IS A MOST CREDITABLE REPRESENTATION OF WHAT MAY BE DONE WITH THIS NEW METHOD OF BUILDING CONSTRUCTION WHICH IS BECOMING SO UNIVERSALLY POPULAR. GORDON & HELLIWELL, TORONTO, ARCHITECTS. TRUSSED CONCRETE STEEL CO., LTD., TORONTO, CONSULTING AND SUPERVISING ENGINEERS.

It is claimed by many that there is no such thing as fireproof construction, and that this term is a misnomer. This is not so, if properly constructed by people who know their business, the danger of fire can be reduced to a minimum in any structure built according to almost any approved fireproofing system. The highest authorities tell us that nine-tenths of our enormous annual fire loss is directly attributable to imperfect construction, that even in our so-called great fireproof buildings the architects make such blunders, such utterly inexcusable ones, as endanger the entire investment. The greatest care and much expense will be placed in the use of high-class materials all through a building, but, foolishly, some window, for instance, will be left unprotected and in a particularly vulnerable place and that offers easy ingress to external fire; one detail bungled that impairs the whole! Lack of knowledge of what constitutes really fireproof construction is probably the most costly sin of the architects.

In the recent fire in the Parker building in New York (a twelve-story so-called fireproof building) many seem to find food for argument in favor of their contentions that a fireproof building is an impossibility, but the facts

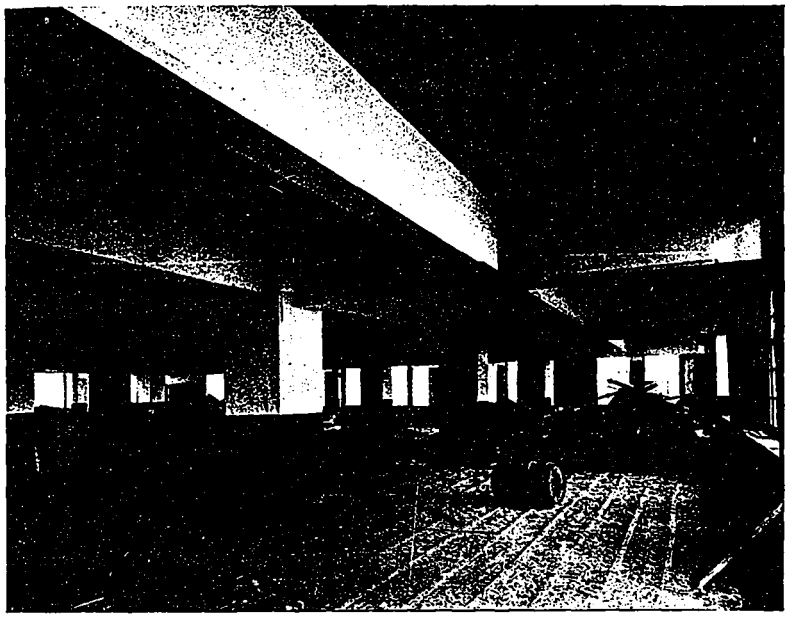


Fig. 2—INTERIOR VIEW OF GROUND FLOOR OF ANDREW DARLING BUILDING, SHOWING THE MASSIVE REINFORCED CONCRETE BEAMS, GIRDERS AND COLUMNS, THAT SUPPORT THE FLOORS. THE SPRINKLER PIPES RUNNING THROUGH THIMBLES IN THE BEAMS AND GIRDERS MAY BE SEEN. NOTE THE LARGE AMOUNT OF LIGHT THROWN TO THE CENTRE OF THE BUILDING.

of the case go to prove the very opposite. That is, the necessity of intelligently using every possible precaution in rendering a building absolutely fireproof.

It is true that in the Parker building approved elements of a fireproof structure were used; that is, steel and brick and hollow tile, but these materials were not properly put together, much of the steel work was left absolutely unprotected by tile, and, of course, was heated and thrown out of place by the fire, thus causing collapse of many sections of floor construction; its stairs and elevator shafts were open from story to story, and its windows were unprotected by wire glass, so that fire had a clear sweep, both within and outside; there was not sufficient water pressure to reach above the fifth floor, and the building was used for far more hazardous purposes than those for which it was intended. Had this structure had every particle of the steel frame amply protected with hollow tile or concrete, and had each story constituted a unit by itself, and all external openings protected by metal sash and wired glass, the fire would have been extinguished before it caused any appreciable damage.

A great many structures are built, in which every precaution has been taken against the spread of fire on the inside, but with no provision made for the protection of the contents of the building from being ignited by flames from the outside. This is one of the grossest and most common mistakes in modern warehouse construction.

In connection with this subject the International Society of Building Commissioners recently issued a bulletin, which makes the statement that 44 per cent. of all the fire losses during 1907 were directly attributable to the lack of proper window protection. Fire originates in one building, but cannot be confined there, and its travel is made easy via the window route to every building in the neighborhood. Further, 80 per cent. of all the damage done in buildings in which fire did not have its origin is fault of sufficient window protection. In conflagrations like those of Toronto or San Francisco, nearly 100 per cent. of the damage is directly attributable to that same cause, for in the latter case we know of but fourteen separate and distinct fires occurring in the city on that memorable morning. Had the adjacent buildings been made invulnerable by protected windows, those fires would have been confined in the structures in which they had their inception, and would have resulted in but insignificant blazes. Surely this matter of properly protecting windows is an important one. Automatic fire doors and shutters afford a large amount of protection, but the universally approved system of window protection is a metal or incombustible sash filled with wire glass, and where the danger is particularly great, on nar-

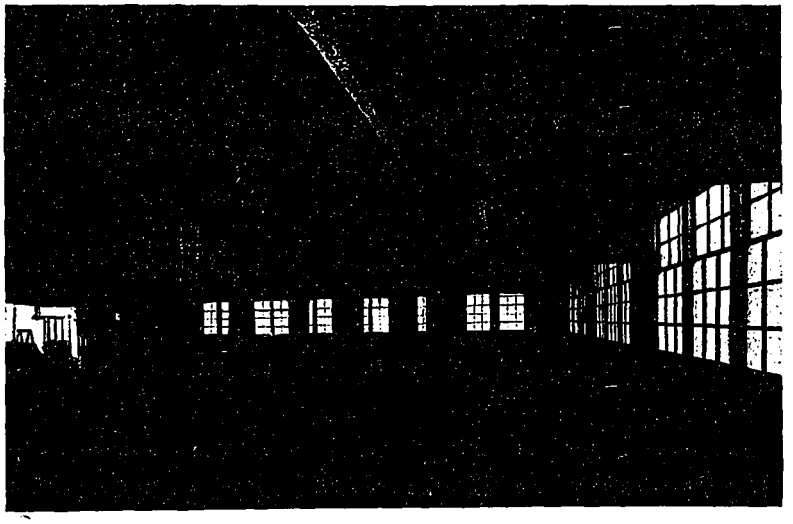


Fig. 3—INTERIOR VIEW ON SEVENTH FLOOR, ANDREW DARLING BUILDING, TORONTO, SHOWING THE SMALLER DIMENSIONS OF THE BEAMS, GIRDERS AND COLUMNS AS COMPARED WITH THOSE SHOWN IN FIG. 2. *A* BETTER ILLUSTRATION OF THE DIMINISHING DIMENSIONS OF THESE PARTS IS SHOWN IN FIG. 4.

row alleys, etc., there should be two thicknesses of wire glass.

It is also worthy of note that 78 per cent. of all the damage done in buildings where fire originated during the past year was caused by open stairways and elevators permitting the rapid spread of fire throughout every part of the structure. All new warehouses should be equipped with concrete, brick, or hollow tile fireproof enclosures, and where these may be difficult to place about elevators and stairs in old buildings, light iron frames and wire glass enclosures can be so placed at little cost and affording splendid protection.

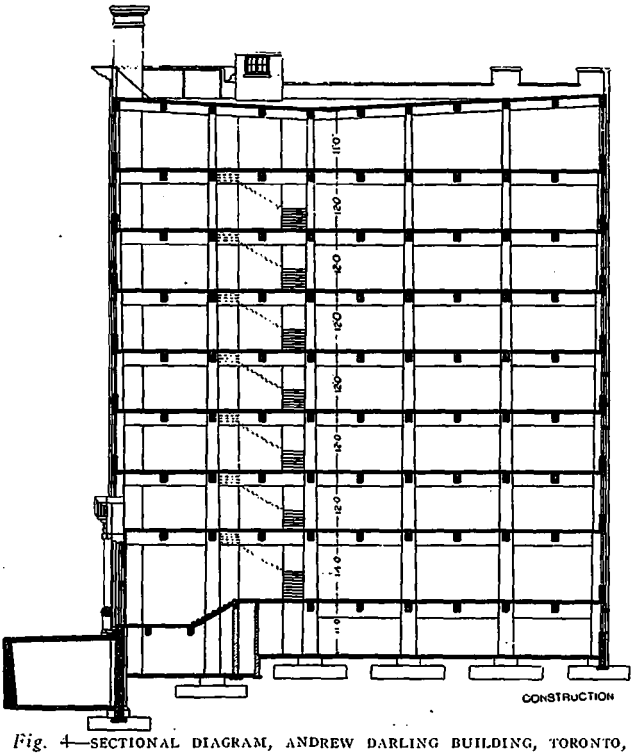


Fig. 4—SECTIONAL DIAGRAM, ANDREW DARLING BUILDING, TORONTO, SHOWING FOOTINGS, AND ARRANGEMENT, LOCATION AND DIMINISHING DIMENSIONS OF STRUCTURAL MEMBERS. THE LOCATION OF THE STAIRS MAY ALSO BE SEEN.

We herewith illustrate three modern warehouses that are excellent examples of their different types of construction. The first is a solid reinforced concrete building, the second a steel frame structure with frame encased in concrete on expanded metal lath, and the third, a warehouse of standard mill construction, wherein every effort has been made, through the use of automatic fire doors, fireproof windows and a sprinkler system, to make the structure, with its wooden frame work, as fireproof as possible.

Good Example in Re-inforced Concrete Warehouse Construction

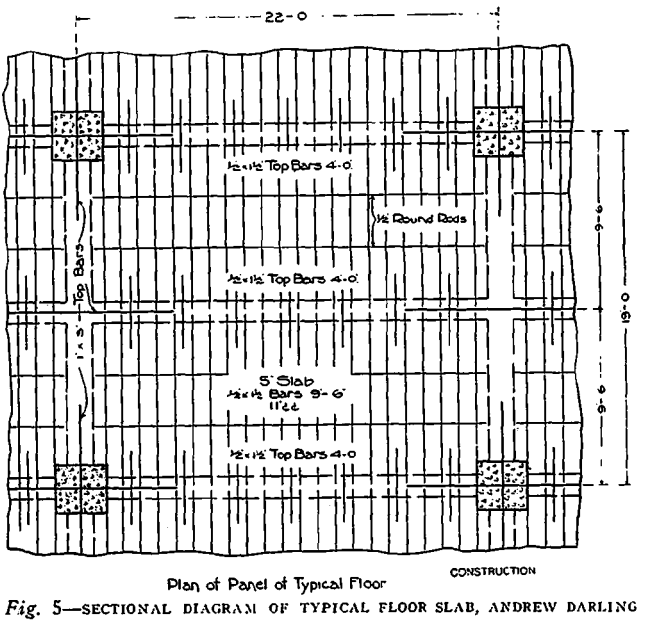
REINFORCED concrete is particularly well adapted for warehouse construction, and during the past few years has been used extensively in this class of structure. It produces a building as substantial as though carved out of solid stone, monolithic in type, fireproof and possesses the granite-like qualities of concrete united with the elasticity of steel.

A good example of this type of warehouse construction is illustrated herewith in the building recently erected by the Andrew Darling Co., at the corner of Adelaide street and Spadina avenue, Toronto.

The floors, beams, girders, columns, curtain walls, stairs, and in fact everything that goes to make up the structural portion of the building, is constructed entirely of concrete, reinforced with Kahn Trussed Bars. Fig. 5 shows the arrangement of reinforcing steel in floor slabs and over beams and columns. The slab is designed to carry a live load of 125 lbs. per square foot, and also a cinder concrete and hardwood floor finish of 20 lbs. per square foot. It consists of five inches of concrete reinforced with 1-2 in. x 1 1-2 in. Kahn bars, spaced eleven inches centre to centre. Half-inch round rods were placed at right angles to the main reinforcing bar to take care of temperature stresses.

In Fig. 6 is shown the arrangement of reinforcing steel in typical beam. This reinforcing steel consists of two 1 1-4 in. x 3 3-4 in. Kahn bars, having shear diagonals thirty inches in length, and one 1 in. x 3 in. Kahn bar, having shear diagonals eighteen inches in length. Fig. 7 shows arrangement of reinforcing steel in typical girder and also the arrangement of steel in floor slabs. The reinforcing steel in the girder consists of two 2 in. x 3 1-2 in. Kahn bars, having shear diagonals, thirty inches in length, and one 2 inches x 3 1-2 inches Kahn bars, having shear diagonals eighteen inches in length. Kahn bars, 1 in. x 3 in., having shear diagonals of eighteen in length were placed over columns and girders to take care of reverse bending moments which occur at these points, and to prevent cracking in top of beams near points of support. The shear diagonals of these top bars assist in taking care of shear stresses that occur at points of support.

In addition to using non-combustible material in the erection of this building, and to still further



Plan of Panel of Typical Floor

Fig. 5—SECTIONAL DIAGRAM OF TYPICAL FLOOR SLAB, ANDREW DARLING BUILDING, TORONTO, SHOWING ARRANGEMENT OF REINFORCING STEEL IN FLOOR SLABS OVER BEAMS AND COLUMNS. THE SLAB IS DESIGNED TO CARRY A LIVE LOAD OF 125 LBS. PER SQUARE FOOT, AND ALSO A CINDER CONCRETE AND HARDWOOD FLOOR OF 20 LBS. PER SQUARE FOOT.

provide against damage by fire a sprinkler system has been installed. To carry the pipes of this system, instead of placing hangers in the ceiling, thimbles were placed in beams in such position as not to interfere with the strength of the member. Figs. 7 and 8 show these thimbles in place.

stallation of the different accessories necessary for the protection of the building and convenience of the occupants.

The gravity system of steam heating has been installed, the boilers having been placed underneath the side-

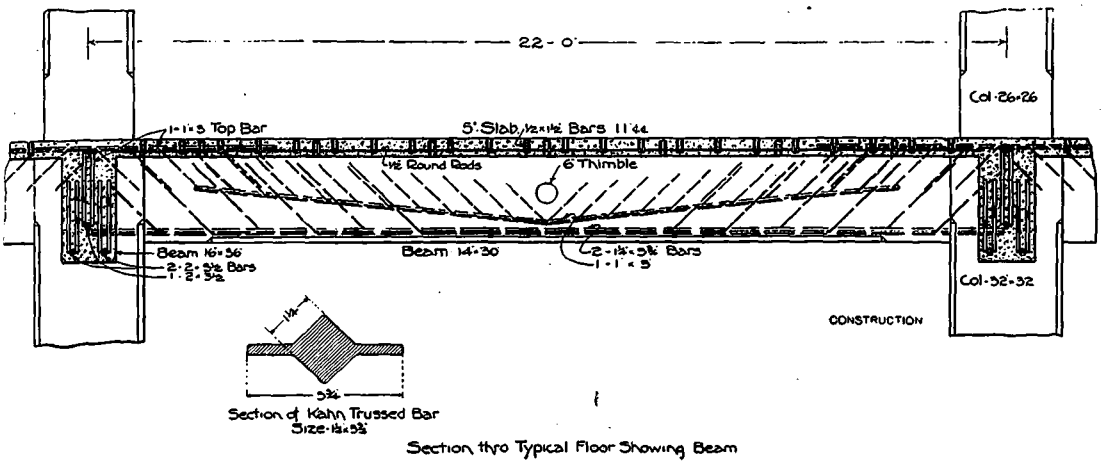


Fig. 6—SECTIONAL DIAGRAM OF TYPICAL BEAM, ANDREW DARLING BUILDING, TORONTO, SHOWING ARRANGEMENT OF REINFORCING STEEL, WHICH CONSISTS OF TWO 1¼ IN. X 3¾ IN. KAHN BARS, HAVING SHEAR DIAGONALS 30 IN. IN LENGTH, AND ONE 1 IN. X 3 IN. KAHN BAR, HAVING SHEAR DIAGONALS 18 IN. IN LENGTH.

By suspending the pipes in this manner an unsightly fixture is done away with, and the view along the ceiling below the beams is kept clear and uninterrupted, while the maximum amount of light is delivered to the centre of the building. For water storage required for this sprinkler system a 25,000 gallon tank has been provided, and the floors have been provided with waterways and scuppers to carry off water rapidly and to prevent flooding when sprinkler system is in operation. The electric wire system is placed close to the ceiling and is carried through

walk area well away from and well isolated from the rest of the building; thus all danger from fire from this source has been reduced to a minimum, and the annoyance caused by dirt from firing boilers is practically eliminated.

The building is equipped with three electrically driven beam to beam. The structure, as a whole, demonstrates stairs are of reinforced concrete, and encircle the passenger elevator shaft. The stair and elevator shafts are isolated from the rest of the building, being completely surrounded with brick walls

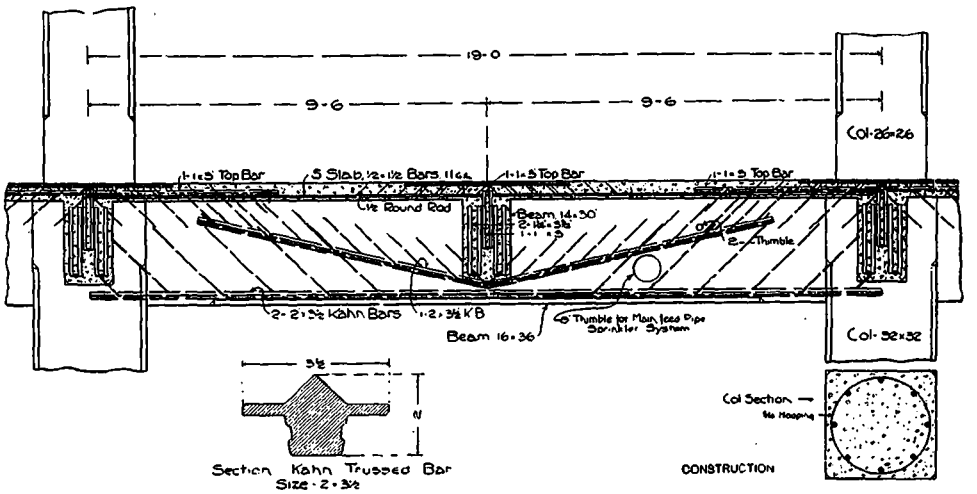


Fig. 7—SECTIONAL DIAGRAM OF TYPICAL GIRDER, ANDREW DARLING BUILDING, TORONTO, SHOWING ARRANGEMENT OF REINFORCING STEEL WHICH CONSISTS OF TWO 2 IN. X 3½ IN. KAHN BARS, HAVING SHEAR DIAGONALS 30 IN. IN LENGTH AND ONE 2 IN. X 3½ IN. KAHN BAR, HAVING SHEAR DIAGONALS 18 IN. IN LENGTH.

beams by properly insulated thimbles. Special provision was made in the ceiling so that porcelain cleats could be properly fastened where necessary to carry wires from beam to beam. The structure as a whole demonstrates very clearly how readily concrete lends itself to the in-

provided with fire doors. One great advantage that a building of this type enjoys over all other types is lack of vibration. In a structural steel frame building the vibration is many times as great as that in a reinforced concrete structure, and it is estimated that the latter lasts

eleven times as long. This lack of vibration is due to the solidity provided by the monolithic nature of the structure, and the ability of the concrete to absorb vibration.

Another great advantage that this type of building enjoys is the large window area, giving the maximum amount of light. It has been conceded that as a general rule the employer of labor regards ample light as a very valuable asset, and in no other type of building construction known can this asset be handled to such advantage as in reinforced concrete construction. Figs. 1, 2 and 3 illustrate to what an extent this idea has been carried out in the Darling building. One particularly striking feature of this building is the large floor areas, the columns being spaced 19 feet by 22 feet centre to centre. Another important feature is the manner in which the space under the sidewalk has been utilized, on Spadina avenue the area being 20 by 129 feet, and the area on the Adelaide street side being 17 by 100 feet. In order to make this area valuable in a practicable way the excavation was carried lower than usual: the owner very wisely insisted on having ample head room under this area. We have already referred to the fact that the boilers are placed in this area, and in addition to which all fuel rooms, machinery rooms, etc., are cared for in this space, the balance of the space being used for packing and shipping rooms. A complete set of toilet rooms is located on each floor, special attention having been paid to the arrangement of fixtures, lighting and ventilation of these rooms. Fig. 1 is an exterior view of the building, and illustrates the pleasing effect that can be produced by concrete when properly handled along correct architectural lines. On enquiry we learn that the building, owing to its exceptionally well studied construction will receive the lowest insurance rate possible to obtain in the city of Toronto. The saving of insurance alone in this instance will amount to a considerable sum annually to the prospective tenants. Mr. Darling is to be congratulated upon his display of good judgment in the selection of this class of building, its merits being unquestionable.

Messrs. Gordon & Helliwell of Toronto were the architects. The Provincial Construction Company of Toronto were the contractors, and The Trussed Concrete Steel Company of Canada, Limited, Toronto, were the consulting and supervising engineers, and the manufacturers of reinforcing steel used in structure.

Fig. 8—WAREHOUSE AND OFFICE BUILDING RECENTLY ERECTED BY THOMAS OGILVIE & SONS, AT TORONTO. THIS STRUCTURE IS AN EXCELLENT ILLUSTRATION OF STEEL FRAME INCASED WITH CONCRETE ON EXPANDED METAL LATH, A TYPE OF CONSTRUCTION BECOMING QUITE POPULAR, AND ONE WELL ADAPTED FOR WAREHOUSES. NO EFFORT OR EXPENSE HAS BEEN SPARED IN PLAN, ARRANGEMENT, SELECTION OF MATERIALS, OR APPLIANCES TO RENDER THIS BUILDING AS THOROUGHLY FIREPROOF AS MODERN BUILDING SCIENCE WILL PERMIT OF. BURKE & HORWOOD, ARCHITECTS, TORONTO. EXPANDED METAL AND FIREPROOFING CO., CONSULTING ENGINEERS.

Steel Frame Construction Fireproofed With Concrete

ANOTHER type of fireproof building construction well adapted for the modern warehouse is well illustrated in the new Ogilvie building at the corner of Wellington and Bay streets, Toronto, which is an excellent example of a steel frame structure with frame encased in concrete on expanded metal lath. No expense or effort has been spared in arrangement of plan or equipment to make it absolutely fireproof.

A feature of the building is the provision for the numerous, large window openings, providing an exceptionally great amount of light. Plenty of light is an important asset in every well planned warehouse. The structure has many other points in design and plan worthy of discussion, but the system of construction is the most interesting.

The concrete with which the steel is encased serves as first-class protection against heat and corrosion, as well as takes up a large amount of vibration common in steel frame structures.

Here we have outer walls of brick pier construction and thin panel walls of brick between them. These piers and the interior steel columns, which are 16 feet apart in one direction, and in the other 18 feet support the heavy steel I beam girders, the latter dividing the building in its long direction into 7 bays, each 16 feet wide. The steel columns are joined at each floor level by small steel I beams (6 in.), these running in the opposite direction to the girders and tying the columns one to another. In fact, this arrangement of steel work, consisting of columns, girders and tie beams, unites the entire structure firmly and rigidly, thus forming a suitable skeleton whereon to erect the concrete floors.

As the Figs. 14, 15, and 16 show, concrete joist beams,

10 in. wide by 12 in. deep and reinforced with steel rods, were built on temporary wood centreing between the girders, and divided each bay, 16 ft. x 18 ft., into 5 panels. The steel girders also were encased in concrete, the outer edge of the steel having at least a 2½ in. protection. Strips of heavy expanded metal run along each side of the girder's lower flange and extending upward into the concrete haunch, thus ensuring the integrity of the concrete fire protection for the lower flange, the most vulnerable portion of the girder. The concrete joist beams of the columns differ in no way from the others except in the incorporation of the small tie-beam as part and parcel of the reinforcement. The method of hooking the ends of the rods, and their bending or trussing is plainly shown in the sectional Fig. 14. Three rods being used, two were trussed, the other being straight from end to end. All rods were placed two inches from the bottom of the concrete, and the rods kept 1 1-2 inches apart. Short eight feet shear bars pass over the girders and are bent down into the concrete beams on either side. Simultaneously with the pouring of the beams, the three-inch concrete floor panels were laid on wood forms between the joist beams the expanded metal reinforcing it being kept one inch from the under side of the floor. As the construction progressed upwards wood forms were also built surrounding the steel columns and the concrete poured in. Here again expanded metal was utilized, the steel columns being securely wrapped with same to bind the concrete protection together.

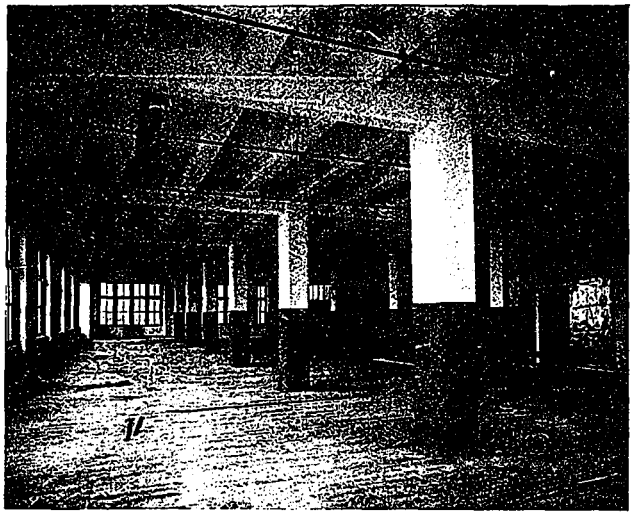


Fig. 9—INTERIOR VIEW, SECOND FLOOR, OGILVIE BUILDING, TORONTO, SHOWING STEEL GIRDERS AND COLUMNS ENCASED IN CONCRETE ON EXPANDED METAL LATH, ALSO THE REINFORCED CONCRETE JOIST BEAMS. THE LARGE WINDOWS SHOWN HAVE METAL SASH AND FRAME AND WIRED GLASS.

Partitions, stairs, pent-houses, the lintels supporting the brick curtain walls and entire roof of the Ogilvie warehouse, were of similar construction. The thoroughness of the designing to secure a stairs system which shall afford the occupants of all floors absolute safety is very evident from the photograph (Fig. 10). The reinforced concrete stairs running from one floor to the next, are separated from the rest of the building by a reinforced fireproof partition, and land in a similarly isolated enclosure at each floor. These partitions are fitted with wire-glass windows and fireproof sliding doors that close automatically in case of fire. By such arrangement an absolutely safe means of exit to the street from any floor is provided, irrespective of the passenger elevator, which, like the freight lifts in the rear, is also cut off by reinforced fireproof enclosures.

In the above construction the concrete was what is known as a wet mix, the proportions being 4 broken stone, 3-4 in. ring, 2 sand, and 1 Portland cement.

The entire building, with the exception of the first floor is equipped with metallic window frame and sash glazed with wired glass, and the windows on the alley on the south are protected with water curtains, thus rendering almost impossible the ingress of fire. The entire building is fitted throughout with an automatic sprinkler system which is fed by a tank on the roof supported by a steel frame tower encased in concrete on expanded metal, protecting it from fire and rust.

The only wood to be found in the entire building is the hardwood wearing floors and the office screens and fittings. The entrance vestibule is paved with marble mosaic, and is wainscotted with dark Italian green marble.

Messrs. Burke & Horwood, Toronto, were the architects and the Expanded Metal and Fireproofing Co., 100 King street east, Toronto, were the consulting engineers and the contractors for the expanded metal reinforcing.

Standard Mill Construction

THE third type of modern warehouse shown in Figs. 17, 18, and 19 is the Shuttleworth building, now under course of construction at the corner of Victoria street and Miller avenue, Toronto, and is a good example of what may be accomplished in minimizing to a great extent the danger of fire through arrangement of plan and modern fire prevention equipment, even in a mill-constructed warehouse.

The structure, which is of best standard mill construction, has dark red brick exterior walls, with white

Fig. 10—VIEW OF FIREPROOF STAIR WAY, OGILVIE BUILDING, TORONTO, SHOWING THE SOLID CONCRETE TREADS AND IRON HANDRAIL. IN THE BACKGROUND TO THE RIGHT MAY BE SEEN ONE OF THE WALLS ENCLOSING THE PASSENGER ELEVATOR SHAFT. THE WINDOW SHOWN HAS METAL SASH AND FRAME, AND IS GLAZED WITH WIRED GLASS.

mortar and cement stone trimmings. It has southern pine columns, beams and plank floors. Each floor is crowned in the middle so as to give a slight fall each way toward the side walls. The wearing floors are hard maple, laid in the direction of the fall, on top of thick waterproof

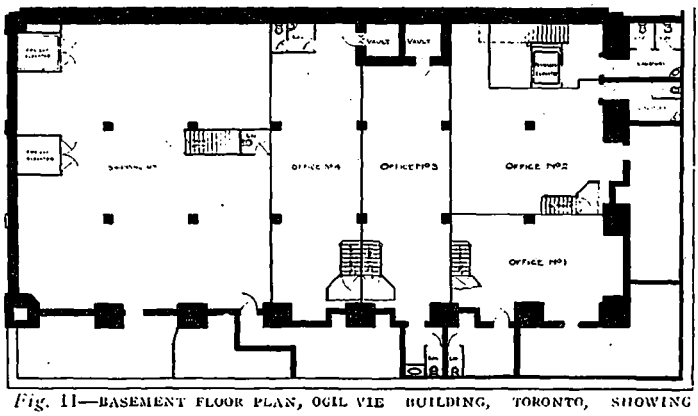


Fig. 11—BASEMENT FLOOR PLAN, OGILVIE BUILDING, TORONTO, SHOWING LOCATION OF STAIRWAY AND ELEVATORS, WHICH ARE INCLOSED IN CONCRETE SHAFTS.

floor felt, which is placed between the plank flooring and the wearing floor. Along each side wall a shallow gutter is formed, lined with galvanized iron and connected to scuppers carried through the walls, so that in case of fire water thrown on any one of the upper floors would run off outside of the building without descending to the floors below.

The elevator will have automatic gates and fire doors. The stairs are isolated inside brick walls, cut off from the rest of the building on all floors by self-closing fire doors. The partitions are all solid mill construction and nothing has been omitted to make this building a first-class example of the best type of mill construction. The windows and skylights are of wired glass and fireproof frames on exposed sides. The boiler rooms and coal bunks are of fireproof construction entirely. This building is designed and a permit obtained for five stories and basement, and the footings, foundations and walls, piers, and so forth, are being built for that height of building, with floors throughout to sustain very heavy loads, though it is intended for the present to stop at the third storey. The location is very central, within half a minute of Yonge street, and it is not unlikely that in the near future the two upper stories will be carried up.

The building is owned and the first three floors will be occupied by the E. B. Shuttleworth Chemical Co., Limited. It will be steam-heated and will have most up-to-date sanitary plumbing appliances throughout. Messrs. R. J. Edwards & Saunders, Toronto, are the architects.

The structure as a whole is a fair example of the best that can be done in the matter of fireproofing a mill-constructed building, and is reproduced here only for this reason and not because we consider its type of construction best adapted to warehouse building, for, as we have repeatedly stated, there is no reason for the use of wooden columns, beams and joists in the modern warehouse.

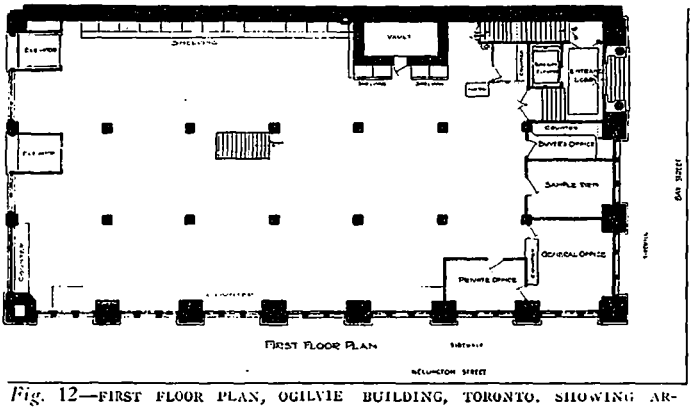


Fig. 12—FIRST FLOOR PLAN, OGILVIE BUILDING, TORONTO, SHOWING ARRANGEMENT AND LOCATION OF THE STEEL COLUMNS, FIREPROOFED WITH CONCRETE.

Suggestions to Architects on Concrete Construction

IN view of the extent to which concrete is at present being employed in connection with all forms of building construction, the following suggestions to architects by E. P. Goodrich, consulting engineer of New York City, and published in the last issue of The Concrete Review, cannot fail to find interest among a large class of readers. At the very outset the author refers to the field of usefulness of the material in question, as follows:

Concrete has a unique and proper field. It cannot and should not be forced to compete with steel, timber or masonry under all conditions. Do not think it necessary or try to make concrete imitate other materials, either as to finish or as to structural design.

The value of concrete in the construction of warehouses and factory buildings of moderate height is unquestioned. When fire prevention is important it finds its greatest usefulness.

Where bold or simple exterior treatment is appropriate, concrete can be employed to advantage.

As regards styles of architecture and surface finish, use the mission style of architecture or other simple massive type, rather than the elaborate classic orders.

Don't try to imitate brick or stone by devices of centreing. Let the architectural details show that the material is concrete and let it stand for itself. Secure contrasts by means of shadows, by using deep reveals at apertures and heavy (but not heavily overhanging) cornices and belt courses.

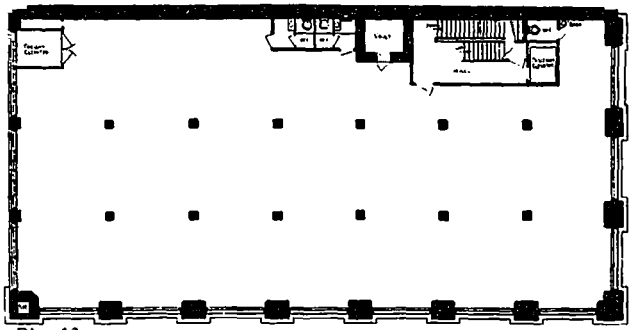


Fig. 13—UPPER FLOOR PLAN, OGILVIE BUILDING, TORONTO, SHOWING HEAVY BRICK WALL PIERS THAT PERMIT OF EXTRAORDINARILY LARGE WINDOW OPENINGS, THUS GIVING THE DIFFERENT FLOORS THE MAXIMUM DEGREE OF LIGHT.

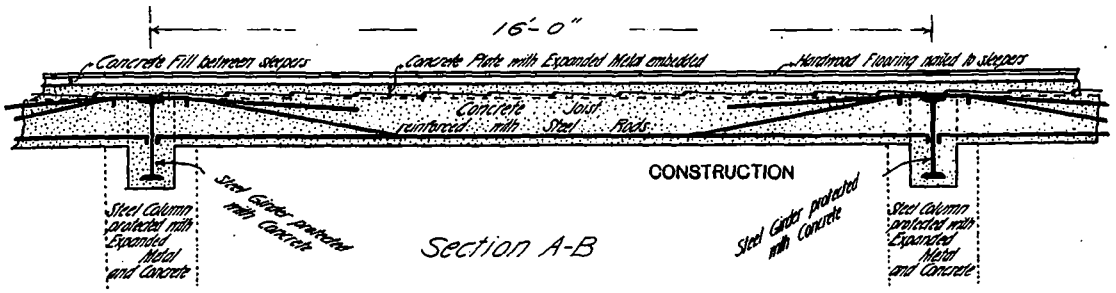


Fig. 14—SECTIONAL DIAGRAM OF TYPICAL JOIST BEAM, OGILVIE BUILDING, TORONTO, SHOWING ARRANGEMENT OF REINFORCING RODS AND EXPANDED METAL LATH, ALSO CROSS SECTION OF TYPICAL GIRDERS PROTECTED WITH CONCRETE OVER EXPANDED METAL LATH. THIS SECTION IS DESIGNATED AS A-B IN FIG. 16.

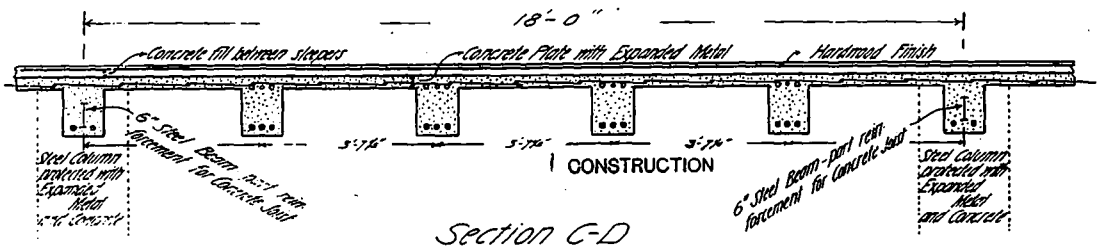


Fig. 15—DIAGRAM OF CROSS SECTION OF TYPICAL BAY, OGILVIE BUILDING, TORONTO, GIVING SECTIONAL END VIEW OF EACH OF THE SIX CONCRETE JOIST BEAMS THAT DIVIDE EACH BAY INTO FIVE PANELS. THIS DIAGRAM ALSO SHOWS THE SMALL TIE BEAMS WHICH RUN IN OPPOSITE DIRECTION TO THE GIRDERS, AND TIE THE COLUMNS ONE TO THE OTHER, THUS MAKING A SECURE SKELETON FRAME TO SUPPORT THE CONCRETE FLOORS. THIS SECTION IS DESIGNATED AS C-D IN FIG. 16.

Simple balconies with strong supports may be exceedingly effective if relieved with ornamental iron railings or awnings of appropriate design. If iron is used it must be galvanized or constantly painted. Don't try to exact numerous sharp projecting edges or mouldings. Instead, design them with sweeping curves and beads.

In designing horizontal mouldings, do not employ level top surfaces for projections. Remember that the concrete must flow on a slight down grade to reach all points, and that air is readily pocketed unless surfaces are so sloped that it is easily driven out. Thus, horizontal surfaces should almost never be employed in mouldings. Proper bevels also assist in easy removal of forms.

Very effective and easily constructed ornamentation can be secured in the form of intaglio work. Greek frets are easily worked out on the forms and are often very effective.

Relief work can be applied in stucco or cement mortar if proper metal bonds are provided and the original surface is carefully prepared to secure a good bond. Obviously, such work should preferably not be very heavy, although with proper care very heavy masses can be satisfactorily employed. The best method of securing intricate details is to have the ornament cast separately and fastened in place in specially provided slots or set as the work proceeds. In either case ample reinforcement, both in the cast ornament and for securing same in the work, should be employed. On the other extreme, do not expect to be able to obtain large expanses of plain wall or long lines of pilasters or cornices without slight waviness, if built in mass concrete. Such work can be secured, if necessary, but it is costly, requiring extra heavy forms and excessive care during the deposit of concrete. Break up such areas and long lines by proper devices. Neither expect to secure such large areas or long lines without some cracks. Such defects can be obviated almost entirely by good workmanship and use of sufficient and properly disposed reinforcement, but it is also wise so to design as to provide artificial joints along which cracking will take place, if at all, and where it will be entirely concealed.

If the practically uniform gray color of cement is objectionable, its tone may be

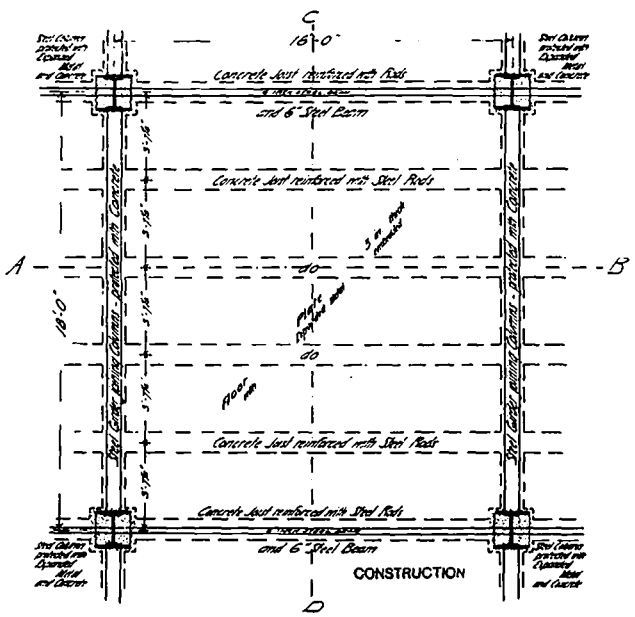


Fig. 16—SECTIONAL DIAGRAM OF TYPICAL BAY, OGILVIE BUILDING, TORONTO, SHOWING END SECTIONS OF COLUMNS AND THE ARRANGEMENT OF CONCRETE JOISTS, STEEL GIRDERS, TIE BEAMS AND STEEL COLUMNS TO EFFECT A PERFECTLY SECURE SYSTEM OF FRAME WORK. FIGS. 14 AND 15 ARE DESIGNATED AS A-B AND C-D RESPECTIVELY.

modified by the applications to the surface, by artificial treatment of the surface, or by introducing coloring substances among the concrete ingredients.

Except for the crudest work, all concrete surfaces should be treated. The ordinary paints, especially of the cold water variety, are not satisfactory. Even cement grout, unless carefully applied, will prove deficient. One or two special preparations, however, have proved of value.

Stucco can be employed where special finish is required. Key joints should be formed in the body concrete and heavy reinforcement installed where stucco is more than an inch in thickness.

Wire lath of every variety, even when carefully coated with preservatives or galvanized, has shown itself liable to disintegration when used as a frame for stucco cornices, etc.

Coloring matter can be introduced into the stucco if desired, but most coloring substances are bleached by the cement and are of short life.

Colored brick, tile, or terra cotta, if of heavy design and considerable thickness, can be imbedded in the concrete work as it is carried on, if the concrete is rather dry in texture, and if care is exercised in the proper placing of the ornamental blocks. In such work, joints must be formed and maintained uniform by the use of proper wooden wedges and strips.

Tile can be employed if it is first glued to perforated forms with common billposters' paste. When concrete is properly set, deluging the forms with water will dissolve the paste so as to allow the removal of the moulds. Copper tacks can be used to secure tile to centering, and no discoloration from rust will take place after the removal of the forms.

The impress that is left by the forms can be removed from old concrete best by mechanical treatment of the surface. Fine picking, chiseling or hammering, either by hand or by pneumatic tools, will produce differing effects according to circumstances. Sand blasting has also been successfully employed.

With mortar, sandstone can be imitated.

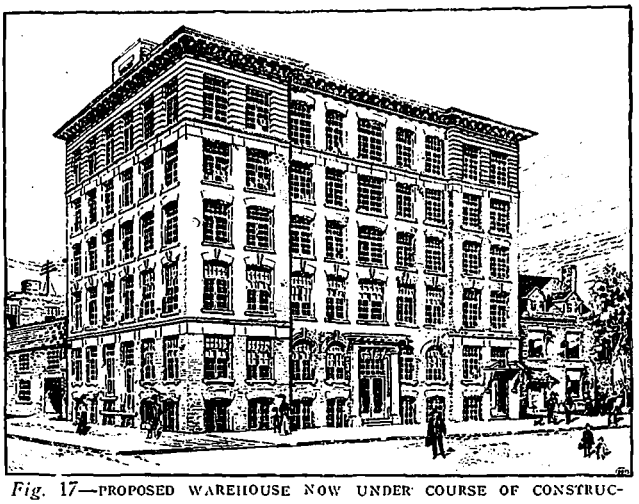


Fig. 17—PROPOSED WAREHOUSE NOW UNDER COURSE OF CONSTRUCTION AT THE CORNER OF VICTORIA STREET AND MILLER AVENUE, TORONTO, FOR THE E. B. SHUTTLEWORTH CHEMICAL CO., LTD. IT IS A FAIRLY GOOD EXAMPLE OF STANDARD MILL CONSTRUCTION IN WHICH EVERY EFFORT HAS BEEN MADE TO MINIMIZE AS AS FAR AS POSSIBLE IN A MODERN FRAME BUILDING THE DANGER OF FIRE THROUGH THE USE OF FIRE ARRESTING APPLIANCES. R. J. EDWARDS & SAUNDERS, ARCHITECTS, TORONTO.

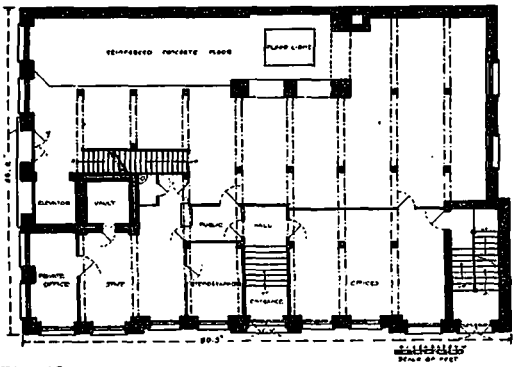


Fig. 18—GROUND FLOOR PLAN, SHUTTLEWORTH BUILDING, TORONTO. R. J. EDWARDS & SAUNDERS, ARCHITECTS.

A HOTEL, terminal station, office and mercantile structure, including cold storage and freight warehouse for both rail and water transportation, all contained in one building of 24 storeys, 200x400 feet, containing 50 acres of floor space, and involving an expenditure of $6,000,000 is an enterprise to be shortly undertaken in Tacoma, Wash.

Insofar as records show, this exceeds in point of cost any single building erected at one time by private enterprise on this continent. It shows what a combination of enterprise can do and it reflects much credit upon that city. The structure will be built into a bluff and will have fourteen storeys below ground at one end and with a ground level entrance at the other. The main structure will have a viaduct 600 feet long, extending from the bluff to the waters of Puget Sound, the full length being 1,000 feet. It will be built over two streets, leaving tunnels for the thoroughfare and will face a third street. From the viaduct piers machinery will unload the largest ocean-going steamers in one-third the time it can be done in any port in the world. Movable belts will convey the freight to the building, into great wholesale houses and cold-storage plants which will occupy the lower fourteen floors. Freight cars will enter on the first floor and be conveyed up six storeys on great elevators to be loaded or unloaded. The lower storeys will also be equipped with power for manufacturing plants. The upper ten storeys will be used for offices on the water front end, with a great hotel on the other. The construction will be steel and brick and the structure will be called the Imperial building.

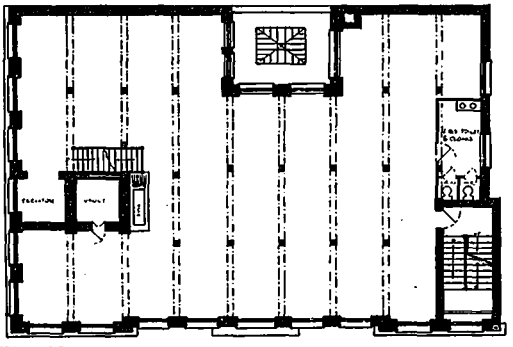


Fig. 19—UPPER FLOOR PLAN, SHUTTLEWORTH BUILDING, TORONTO. R. J. EDWARDS & SAUNDERS, ARCHITECTS.

CONSTRUCTION

A Journal for the Building and Engineering Interests of Canada

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ADVERTISEMENTS.—Changes of, or new, advertisements must reach the Head Office not later than the first of each month to ensure insertion. Advertising rates on application.

CORRESPONDENCE.—The Editor will be pleased to receive communications upon subjects of interest to the readers of this journal.

Vol. 1 February, 1908 No. 4

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Items of Interest

A PARTNERSHIP has been formed by Herbert B. Rugh, a well known architect of Winnipeg, and Andrew J. Ridell, civil engineer and architect, late of Glasgow. The new firm has opened a suite of offices at 926-927 Union Bank Building, Winnipeg, and will be known under the name of Rugh & Ridell.

* * *

THE first annual banquet of the officers and members of the Master Builders' Exchange of Edmonton, was held in that city on the evening of December 26 last. Over 100 members and guests gathered to celebrate the occasion. President J. H. Miller presided, and the interesting programme provided made the event a most enjoyable affair.

* * *

AT a meeting of contractors held in Ottawa, Ont., January 30th, a committee, composed of Messrs. T. A. Shore, R. Hooper, Alex. Garvock, J. Thorp Blyth and George A. Grain, was appointed to prepare a constitution and by-laws for a contractors' association and builders' exchange, which it is proposed to establish in that city, along the lines of building exchanges in Toronto and Montreal.

* * *

AT the annual meeting of the Builders' Exchange of Toronto, held January 20th, the following officers were elected for the ensuing year: President, C. W. Batt; first vice-president, Arthur Dennis; second vice-president, George Gander; treasurer, James Crang; directors, Wm. Clark, J. B. Thomson, John Aldridge, Wm. Smallwood and George Duthie; auditors, Walter Davidson and J. P. Browne.

* * *

MR. SAMUEL CALLARD, a well known contractor of Montreal, died at his residence, 374 Greene avenue, Westmount, on the morning of February 4th. Mr. Callard was born in Paignton, Devonshire, England, fifty-one years ago, where he was engaged in the construction line for a number of years. He came to Canada nineteen years ago, immediately establishing himself in Montreal as a general contractor. Mr. Callard was prominently identified with the Masonic order, being a life member of St. Andrew's Lodge, No. 58. A widow, two sons, Messrs. Allan G. and Archibald W. Callard, and three daughters, Misses Nellie, Amy and Elsie Callard, survive him.

* * *

THE members of the Engineers' Club, of Toronto, held their annual banquet on Feb. 6, at the club's headquarters, 96 King street west. Mr. C. B. Smith, past president, presided, and the vice-chair was occupied by Mr. J. G. Sing, president. Prof. Ellis responded to the toast of "Our Country," Mr. R. O. Steele to "Our City," Major Van Nostrand and Capt. Gamble to "Ontario Land Surveyors," Mr. J. B. Tyrrell to "Canadian Mining Institute," Prof. Stupart to "Canadian Institute," Prof. Rosebrugh to "Canadian Society Civil Engineers," and Mr. J. G. Sing to "Canadian Branch Electrical Engineers."

The club room was beautifully decorated, and the event was successfully carried out by a committee, of which Mr. W. J. Fuller, was chairman.

The musical programme consisted of numbers by W. Paris and R. A. L. Gray, with J. F. B. Vandeleur as accompanist, all members of the society.

It is understood that the club is arranging to purchase larger quarters, which are rendered necessary by its continued growth.

THE Metropolitan water board has abandoned for the present the scheme to bring London's water from Wales, and will ask parliament to authorize the building at a cost of 1,650,000 pounds sterling ($83,250,000), of a reservoir in the Bourne valley to be ten square miles in area, capable of impounding 55 billion gallons

* * *

THE Victoria, B.C., "Colonist" recently came out with a very timely editorial on the menace to public safety at present existing in the public hall in the municipal building there. This paper points out the dire results which might follow a panic in this hall, the only exits from which are two comparatively narrow stairways with a right-angled turn in each. In the majority of cases these fire-traps are allowed to remain until some great catastrophe occurs, involving the loss of human life, and every effort to eliminate these relics of prehistoric architecture is worthy of commendation.

* * *

MAJOR WILLIAM V. JUDSON, U.S. government engineer in charge of the breakwater construction at Milwaukee, has devised an ingenious plan for facilitating the transportation of large foundation blocks of concrete by water. The blocks are moulded with a large hollow space inside, with means for excluding the air. The blocks are made watertight and may be floated to the exact point in the work at which they are designed to lie. When the proper location has been reached, the stopper is removed and the weight of the water, rushing in, carries the block down to its bed. The system is still in its experimental stage, but it is believed that blocks weighing as much as fourteen tons may be handled in this way.—Concrete.

* * *

PROCEEDINGS have been instituted in the Superior Court against the town of St. Louis du Mile End, to annul the contract which was entered into with Mr. Treffle Bastien to equip a large section of that town with water mains and sewers at a cost of approximately $1,000,000. The suit has resolved itself into a question of whether or not the town has exceeded its borrowing power. It is alleged by the plaintiff that such is the case, claiming that by virtue of its charter the town cannot float a loan for more than 15 per cent. of the value of the property. The finding of the court is awaited with much interest as being important regarding the extent to which a contractor is protected in engaging in municipal work.

* * *

IT is the intention of the Grand Trunk Pacific to make a model city of Prince Rupert, the Pacific Coast terminus of the great transcontinental road now being built, and with this end in view two Boston landscape architects, Messrs. Franklin Brett and George Hall, of the firm of Brett, Hall and Stiles, are now on their way to the site of the new place.

Although as yet the plan is by no means fully developed, it is expected that the same methods will be employed that made Washington one of the most beautiful cities in the world.

Some time will be spent in going over the ground and laying out a scheme for the work, after which recommendations will be made to the road as to the best means to be followed.

Although the officials of the road say that as yet they have not given any contract for the work, it is very probable that Messrs. Brett and Hall will be asked to prepare general plans at least, and this may only represent a small part of the work they will be called on to do, for they may afterwards be intrusted with the making of the full detailed plans and other work in connection with the development of the proposed city.

A SWISS engineer has perfected a new fire escape. It consists of a series of folding iron ladders attached to the window frames. Each ladder reaches from one window to the next one below it. By turning a crank on any floor all the frames beneath are unfolded in less than a minute, and form a continuous means of descending to the ground.

* * *

AT the tenth annual meeting of the Montreal Builders' Exchange, held January 9, the following officers were elected for the year 1908: President, Thomas Ford; vice-president, J. H. Arcand; sec.-treas., J. H. Lauer; Board of Carpenters, T. Charpentier; general contractors, A. F. Byers; plasterers, Jos. Fabien; electricians, Simoneau; painters, W. T. Castle; plumbers, John A Gordon; structural iron and steel, D. W. Ross; roofing and fire proofing, W. A. Ramsay. Another member will later be selected to represent the stone and marble trade.

The report of the Board of Directors submitted at this meeting, shows an increase of 25 per cent. in membership over the year 1906. Reference is made to the fact that owing to the prudent management of affairs, not a labor strike occurred in the building line in Montreal during the past year. After meeting all obligations, the exchange has a balance of $1,500 in its treasury.

* * *

A NEW firm, Wright & MacDonald, have engaged in the practice of architecture at Vancouver, B. C., with offices in the Calthorpe Building, 619 Hastings st. Both of these gentlemen have had a broad experience in their chosen profession, having been connected with a number of leading firms in the British Isles. Mr. Edmund Wright, who served his apprenticeship in Leeds, is an A.R.I.B.A., and has been awarded a gold medal by the Royal Academy. Mr. Robert J. MacDonald received his architectural training in the offices of Ross & McBeth and Hippolyte Blanc, of Inverness and Edinburgh, Scotland, respectively. Afterwards he was connected with both Frederick Arthur and Ernest Taylor, two well known practitioners in London. On coming to Canada, both Mr. Wright and Mr. MacDonald entered the government architectural offices at Edmonton.

* * *

THE second annual meeting of the Alberta Association of Architects was held in the association rooms, at Edmonton, January 30. Among those present were Messrs. Wize, Magoon, Cauldron, Pirie, of Calgary; Macdonald, of Lethbridge; Johnston, Gibbs, Henderson, James, Whittington and Lines, of Edmonton.

The president and secretary being absent, their speeches were read and embodied between them comments on the most important work of the association for the past year, and on the proposed work for the coming year.

The examiners' report was read and showed that G. Fordice, of Calgary, had passed his examinations, and has been admitted to the practice of architecture.

The council elected for 1908 is as follows: R. P. Barnes, Edmonton, J. T. Childs, Calgary; W. M. Dodd, Calgary; D. C. Hopkins, Edmonton, F. J. Lawson, Calgary, R. W. Lines, Edmonton, J. Macdonald, Lethbridge, W. A. Marsden, Calgary, A. Pirie, Calgary, H. M. Whittington, Strathcona, and J. E. Wize, Edmonton.

The following officers were elected for the ensuing year—

President—J. E. Wize.
First Vice-President—A. Pirie.
Second Vice-President—J. Macdonald.
Secretary.—R. P. Barnes.
Treasurer—R. W. Lines.
Auditors—P. L. James, J. M. Henderson.
Examiners—Messrs. Bates, O'Gara, Henderson, Cauldron and James.

A LARGE jute mill near Calcutta has placed an order with a Manchester manufacturer for 20,000 sprinkler heads for fire protection. As English and Scotch insurance companies are giving a special rebate to all jute mills in India that install automatic fire extinguishers, other factories will doubtless follow the example of the first enterprising firm. It would be a good move on the part of Canadian manufacturers of fire extinguishers if they would make an effort to secure some of the business thus opened up.

* * *

FROM an ironworker's point of view the greatest achievement during the revolutionary period was the making of the great West Point chain. This massive chain, which has probably never had an equal since the first hammer struck upon the first anvil, was stretched across the Hudson River at West Point to prevent the British fleet from making a second attack on Kingston and Albany. It was nearly a mile in length and weighed almost 200 tons, many links being as heavy as an ordinary sized man. To complete it in six weeks 60 men hammered day and night at 17 forges and the cost of it was placed at $400,000.

* * *

RECENT tests of the hardwoods of Western Australia have revealed the extraordinary properties of yate, believed to be the strongest of all known woods. Its average tensile strength is 24,000 pounds to the square inch, equalling that of cast iron. Many specimens are much stronger, and one was tested up to 17½ tons to the square inch, which is equal to the tensile strength of wrought iron. The sawn timber of yate is probably the strongest in the world. The tree grows to a maximum height of 100 feet, and a diameter of two and a half or even three feet.

* * *

CHANGES to city building codes are always of vital interest. These are some new effects introduced in Chicago lately: Outside fireproof passageways of theatres must be 5 ft. wide, and one additional foot up to 8 feet for each one hundred people over 500 seating capacity.

Stairways in buildings of "mill construction" shall be incombustible, except when equipped with automatic sprinklers.

Buildings three storeys high, except residences, and those now otherwise equipped, must have stairway fire escapes.

Fire escape inspection work to be done by regular Building Inspectors.

* * *

TURKEY in Asia, says a correspondent from Beirut, Asia Minor, offers opportunity for the profitable investment of American capital in public works, such as railroads, harbors, electric street-car service, electric-lighting plants, telephones, waterworks, tourist hotels, and in developing its natural resources, which now lie dormant, in mines, silk-reeling establishments and irrigating projects. Such investments are of great importance to the growth and stability of foreign commerce. It should be remembered that Syrian wholesale dealers are compelled to give long credits to their customers. In the absence of American manufacturers' trade agencies on the spot, the next best trade auxiliaries are commercial travellers carrying samples and authorized to offer quotations. If any advertising is done for Asiatic Turkey, it should be in the form of posters in the Arabic language. There are many Arabic printing offices on the continent of America.

PROFESSOR FREDERICK STARR, an anthropologist of Chicago, has just returned from the heart of the Sierra Madre region of Mexico, where he studied ruins and relics left there by a prehistoric race. He says the race which, in ages gone, inhabited that region was possessed of much ability and no little civilization, as is shown by the buildings and implements which remain.

The houses were of cement and the process used is much the same as that used to-day in building concrete structures. Walls of temporary boards were first built, and between these upright pieces the material was placed while wet. The boards were removed when the cement had hardened, and the walls were left. That the material was durable is shown by the good condition of these ancient walls.

* * *

FIGURES for estimating in building construction were recently published in the Builder of London, England, in an article by A. C. Passmore. He says that the approximate value or percentage of each trade to the total of the estimated cost may be approximately calculated by multiplying the total of the estimate by the decimals given in the accompanying table, which is for ordinary work only.

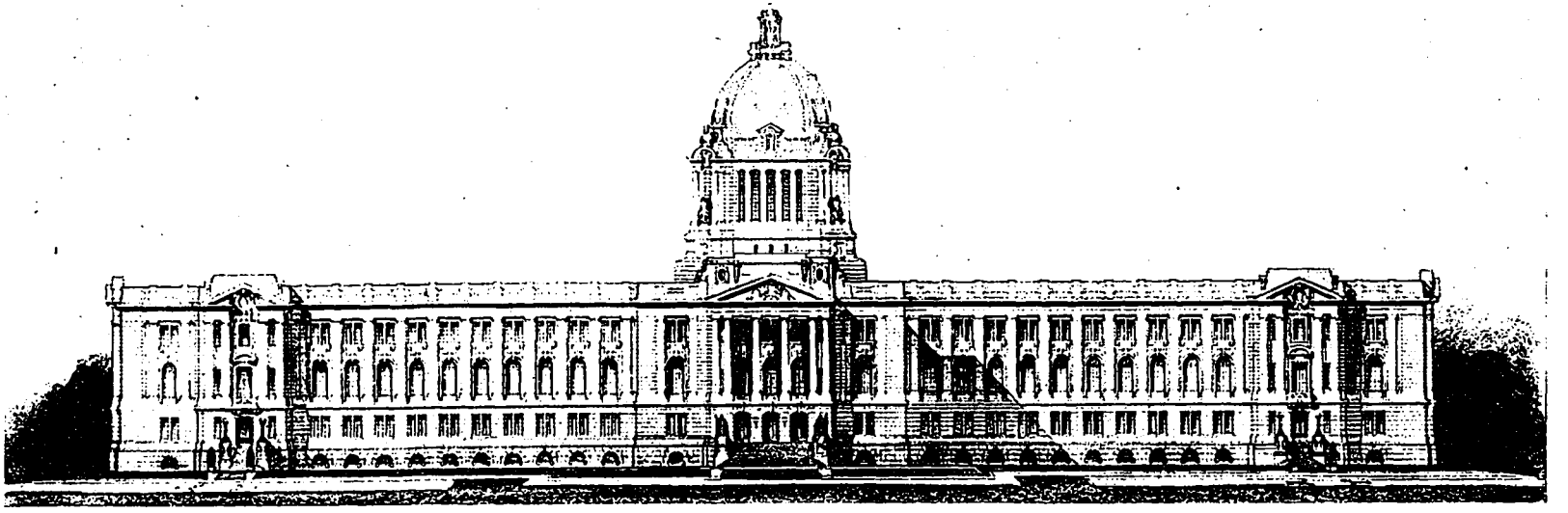
Excavator	0.005	Plumber	0.068
Drains	0.010	Gas fitter	0.010
Concrete	0.013	Paperhanger	0.009
Brickwork	0.205	(Electric)	0.007
Boundary walls	0.059	Glazier	0.009
Masonry	0.014	Painter	0.027
Slater	0.046	Bellhanger	0.007
Tiler (roof	0.046	Laying out grounds roughly	0.004
Tiler (floor)	0.019	Depreciation of plant	0.004
Carpenter	0.086	Sundries—	
Leveling site	0.004	Insurance	0.009
Joiner	0.286	Expenses—	
Ironmonger	0.014	Water, etc.	
Smith and founder	0.045		
Plasterer	0.058		

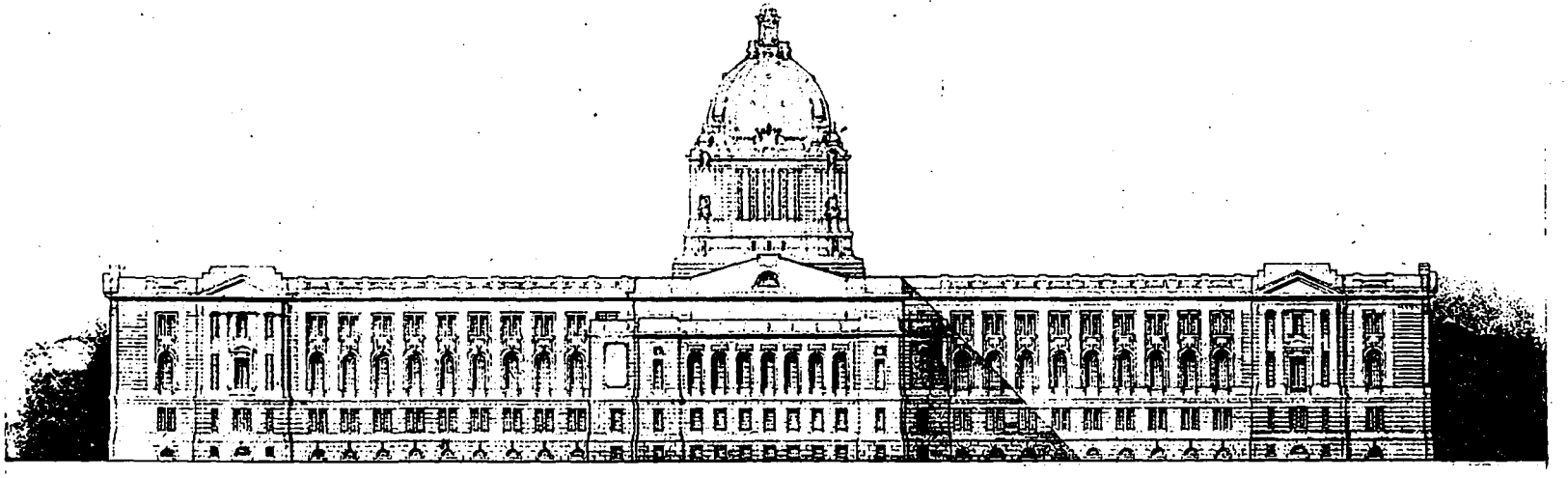
In difficult work or that with any elaborate detail the constants, of course, vary, according to materials and class of work, and also for very small jobs or those less than $5,000.

* * *

VOLCANIC ashes have been found to be a potent substitute for cement, and a strong company has been recently formed in Nagasaki, Japan, to make use of this product which is found in great quantity in that country and develop the industry. Considerable of this material has already been exported. At present the ashes are supplied to the Mitsu Bishi and Kawasaki Dockyards, the Sasebo Naval Yard, and the Wakamatsu Iron Foundry. Quantities have also been exported to Korea, North China, Shanghai, and Formosa, and the demand is rapidly increasing. Forty thousand bales were recently supplied to the Sasebo naval authorities, and a contract has been made for the supply of 60,000 bales to be used in the harbor works at Keelung. The ashes are much cheaper than cement and almost as effective; sometimes the ashes and cement are used together most advantageously. The company paid a dividend of nine per cent. for the first half year on a capital of 200,000 yen ($99,600).

The Kyushu Kazanbai (volcanic ashes) Company, which is composed of prominent business men of Nagasaki, has decided to construct a factory near Yobiko, and about 8 acres of land was recently acquired for this purpose. The Saga-ken authorities have been applied to for permission to construct a light railway between Uchiage, where the first factory is situated, and Yobiko, a small port from whence the product of both factories could be shipped. When these undertakings are completed, the annual output is estimated at 700,000 bales.



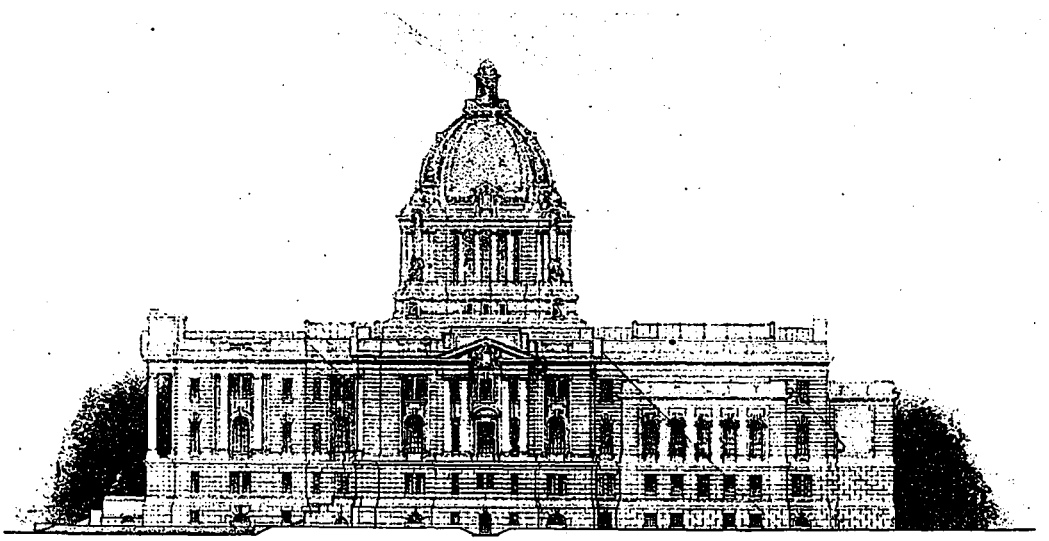


Front and Rear Elevations of the Winning Design for the Proposed Saskatchewan Provincial Parliament Buildings to be Erected at Regina. E. & W. S. Maxwell, Architects

Winning Design in Regina Competition

Messrs. E. & W. S. Maxwell of Montreal Given First Place in Regina Parliament Building Competition. Design Provides for a Well Planned, Dignified, Monumental Structure. A Marked Departure in Government Building Architecture in Canada

A NEW departure has been marked in the design and construction of Government buildings in Canada by the adoption of the plans submitted by Messrs. E. and W. S. Maxwell, of Montreal, for the Saskatchewan Parliament building to be erected at Regina.



END ELEVATION, PROPOSED PARLIAMENT BUILDINGS, REGINA. E. & W. S. MAXWELL, ARCHITECTS.

We have not as yet been enabled to see the various plans submitted, and cannot, therefore, criticize the comparative merits of the several competitors' work.

The prize design, however, is a most excellent one, admirably adapted to the purpose for which it is intended. The type of architecture adopted is uncommon in this class of building in Canada, where we seem to favor styles leaning toward the Gothic, which does not lend itself so readily to the requirements in modern Government legislative buildings.

The building as shown in the shaded elevations is dignified, massive and monumental in appearance. Its plan is excellent and lighting arrangement good, and the designers are to be highly complimented on the excellence of their work as shown throughout the whole plan.

The declared aim of the designers has been to produce a dignified, monumental architectural design, that shall express the purpose of the building at a glance, that shall fulfill its usefulness in the most direct manner, consistent with economical planning, that shall be adapted in every way to the climatic conditions, that shall provide well lighted and ventilated rooms, corridors and stairways, without resorting to courts, light shafts or borrowed lights; to this end a rectangular building, with a central corridor on each floor and cross circulating corridors at the central portion, provided that due provision is made for the proper lighting of all communications, offers the most economical solution of the problem and the one that is best suited to the extremes of climatic conditions here encountered.

One approaches the building by a driveway off Alber street, skirting the shore of the lake until the Main avenue is reached, being the continuation of Smith street. This leads from the lake shore to the principal entrance. The first impression of this vista terminated by the central feature of the front elevation crowned with the lofty, spacious and unique dome is one that will tend to lend dignity, solemnity and impressiveness to the expanse of façade that gradually unfolds as one nears the forecourt.

The main entrance is by a triple doorway, through

spacious vestibule into the main entrance hall, treated in a dignified, monumental manner. Directly across the hall is the staircase of honor for the use of the Executive and members, leading by two easy flights to the main or legislative floor. Flanking this staircase are four elevators, while adjacent hereto are two staircases for the use of the public.

At each end of the building are provided entrances, stairways and elevators, giving access to all floors.

At the head of the staircase of Honor, which is of spacious proportions with a lofty vaulted ceiling, one steps into the ante-room of the legislative chamber, situated beneath the dome, from which it receives its light, and on the major and minor axis of the building. To this room has been assigned an importance second only to that of the chamber itself, with its monumental treatment, spacious, vertical and horizontal vistas.

From here the legislative chamber is approached by a main central entrance, and by the two flanking entrances, thus providing ample circulation during a crowded session. This room has been designed after making a careful study of the principal examples of successful rooms of a like character, and it is believed will fulfill its functions in a manner capable of but slight improvement.

An unobstructed view of the Speaker's rostrum from every seat in the house is obtained, as well as from every seat in the public galleries, provided on the three sides of the room. The Speaker's and press galleries are likewise well situated behind and above the Speaker and approached by two stairways off the rear corridor.

The question of galleries is usually the "bete noire" of architects in designing a legislative chamber; they either extend to undue proportions the size of the room, rendering it difficult to arrive at a satisfactory architectural solution; whilst if made to overhang into the room the view of the public and members is unduly restricted by the unsightly projections. In this design the usual objectionble forms of galleries has been overcome by placing each one in a recess specially provided for it in the architectural treatment of the room; unnecessary size and consequent acoustic difficulties are thereby avoided.

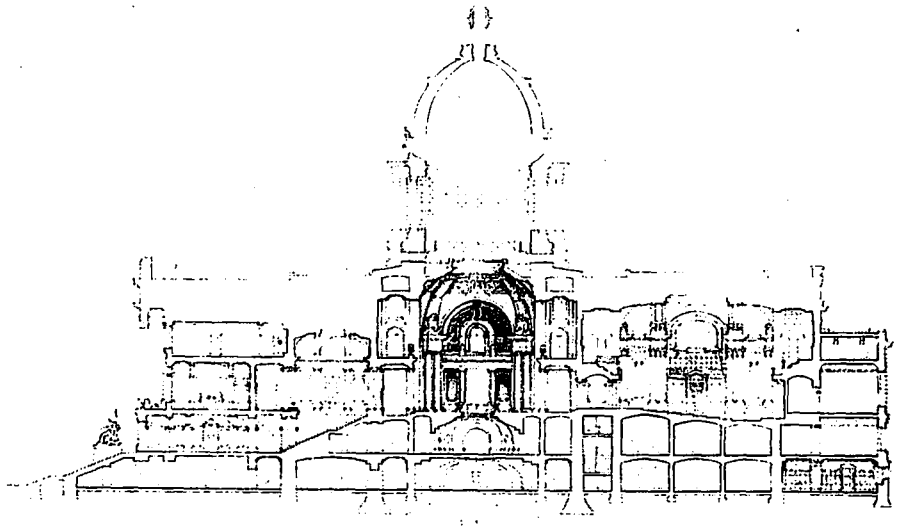
It will be noted that from the point at which one enters the building by the main entrance vestibule, hall, staircase of honor and ante-room, a succession of monumental apartments are traversed, all leading directly to the legislative chamber, the room above all others for which this building will be erected.

The rooms more immediately in connection with the chamber are conveniently situated. The smoking rooms are directly across the corridors at the lateral entrance doors, with toilet rooms near by. The Speaker's apartments are immediately behind the chamber, with a private door from the rostrum. The Clerk of the House, the office, Sergeant-at-Arms, Law Clerk and mail clerks are here located immediately at hand. In the mezzanine over these apartments is provided a very spacious vault for the storage of records in connection with transactions of the legislative chamber, this in addition to a vault in the office of the chamber.

The Council room, Provincial Governor and Premier's apartments have been placed in the place of honor at the centre of the building on this main floor, with the clerks and business office near at hand.

Members' coat rooms are conveniently, but slightly isolated from, the ante-room.

The reading room, stock room and committee rooms occupy the available space in the East wing, while the West wing is devoted to the writing room, the twelve offices for members, the public waiting room, lavatories, etc. It will be noted that all the rooms on this floor, as well as all other floors are so arranged that there is not any waste room or dark corridors.

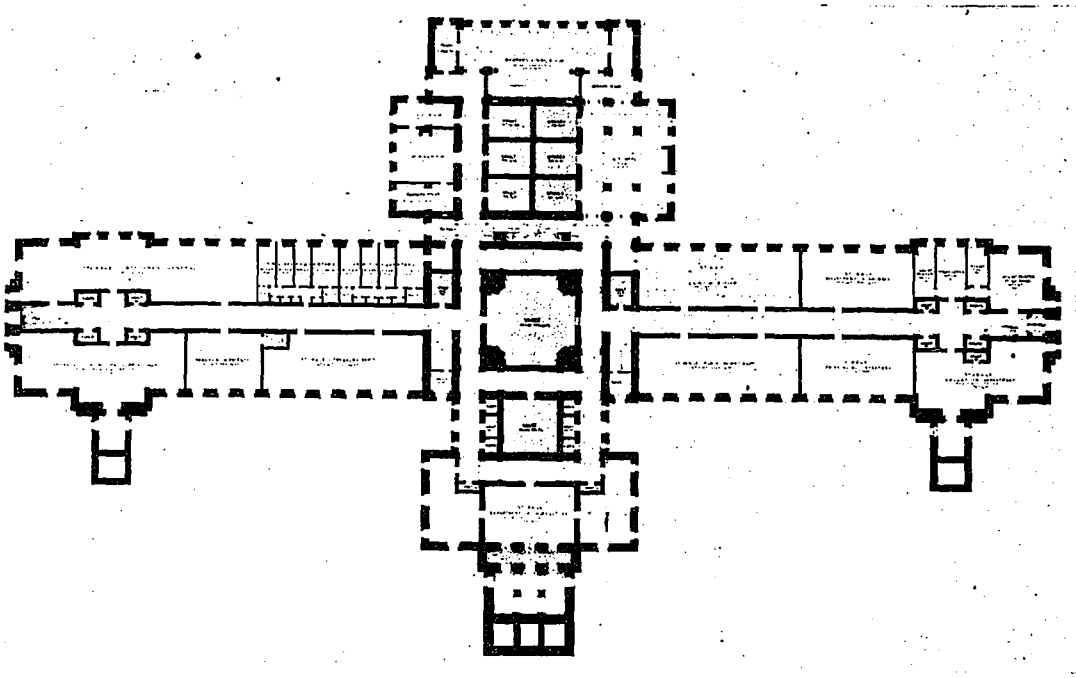


SECTIONAL ELEVATION, PROPOSED PARLIAMENT BUILDINGS, REGINA. E. & W. S. MAXWELL, ARCHITECTS.

In order to provide for future growth, it will be noted by referring to the plot plan, that extensions may be built at each end of the building, and extended in a southerly direction indefinitely, so as to give any desired amount of accommodation, without interfering with the building as at present designed; in fact the extended building will be as complete a unit as if designed and erected all at one time.

It is proposed to provide for extensions to the stock room in the future by utilizing the two Committee rooms each of 600 feet area, and extending these, as well as the stock, out into the proposed wing as far as may be required.

The staircase between the two committee rooms is



BASEMENT FLOOR PLAN, PROPOSED PARLIAMENT BUILDINGS, REGINA. E. & W. S. MAXWELL, ARCHITECTS.

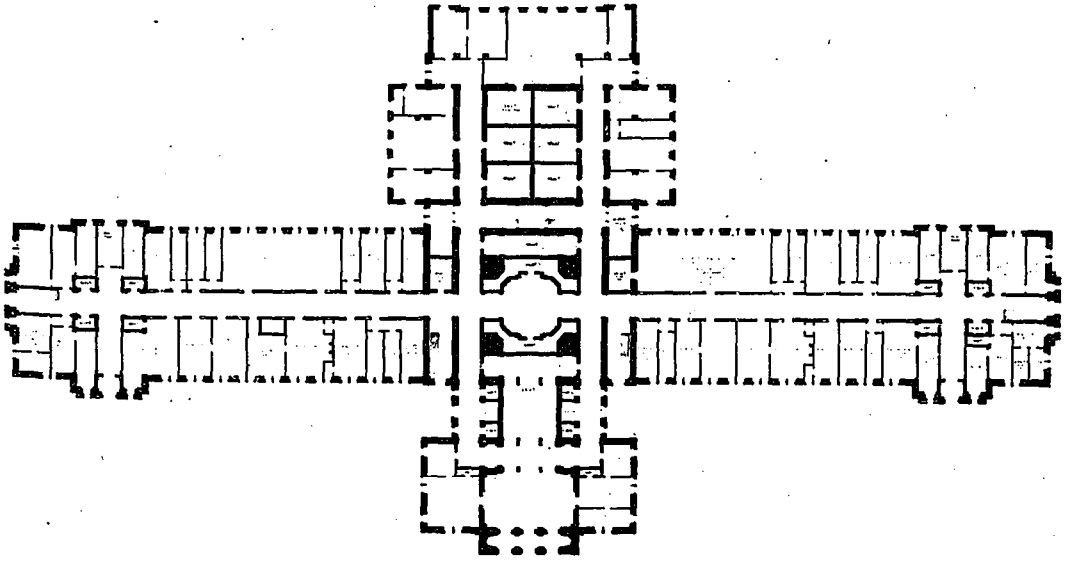
designed that a passage between the landings will be provided so that the stack room will be a continuous room when extended.

It will be noted that the reading and writing rooms have been lighted from the north, which is important in a climate where the sunlight p'aying on the snow gives such an intense glare.

To the ground floor has been assigned the principal departments, viz.:—The Treasury, Public Works and Agriculture. The post office has been located at the main entrance, as required by your conditions. Ample male and female cloak room and lavatories, and vault accommodation is provided, the latter as far as practicable open off the rooms which they serve.

On the second floor is found the Attorney-General's Department, Departments of Education and Railways, the Provincial Secretary and Municipal Commissioner, while the draughting rooms in connection with the Chief Engineer's office of the Department of Public Works and the Department of Railways are located on the north side, where a suitable light is obtainable.

In the basement will be found the members' dining room, a smoking room, a private dining room and a smoking room, the staff lunch room, with the kitchen depart-



GROUND FLOOR PLAN, PROPOSED PARLIAMENT BUILDINGS, REGINA. E. & W. S. MAXWELL, ARCHITECTS.

ment conveniently located to serve both dining and lunch rooms.

In addition to the elevator service for the members desiring to reach the dining room, two stairways for their exclusive use lead from near the legislative chamber direct to the dining and smoking rooms.

It will be noted that a private stairway also leads from the stock room on the main floor direct to the newspaper fyles room in the basement.

The Government Printer has been located in the west end of the basement, with a separate entrance door. The receiving, storing and distributing of supplies, etc., is thus facilitated.

The balance of the basement is devoted to a storage chamber for each department and for quarters for the janitor and engineer..

The tunnel for the conveyance of heating pipes, wires, etc., from the power house to the building is shown on the plot plan, so arranged that when the future additions are erected that the tunnel will be in the right relative position to serve them. This tunnel it is proposed to extend under the basement corridors so that ready access may be had to all pipes, wires, ducts, etc., as well as the elevator machines, the level of the drainage permitting of such an arrangement.

All staircases in the building, with the exception of the staircase of honor, as well as all elevators, will be enclosed in solid brick walls, and be provided with wired glass and metal screens and doors at each landing.

The floor areas for the various departments under your conditions permitted to be varied slightly, at the discretion of the competing architects, therefore as a basis of comparison the areas demanded and those provided are hereby given:

	Area Demanded	Area Provided
Attorney General's Department	5,800	6,469
Department of Public Works.	13,750	13,656
Treasury Department	5,850	6,350
Department of Agriculture	8,750	7,401
Department of Education	3,750	3,835
Provincial Secretary	3,200	3,082
Government Printer	1,450	1,480
Department of Railways	3,650	4,077
Municipal Commissioner	3,400	3,000
Total	49,100	49,350

The remaining apartments are of almost identically the areas asked for in each case.

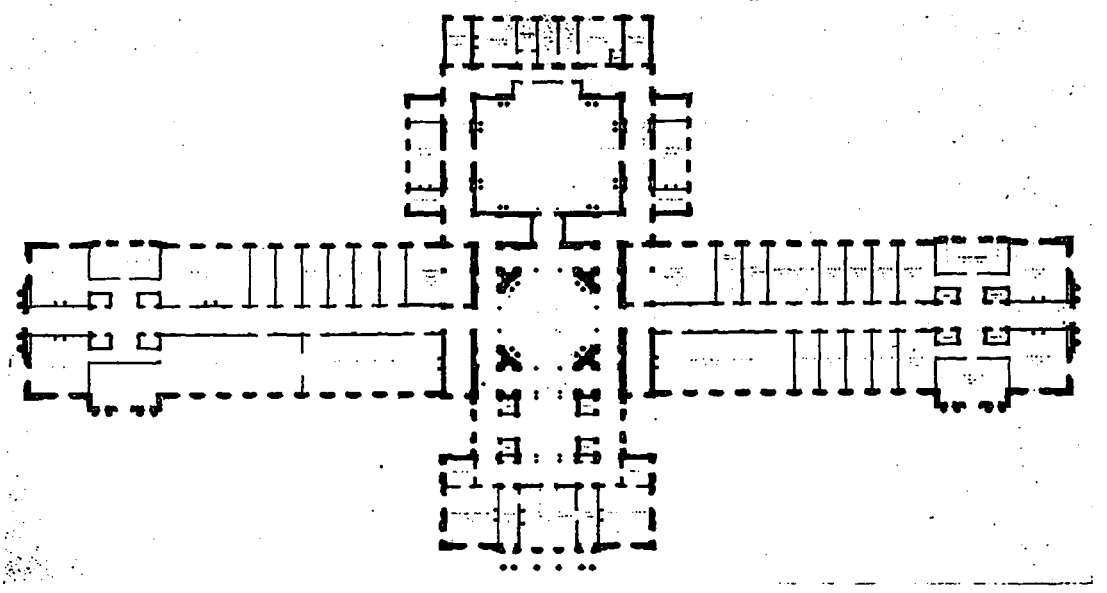
The areas of the vaults provided on each floor are herein given slightly exceeding your demand for ten thousand square feet of floor space.

Basement	4,206
Ground floor	4,650
Main floor	202
Second floor	2,400
Total	11,458 Sq. feet.

The total cubical contents of the building have been carefully taken and amount to 4,291,242 cubic feet, which is guaranteed as correct within a very small fraction.

The building of the dome will necessarily be of a more expensive character than the balance of the work. This dome contains 223,200 cubic feet, measured as square, which would cost 50 cents per cubic feet, equalling $111,600.00. The main portion of the building contains 4,068,042 cubic feet, which would cost 28 cents per cubic foot, equalling $1,139,051.76, making a total of $1,250,651.76.

In designing the exterior of the building a free adaption of English Renaissance work has been employed, as being best suited to the requirements, and offering a logical, sensible, and architecturally interesting solution of the problem that makes it unmistakably as representative of the British sovereignty, under which the province is governed.



MAIN FLOOR PLAN, PROPOSED PARLIAMENT BUILDINGS, REGINA. E. & W. S. MAXWELL, ARCHITECTS.

The combination of red brick and pale buff stone is particularly happy when used with discretion in this style, and it is felt that no extended description of the facades is requisite. By careful study of massing, fenestration, outline and detail, a buildingsuch as is herewith presented should prove to be all that could be desired to house the Legislature and Administration of what is destined to be one of the most important provinces of the Dominion.

To this end dignity, simplicity and purity of style have been combined with a monumental treatment of the best period of British architecture, to produce a building that it is believed will serve its purpose in the best possible manner.

When the time comes to extend the administrative offices, etc., as shown on the plot plan, the beauty of the structure will be further enhanced by the symmetrical treatment of the proposed extensions.

PROCEEDINGS... OF THE 20TH ANNVAL CONVENTION.... OF THE ONTARIO..... ASSOCIATION.. OF ARCHITECTS.. HELD AT TORONTO.. JAN. 14TH & 15TH .. NINETEEN HVNDRED AND EIGHT.

Condensed Proceedings of O. A. of A. Convention

Interesting and Timely Discussion of the Many Problems Before the Architectural Profession in Canada—Architectural Education; Registration of Architects; Toronto's Waterfront; Civic Park System Improvement Agitation

THE twentieth annual convention of the Ontario Association of Architects, held in Toronto on January 11th to 15th, was without question the most important in the history of the association. The various questions discussed were of an important nature, not only from the standpoint of the architect, but also from the standpoint of the general public. The question of the registration of architects, which is a most imminent one at this time in Canada, was thoroughly discussed. This, in view of the fact that the association propose to petition the Government for a bill amending their charter, was possibly the most important of the convention. The question of architectural education was fully dealt with in the several addresses and discussions. The "water front" problem of the city of Toronto was widely discussed, and the work of the Guild of Civic Art, in their agitation for the appointment of a permanent commission and the adoption of a definite plan for city improvement, was ably dealt with. The discussions and addresses of the convention were, to say the least, scholarly in their thoroughness, and we believe that the architect in Canada will find much of interest to him in the condensed proceedings that follow:

PROGRAMME

TUESDAY, 2.30 *P.M.—Opening of convention proceedings, addresses, reports of Treasurer, Registrar Committees and Chapters.*

4.00 *P.M.—Paper by Mr. A. H. Chapman, on Toronto's Waterfront. Discussion.*

8.00 *P.M.—Annual dinner at the National Club. "Architectural Education," proposed by Mr. Langton; replied to by Dr. Falconer and Dr. Ellis. Toast, "City of Toronto and Future Improvements," proposed by Mr. Wickson and replied to by Mr. A. B. Morine and Controller Harrison..*

WEDNESDAY, 10.30 *A.M.—Drive and visit to recent buildings of especial interest.*

2.30 *P.M.—Paper by Mr. W. S. Maxwell, of Montreal, on "Architectural Education." Discussion.*

3.30 *P.M.—Paper by Mr. Cecil S. Burgess, A.R.I.B.A., Montreal, on "Applications of Lessons of Ancient History With Reference to Modern Design." Discussion.*

Election of new members of Council and meeting of new Council to elect officers.

President's Annual Address

By EDMUND BURKE

WE assemble to-day to inaugarate the 20th annual convention of the Ontario Association of Architects.

The year just closed has been one of intense activity, the first ten months of which have produced the greatest volume of building expenditure which the Province, and especially Toronto, has ever known.

The stringency in the money market arose too late in the year to seriously affect the interests of architects, coming as it did at a time when the bulk of the work of the season was nearing completion.

It is certainly the hope of every architect that the small cloud has passed away and that restored confidence will so oil the wheels of progress that extensive and important building operations will continue to be necessary to meet the demands of business and the other needs of a prosperous community.

The suggestion in the President's address of a year ago regarding the desirability of forming a Dominion association of architects was warmly supported at the annual dinner in Ottawa by Messrs. Chausse and Hutchison, of the Quebec Association, and has borne fruit, largely through the enthusiasm of Mr. Chausse.

A provisional board was formed in the early summer, and at the call of that Board a congress of Canadian architects met in Montreal in August, when the "Institute of Architects of Canada" was organized and the Provisional Board elected as a council for the ensuing year with instructions to procure a charter from the Dominion Government.

INSTITUTE OF ARCHITECTS OF CANADA.

The Congress, by a practically unanimous vote, instructed the Council to include in the bill a clause restricting the use of the title "Architect" to qualified men, men passing prescribed examinations and members of other organizations of equal standing.

It was understood, of course, that those who are now in the honorable practice of the profession would have to be admitted to membership at the inception of the Act.

It is held by some opponents of the restrictive clauses that that portion of the Act is unconstitutional, contravening the British North America Act, which delegates jurisdiction in such matters to the Provincial Legislatures.

The bill has been printed and is to be introduced during the present session of the house.

The question is complicated by the fact that in two of the provinces, Quebec and Alberta, the use of the title of "architect" is restricted to those who pass the prescribed examinations of the local association or who present their credentials of membership in architectural societies of equal standing, while the other provinces either have or may have organizations which may at some time desire provincial legislation on the lines of the two provinces before mentioned.

It is altogether likely, when the bill reaches the committee stage that these knotty points will, in conjunction with the inevitable opposition of those who are opposed to restrictive legislation, result in the throwing out of the restrictive clause, and that the Institute will have to accept incorporation as an entirely voluntary organization.

Some misconception seems to have arisen in the minds of some as to the attitude of the Ontario Association of Architects with regard to registration.

It seems to be taken for granted that the Association is aiming for registration and a close corporation and that alone.

This is most emphatically not the case.

The chief aim and desire has been to raise the status of the profession and the ever present question has been as to the best method of accomplishing so desirable an object.

The Association has not been alone in the opinion that registration and the restriction of the title "architect" to men who had passed a qualifying examination, is one of the simplest and best means of doing so.

The recent world's congress of architects in London pronounced in favor of the statutory qualification of architects, without dissent from the representatives of any country present at the meeting.

O. A. OF A'S. STAND ON REGISTRATION.

The Ontario Association is not desirous, as many have charged, of controlling the entry of men into the profession, and its executive has frequently emphasized the statement that it would be pleased to see the whole matter in the hands of and controlled by the Government.

The Association, through its executive, has long felt the burden of preparing students for examination, students moreover who should have been at college obtaining the foundation which the Association has been forced to lay, because there is and has been no standard which students are compelled to reach before entering the study of architecture.

The lack of well conducted classes in design has also caused the executive grave concern.

The Association would therefore welcome relief from the responsibility involved by the present situation.

How to achieve the best results is a matter deserving serious consideration and the co-operation of all those in the profession who desire to see its interests and those of the public best served.

It may be taken for granted that some means will have to be adopted to induce students to qualify, for as long as there is no restriction of entrance to the profession, the best provision for education will remain unused by the lazy or careless student.

What those provisions should be is a question calling for most serious consideration, and, in the interests of the art and of all

country, should be taken up by the Government and the provincial university.

The unwisdom and inexpediency of a fixed legal tariff of fees has been demonstrated by the fate which has befallen the Quebec Association. The council of that Association applied to the legislature to have the usual tariff of 5 per cent. commission, with the customary variations for special services embodied in an amendment to their act of incorporation; the result proved to be something in the nature of a boomerang, resulting in a serious cutting down of the legal rate of remuneration, and proving the old adage that "it is better to leave well alone." The legal fees are now five per cent. on all buildings costing less than $50,000, four per cent. on those costing from $50,000 to $150,000, and three per cent. on all buildings exceeding $150,000 in cost.

The tariff as passed apparently suits the practitioners who are not likely to deal with large work but the men who execute large and expensive work are very much annoyed and chagrined with the result and evidently feel that some one has blundered. Consolation may be found, however, in the fact that an architect may arrange for a higher fee with his client by a special contract. This is, however, not always a pleasant or desirable thing and will be sure to lead to a large amount of dickering before terms can be arranged.

THE OTTAWA COMPETITION.

It will be remembered that at our convention of a year ago in Ottawa a resolution was passed urging the Dominion Government to entrust the supervision of the execution of work in connection with the proposed new Government Buildings at Ottawa to the author of the successful design.

Another resolution was passed asking for an extension of the time allowed for the reception of the competitive designs.

The latter resolution was acceded to by the Acting Minister of Public Works.

The assessors completed their work and awarded the prizes last June, but as far as known the Government has taken no action with regard to the carrying out of the work.

It may be looked upon as a coincidence, or it may be taken as a proof of the soundness of the award of the judges, that the authors of the designs ranked first, have been awarded first place in the competition for the Saskatchewan legislative buildings, and the execution of the work. This competition, a limited one, included English, American and Canadian competitors with judges of English and American training. The buildings referred to are to cost $1,250,000.

THE GUILD OF CIVIC ART.

It is to be noted with satisfaction that the movement inaugurated by the Toronto Chapter of this Association some five or six years ago for a comprehensive plan for the improvement of the City of Toronto, and handed over to the Guild of Civic Art two years ago, has reached such a point that the suggested plan is practically completed, and that through the efforts of the Guild, public opinion has been so educated that the press and the public are strongly advocating the appointment of an independent commission to carry out the various improvements suggested. The candidates for civic office, almost to a man, yielding to the popular demand, declared themselves in sympathy with the scheme and of those elected two weeks ago, a majority may be expected to vote for legislation empowering the appointment of such a commission.

The defacement of buildings, by hideous and aggressive signs, is growing apace, and our business streets are fast assuming the appearance of a midway at a fair. Fortunately the most important buildings have not as yet suffered serious disfigurement, but the competition among business men for striking advertisement is becoming so strenuous that it is time to call a halt.

The Guild of Civic Art is moving in the matter and architects can and should aid the movement by endeavoring to lead their business clients in practical support of the movement.

The writer has found clients, as a rule, amenable to advice, but fear of losing good tenants sometimes overcomes their better judgment. Legal regulation and restriction is the only means by which satisfactory results may be obtained.

EVILS OF "FLIMSY" CONSTRUCTION.

The occurrence of fires, lately, in some of the new warehouses in what is known as "the burnt district" in Toronto, which while doing comparatively small damage to the structures (thanks to our efficient fire-fighting appliances), have resulted in heavy or almost total losses of the contents, and emphasize the fact that very much greater care is needed in the internal construction of such buildings.

The owner of this class of building is often responsible for flimsy construction, finding it cheaper to thus build, paying a higher rate of insurance, than to go to the expense of better construction and a lower rate of insurance. In some cases the owner is guided by his architect, who, either from lack of experience, or from a desire to keep down the cost, fails to urge upon his client the wisdom of adopting proper and up-to-date methods of construction.

Architects should lose no opportunity of studying and diagnosing buildings which have been injured by fire with a view to the elimination of the defective points disclosed in the method of their construction.

While defective construction of warehouses from a fire resisting standpoint is to be deprecated as likely to lead to economic waste, a far more serious condition arises where risk of human life is added to that of property risk. The world has been periodically shocked by appalling losses of life caused through defective construction of bridges, churches, public halls and theatres. The Christmas holiday season with its multitude of shoppers of cities and towns makes possible, some day, a holocaust which will be without a parallel in history. The elements of a catastrophe are at hand in half a thousand cities and who can say where or when it may happen?

GRUESOME PICTURE OF DEATH TRAPS.

To our mind an enormous responsibility is involved. Thousands and tens of thousands of individuals flock to such establishments, and on special days and at certain times these throngs are so great as to be practically unmanageable. No power on earth could extricate these people in the event of a serious panic. A mere unreasoning panic would probably result in a pile of crushed and smothered humanity. No system of staircases and no battery of elevators in any known establishment could begin to relieve the situation. The floor areas are so large and so lacking in subdivision that the impact of a surging crowd would be practically irresistible, possibly overturning stair railings, and well-hole guards and precipitating hundreds to the floors below.

If such a panic should be complicated by fire the result would be still more distressing.

Smoke ascending through the various flats from even a small fire would asphyxiate the occupants before relief could arrive—minutes, even seconds sealing their doom.

It may be argued that a building equipped with a first-class, well-maintained sprinkler system would effectually prevent such a catastrophe. But the portion most needing this safeguard is by the very nature of the case lacking in such protection.

In the light wells the sprinklers are usually placed in the skylights, sometimes 100 feet or more above the floor where a fire might occur. Such a fire would create smoke enough to smother every person in the establishment before sufficient heat could bring the sprinklers into action.

It is, therefore, obvious that the only safe and wise method to be adopted in the construction of an establishment housing large quantities of inflammable articles, and frequently containing enough people to fill every available foot of space, is to so subdivide the building, both horizontally and vertically that risk of panic, accident or death will be reduced to a minimum.

The otherwise reasonable desire for display and effect should be resolutely subordinated to the sacred duty of the protection and preservation of life and limb.

The record of terrible accidents in these days of great undertakings is appalling, and any day may see, and the possibilities and probabilities are such that the next disaster may find its location in some establishment which has neglected the self-evident precautions, the lack of which is usually at the root of most of the distressing events which face the reader almost daily in the public prints.

FIRE AND PANIC PREVENTION IN LARGE STORES.

The adoption of every possible device to make such an establishment a model of safety, a building in which customers, the majority of whom are women, and comparatively helpless, could feel perfectly safe, would doubtless amply justify any additional expense involved, by the added popularity and additional business obtained.

The two most important points in the construction of such establishments are, undoubtedly, the avoidance of the open light well, and the surrounding of all vertical openings, such as stairs, elevators, dumb waiters, etc., with fire resisting enclosures equipped with automatic gates or doors. By this means each floor would become an independent unit, localizing either fire or panic.

Another very desirable precaution, still further localizing trouble, would be the subdivision of all floors by fire-resisting partitions.

Automatically closing doors or rolling shutters could be installed, giving numerous openings, while the dead portions of the partitions could be lined with mirrors, masking such dead walls and reflecting in endless effect the stretch of store on either side.

For exit there should be an ample number of broad staircases, ample and broad enough to seem almost wasteful under ordinary conditions, but planned in view of emergencies. If these staircases had outlets to the street free from revolving doors, added freedom of exit would be gained.

The ordinary iron fire-escape ladder is of little use in a sudden emergency where great crowds are involved. A proper fire-escape would be of the type where each flat opens on to an open air landing entirely cut off from any other flat, and having independent access to a broad fireproof staircase absolutely cut off from the building from bottom to top.

And now, if you will permit personal reference, I have to express my appreciation of the honor laid upon me by your council in electing me last January to the office of President for the third time, consecutively.

I have endeavored, so far as a very busy man could, to serve your interests faithfully, believing as I do that no man should accept office without being prepared to sacrifice time and thought in order that the interests which he is chosen to represent may be properly furthered.

I regret that the movement of two or three years ago for the union of the Toronto Architectural Club with us, for which I, with

others, made considerable effort, failed through divergence of ideas on certain matters of polity.

I am glad to have been identified with the movement inaugurated by this Association of preparing a comprehensive plan for the improvement of Toronto, the outline of which as previously stated, was handed over to the Guild of Civic Art at our annual banquet two years ago, and I am happy to have been one of the active agents in the formation of the Ottawa Chapter of this Association, and which made possible the holding of our annual convention in that city a year ago.

Let me lay upon my successor and the members of the executive the burden of an endeavor to organize a chapter in either Hamilton or London in the course of the next year.

ADVANTAGES AND PROGRESS OF O. A. OF A.

The coming year should also seen an advance along educational lines. To this advance should be the thought and aim of every architect claiming to be broad minded, unselfish, and having the good of the art and of the profession at heart.

The best results will never be attained if divergence of opinion on matters concerning our welfare is permitted to keep us apart. The aloofness of some architects and the carelessness or selfishness of others are also retarding our best interests.

I do not think the architects of the province have any conception of the good accomplished for and the standing given the profession by our organization. Architects who have shown little interest in the Association are prone to say that they have had little to show for their annual fee. When these men have occasion to go to court for the collection of an account they are only too glad to claim membership and to quote the rate of charges approved by the Association. The winning of many a suit has been helped through the influence of this Association and by the testimony of its officers in the courts, while architects who are not members have frankly admitted the use of similar means for the strengthening of their case.

But putting all sordid considerations aside there is no doubt whatever as to the beneficial influence of contact and conference with one another made possible through our organization, and the use of opportunities thus afforded cannot be too strongly urged upon the architects of this province and city.

This, from an extended experience of the benefits accruing therefrom, I would press upon you as the most practical step towards raising both your own status and that of the profession in the community where you reside and practise.

Committee Reports

Registrar's Report

TheRegistrar's Report for 1907 showed the Association to have a membership of eighty-four, of which two were honorary members, forty-three regular members in Toronto, and thirty-nine regular members in other places. Ten meetings of the Council had been held during the past year. An exhibition of the competitive drawings for the new Department of Justice Buildings in Ottawa was held in Toronto during October, under the auspices of the Association in the Galleries of the Ontario Society of Artists. Examination were held in April and supplemental examinations in October, five students having passed the former examination and six the latter. Interest now in hand on the Guild Fund was $55.97. The Seventh Annual Volume of Proceedings, of which 1,200 copies were distributed, was issued in June. Mr. Edward Burke, of Toronto, has offered a travelling scholarship of $50.00 as a reward for the best solution of a problem in design by an articled student in the office of a member of the Association.

Report of the Rooms Committee was then read.

Report of Editing Committee

The report of the Editing Committee showed that the 1907 Proceedings were issued at a cost of $483.67. The receipts from advertisements were $863.00, leaving a balance on hand of $379.33.

The Proceedings were nearly as late as usual, in spite of determined effort to be early. Mr. Langton, the chairman, believed, in fairness to he advertisers, these proceedings should be published early in the building season, and recommended that future advertising contracts be made before the date of convention.

Report of Education Committee

Report of the Educational Committee. The chairman called attention to the fact that Mr. Burke had offered a travelling studentship giving the winner an opportunity of spending a week in one of the larger American cities. This competition was open to all students who are at present serving their articles in the offices of the members of the Association. The subject is "A Garage for a Gentleman's Estate," and the programme provides that preliminary sketches are to be first presented and criticized by the judges and then complete designs are to be sent in six weeks later for final criticisms and award. The mathematical classes held in Toronto under the tuition of Mr. Thomas Taylor were again in session, twenty students being on the roll. The committee desired to urge upon the Association members the desirability of admitting to their offices only such students who had passed matriculation, and of making it a condition that they shall make the course of study and examinations, as set forth in the curiculum during their studentship, which was an admirable substitute where it was impossible to take a university course.

Report of Legislative Committee

The most important committee report was that of the Legislative Committee, in so far as it dealt with the proposed bill to be presented before the Ontario Legislature. The report stated that, as instructed at the last annual meeting, they had petitioned the Government for an amendment to the Architects' Act, eliminating the word "Registered" from it. A solicitor had been engaged who had adopted a method of proceedure and drafted up the proposed bill, as per the instruction of the Association. The solicitor reports that the Government has asked to place the matter of conducting examinations before the Senate of the University. Word had been received that this matter was to be taken up with the Senate on January 6th. The committee reported that the matter was progressing satisfactorily and that they had had ample assurance that the bill would carry, as amended.

AN ACT TO AMEND THE ONTARIO ARCHITECTS' ACT

His Majesty, by and with the advice and consent of the Legislative Assembly of the Province of Ontario enacts as follows:

1. *Section 5 of the Ontario Architects' Act is amended by adding the following section thereto:—*

"(3) *Three of the members of the Council shall be the President, Vice-President and Treasurer of the Association.*"

2. *Section 6 of the Ontario Architects' Act is amended by striking out the words "The members of the Council" in the first line thereof, and substituting the words "The President, Vice-President, Treasurer and other members of the Council, and by inserting after the word "Votes," in the ninth line thereof, the words "for the respective offices."*

3. *Section 11 of the Ontario Architects' Act is repealed and the following substituted therefor:—*

"The Council shall appoint a Registrar and a Solicitor, and such other officers as may be necessary for the working of this Act, who shall hold office during the pleasure of the Council."

4. *Section 22 of the Ontario Architects' Act is amended by striking out the words "as shall be necessary in that behalf" in the fifth line thereof, and substituting therefor the words "as the Council may prescribe" and by adding thereto the following sub-section:—*

"(4) *The Council may enter into agreements with the Senate of the University of Toronto and the Faculty of Applied Science, for the conducting of such examinations as may be required under this Act by examiners appointed by the said Senate and Faculty, or may make such other arrangements therefor as they may deem expedient.*"

5. *Section 24 of the Ontario Architects' Act is amended by striking out the words "Registered under this Act, unless he is so registered," in the 4th and 5th lines of the said section, and substituting the words "a qualified architect unless he is registered under this Act."*

6. *The Ontario Architects' Act is amended by adding the following section thereto:—*

(34) *"The fees which the Council shall be empowered by this Act to impose shall be fixed by the Council of the Association, subject to the approval of the Lieutenant-Governor-in-Council, but shall be for the following purposes only:*

(a) *For registration as a student.*
(b) *For each assignment of articles.*
(c) *For each examination.*
(d) *For registration as an architect.*
(e) *For the annual fee of members.*

Discussion

The discussion that followed was opened by Mr. Horwood, who wished to be informed as to whether the amendments read would make the Ontario Association of Architects a closed corporation. In answer to this Mr. Langton stated that he was not quite sure, but he thought it would. After reading the first sentence again: "We were instructed to petition the Government for an amendment

to the present act eliminating the word 'Registered' therefrom and to employ counsel for that purpose." He stated that the solicitor asked if any other amendments were wanted, and it was decided that the President, Vice-President and Treasurer be elected at the annual meeting and also that examinations should be held by a board of examiners appointed by the Senate of the University of Toronto. The Government had taken up this matter and had asked the Senate to agree to conduct the examination.

Mr. Langton recited some of the objections found to the bill, as proposed heretofore, and stated that in the minds of some people the Ontario Association was merely a clique that aimed to control the entrance of architects into the profession.

Mr. Watts did not believe it in order to interfere with the work of the legislative committee and maintained that the Convention had no right to change what had been done at the previous meeting without very serious consideration. Mr. Watts went further and explained, in reply to a request for further information on the subject by Mr. Belcher, as to what was meant by the change, and explained that if the word registered were to be eliminated from the charter it would make the Association a closed corporation. He maintained that it was an open question as to whether it was advisable to attempt to change the general scheme.

Mr. Kay said that the title "Registered Architect" seemed to carry a sort of a mystic sound with it and he thought it would be perfectly safe to adopt the simple word "Architect." He did not think, however, it wise to tamper with this matter while the bill was in its transitory state.

Mr. Gordon moved he following resolution: "Whereas this Association in its application to the legislature for a charter, and in its subsequent applications for amendments to its charter, has had in view the technical qualification of those who are admitted to practice the profession of architecture, and whereas this Association is quite willing that the Government shall take in charge matters of architectural education, examination and registration, it is resolved that this Association approves of the action of its legislative committee in application to the legislature for amendment to its charter and for such Government legislation as will secure the claim of compulsory architectural education examination and registration under the control of the Government." Mr. Gordon maintained that the method of control was of little importance whether the examinations were conducted through the Senate of the University or through any other body they may delegate, and he wished to have it emphasized that the sole object aimed at by the organization was a better education of the men in the profession and the raising of the standard of architecture.

Mr. Watts maintained that the last resolution was out of order and thought it ill-advised to interfere with the proposed legislation which would eliminate the word "Registered" at this time.

Mr. Gregg believed that there were not the differences to be made in the act that some people supposed. He said that the one point the Association had been working for was to see that the gentlemen desiring to enter the profession of architecture should go through a prescribed course of study, and that the Association had agreed on former occasions to have the examinations conducted by the Government. He did not think that under these conditions the organization could be called a closed corporation. He stated: "We are working for a Government measure which will in some way bring about compulsory education. Mr. Gordon's amendment was simply a confirmation of the legislative committee, and he (Mr. Gregg) seconded the adoption of the report.

Mr. Gemmell suggested that if the Government became the examining body it must of necessity be the licensing body.

Mr. Langton replied to this and stated that the Ontario Society was a Government Association appointed for a purpose, as the Law Society is, a body into which architects who, through proper training are capable of practising and are admitted. This body also had the power of examination. He stated that because people were suspicious of a body which had both the power of examination and contains in itself those who were allowed to practice, the Association found it expedient to accede to the representations of those who were opposed to them, that examinations should be conducted by some independent body. He said: "The proposal here is simply that this Association be made a closed corporation, that is to say, that nobody be allowed to use the word architect except members of the Association, but that those entitled to become members of this Association shall be examined by some body independent and outside of the Association. . . . . The Association would then have all the advantage of acting together, assisting one another's minds, keeping the tone of the profession high, seeing that the ideas of the profession are advanced and without the suspicion of corruption attached to it."

He called attention to the advantages of having a bill which the Government approved of, and which the opponents of the former bill do not oppose.

He did not see any reason why the committee's report should not be adopted. The report of the Legislative Committee was adopted.

Mr. Gordon again introduced his resolution the reason for which he gave that it was an attempt to strengthen the hands of the Legislative Committee to show them that the organization was in sympathy with what they had done, also to put the Association on record that its attitude from the first was that no special powers were to be asked for its members, but that they wanted to establish a power that would compel all young men who are students of architecture to educate and fit themselves so that each would be an ornament and not a disgrace to the profession. He believed that they owed it to themselves, the only recognized Government body of architects in Ontario, that they be placed on record that they had no desire for a closed corporation, or anything of the kind, but for a system of education that would be effective. Another reason for his desire to have his resolution passed was that it would effectually disarm all opposition in the Legislature by making it plain that all that was asked was compulsory education and that that education may be controlled by the Government or by anyone the Government may delegate.

Mr. Gordon stated, in answer to a question from Mr. Watts, asking if this resolution was a recommendation to the Legislative Committee, that it was an expression of the opinion of the Convention. On motion of Mr. Gordon, seconded by Mr. Wickson, the resolution was adopted.

Report of Ottawa Chapter

Mr. Fred. J. Alexander read the report of the Ottawa Chapter. The report showed that during the year 1907 the Chapter had held nine regular meetings and four special meetings, all of which were well attended. During this period four members were added to their number, making a total of fourteen members. An important item in the report was the fact that the attention of the Chapter had been called to a number of public officials in the civil service who were abusing their position by placing themselves in active competition with the architects. Their services were offered at most insignificant figures as compared with recognized provincial tariffs. In this matter the Chapter had been enabled to do some good.

Another very important matter that has occupied their attention was the importation of designs from architects outside of Canada, and the duty payable thereon. It had been pointed out to the Commissioner of Customs that although the tariff provides a duty of 20 per cent. ad valorem on the charge usually made by the architects for the drawings, apart from the specifications—the customs appraisement, under Bulletin No. 152, issued for the guidance of appraisers, provided hat the drawings be assessed in value as only one per cent. of the architects' usual two and one-half per cent. charge, so that by placing a preposterous valuation in the specification (which is free) the greater amount on which duty should be levied is whittled away, involving great loss of revenue and taking away any protective advantage to the Canadian architects, as intended by the tariff. Emphatic protest against this had been made, and in reply the Chapter had been informed that the matter would be brought before the Customs Board.

The Institute of the Architects of Canada had been extended the hearty sympathies and co-operation of the members of the Ottawa Chapter in their petition to the Government for a Charter.

The Chapter was at present engaged, at the request of the corporation of the city of Ottawa, in preparing a draft of a new set of building by-laws suited to the city's present needs.

Report of Toronto Chapter

This report showed that sixteen meetings had been held during 1907, with a total attendance of one hundred and sixty-seven. The officers elected last April were as follows: President, Mr. George Gouinlock; Treasurer, Mr. A. Frank Wickson; Secretary, Mr. H. E. Moore.

Some of the important questions discussed during the year were as follows:—

Legislation Regarding the Profession.—This important matter had been the subject of much discussion, owing to the prominence given it by the Ontario Association of Architects and the Institute of Architects of Canada. While opinions were divided as to the advisability of seeking a closed incorporation, a great many of the Chapter favored the placing of educational matters under Government control and license. This seemed to be the ideal method for the protection of the profession and the public and the most likely to be attained if the architects of Canada would form a unity for its support.

Building By-laws.—The committee appointed by the Manufacturers' Association to deal with the proposed amendments to the Building By-laws of Toronto invited the members of the Chapter to attend, but nothing definite was accomplished, as the Manufacturers' Association found that the ground had been pretty well covered by the Chapter at previous meetings in connection with the Board of Trade.

Plumbing By-law.—A committee had been appointed to draft amendments and to thoroughly revise the plumbing by-laws. When this work was completed it would be forwarded to the Medical Health Officer for his consideration. When it was considered that these by-laws have remained unchanged for from fifteen to twenty years it should be quite apparent that the efforts of the Chapter in this connection were of great importance.

Housing Problem of the City of Toronto.—A committee was appointed by the city to deal with this matter, the Chapter having representatives on same. Nothing definite had been accomplished.

Exhibition of the Completed Drawings for the Government Buildings at Ottawa.—Through the efforts of the Chapter and the courtesy of the Dominion Government an exhibition of the drawings submitted for this competition was made possible.

Plans for Civic Improvement.—The interest in this most important public question had been maintained throughout the year. The Chapter was the originator of this movement.

Others matters discussed were General Business Methods, Affiliation With the Institute of Architects of Canada, Technical Instruction, and Fire Insurance on Buildings in Course of Erection.

The Waterfront of the City of Toronto

By A. H. CHAPMAN

I HOPE my subject of the waterfront is not intended to embrace a discussion of the very much discussed viaduct scheme—at any rate I have got out of it by assuming that it does not, and I think you will all be with me in hoping that the viaduct scheme as outlined in the report submitted by Messrs. Rust, Smith and Parsons last summer will be adopted.

The general idea of the viaduct is to eliminate the danger of level crossings by elevating the railroad tracks on a four-tracked viaduct between Bathurst Street and the Don; of course at York Street and Bay Street there will be considerably more than four tracks on account of the station.

In the report submitted last summer it was also suggested to carry a thoroughfare, at least 125 feet wide, along the whole of the waterfront within about four hundred feet of the New Wind-mill line and practically parallel to it. The Wind-mill line is the line fixed by the Government beyond which no docks, piers, etc., are allowed to extend into the navigable portion of the Bay. This suggested thoroughfare could be made to connect with the lake shore driveways planned by the Guild of Civic Art to extend along the Lake Front. Owing to the limitations of the harbor front, the greatest part of this thoroughfare will be devoted to the traffic incident to the manufacturing industries, warehouses, etc., on either side, and the handling of freight, etc., of the purely commercial boats. There will consequently be tracks at grade level for the various sidings and, as pointed out in the report, the necessary shunting on these grade tracks could be limited to night hours, thus avoiding any danger of accidents.

THE GATEWAY OF THE CITY OF TORONTO.

The thoroughfare, suggested in the before-mentioned report, solves a large part of the problem of the waterfront, and not even architects nor the Guild of Civic Art can complain of the scale of this suggestion. It is the portion of this thoroughfare between Scott Street and York Street that I wish to direct your attention to. You will note that this is practically a continuation of the heart of the city south of the waterfront. This portion, ample enough for our present needs, but which may be found rather limited when the population of Toronto is doubled, is the part reserved for the entrance and departure of passengers to and from Toronto by water. Note also that this is just south of the proposed new station, the *point of entrance* and departure to and from Toronto by land; or let us call the whole area from Front Street to the Bay from Scott Street to York Street the gateway of the City of Toronto. This whole problem should be treated as one large composition and designed on a scale and character suitable for the entrance of a large city.

Assuming all main tracks to be elevated, and the lines necessary for the handling of freight and for the various sidings to be not carried west of Scott Street or east of York Street, we have the whole area between Scott Street and York Street free from all railroad crossings at grade level. There are three broad divisions to our plan, the docks, stretching about four hundred feet into the bay, a large plaza about five hundred feet broad, through which the thoroughfare runs, and the viaduct or wall with the points of entrance at the foot of each street, and the whole stretching from Scott Street to York Street, a distance of about 2,000 feet. This is the extent of the ground available.

A HUGE CONCOURSE SOUTH OF VIADUCT.

Let us consider this whole area south of the viaduct as one huge concourse, similar in function to the concourse and waiting room of a terminal station. Our problem now is, first, to develop this area to perform its function with the greatest efficiency, and, secondly, to develop it to express its function and the dignity of the city to which it forms the entrance.

We will not go into a discussion of the docks themselves, except to get a general idea of the circulation (as these are planned to accommodate private interests and are controlled by same), but the designing of the end elevations should be controlled by the municipality if we expect to make the composition count as a whole.

The first part of our problem is not very complicated, there are four classes of circulation to be dealt with: First, the people and baggage going directly to and from the boats; secondly, the people waiting for the arrival of the boats; thirdly, those transferring from the boats to the trains and vice versa, and fourthly, those who would use this part of the city as a park or place of interest.

For the first requirement we simply need directness from the entrance at the ends of the streets to the various docks and clearness in the designation of the various lines of transportation.

The thoroughfare running east and west across the plaza would run within say one hundred feet of the ends of the slips and entrance to the docks, which would leave space for cabs, vehicles and the public awaiting the arrival of the boats. Another reason for doing this is that our distance east and west is more limited than the distance north and south, and it is advisable to keep the docks themselves as free of unnecessary traffic and vehicles as is possible, and this 100 feet would give ample space in front of each dock, without conflicting with the traffic along the main thoroughfare. The street car services for the docks would run along the southern side of the boulevard, which would give an additional reason for these squares in front of the docks.

For the people transferring from the boats to the trains or vice versa, an entrance could be arranged in the viaduct wall similar to that at the foot of each street, whereby people could pass under the tracks and up on to the concourse of the station as will be described later on.

A WATER-FRONT PARK ARRANGEMENT.

As a park, or place of interest for the general public, the spaces or squares at the ends of the slips, together with about two hundred feet north of the plaza and against the viaduct would give ample space for park development as well as giving sufficient breadth and dignity to the whole composition.

Let us consider for a moment, the circulation on the docks; the general principal for the layout of the docks would be for each line to have half a dock, the entrance, waiting-room, and ticket office in the centre, the exit along the side of the dock, and the freight handled between the two; thus we have a building covering the whole centre of the dock with extended roof protecting the side. I might mention another possible solution for the handling of large crowds, together with a considerable amount of freight and baggage; and where the least possible amount of time should be lost between the arrival and departure of boats, and this is to have the people enter the boats from a large waiting room and ticket office at higher level approached by a broad flight of stairs. The people leaving the boats would go directly through to the centre of the building and then out, while most of the landing dock and a large area of the building would thus be left free for the handling of freight and baggage.

So much for the general requirements and circulation of the plan, and now we come to the second part, and that is to give suitable expression to all this as the entrance to the city:

IMPORTANCE OF ATTRACTIVE WATER FRONT.

Consider for a moment the importance of the proper appreciation and development of Toronto's greatest natural asset, our harbor, and our situation on one of the Great Lakes. It is by visitors coming by way of the lake and it is by the large proportion of our citizens, who seek their pleasure in the summer time by the various trips our situation affords, that this great asset is appreciated to its full extent. When we once have the viaduct the development of the rest of this waterfront as suggested would be a comparatively inexpensive proposition considering the results to be obtained. And gentlemen, a thing in which it is beneath the dignity of a city such as ours to economize in. The time has passed when an imitation of a mediaeval castle in wood and paint for the entrance to navigation lines such as we have in the Niagara and the Richelieu & Ontario lines is rather beneath the dignity of a large city, that takes itself seriously.

But to return to our problem—the time has come when we have to handle this plan in a broad and permanent manner, and on some definite basis that will satisfy the needs of the future growth of the city.

The viaduct we assume to be built of heavily rusticated stone or concrete, and it is only a matter of architectural design to make the openings at the foot of each street of considerable interest and massive character. Passing under the viaduct, note the extent and scale of the composition that could be made to confront one, five hundred feet in front of you stretches a series of gates, divided by groups of trees, through which a glimpse of the bay could be caught. If the whole composition is taken as a unit, as it should be, you can readily conceive that there is an unusual opportunity here of obtaining an imposing effect by treating the entrances to all the docks, which practically perform the same function, in a similar character and scale. The variations naturally arising will give sufficient interest to prevent monotony. The special design of these docks is a matter of architectural detail—the point which I wish to make clear, however, is that the whole series stretching over the two thousand feet should be designed as one composition and on a scale and character in keeping with the huge plaza on which they face.

SUGGESTION FOR A BEAUTIFUL WATER APPROACH.

At the ends of the slips and between the docks, the balustrading protecting the water's edge, the trees and benches, will make of these spaces—delightful little parks from which a view of the bay and the interest afforded by the landing and departure of our lake boats could be enjoyed. Again, as already mentioned, the alternating of the entrances to the docks and these little parks would be a problem of peculiar interest, and as these parks are properly located for those awaiting the arrival of trains coming by the various navigation lines, they are of considerable practical use, in the plan.

I assume that the arrangement for the Station in case of the adoption of the viaduct will be a central concourse running north and south level with the track for the terminal lines and this concourse depressed at the southern end for the approach to the through lines, this concourse to then open right on to the waterfront, or if this is unsatisfactory to the railroads a separate subway could be carried from the waterfront to the waiting room in the Station. In either case it is simply a matter of treating the concourse and subway in a sufficiently broad scale, with a substantial and monumental elevation for the entrance from the south, and we

have an ideal connection between the entrance to our city by water and by rail.

Viewing the composition from the south you first see the end of the dock and buildings jutting out into the water, and between the docks catching glimpses through the trees bordering the ends of the slips—we get the impression of a large plaza backed by the green sward and the trees against the massive viaduct wall with the opening through the same at the foot of each street and to the railway Station. The Train Shed of the Station will be seen above this portion of the viaduct, the masonry of which might be carried up to make a monumental feature over the entrance, to the Station from the plaza, and if this is all done and designed with due consideration to its prominence from the south, it would add rather than detract in the interest and attractiveness of the approach by water to Toronto.

Mr. Chairman and Gentlemen, I thank you for the privilege of outlining my conception of the treatment of this problem.

Discussion

In the discussion that followed Mr. Chapman's paper, Mr. John Shaw, Ex-Mayor of Toronto, gave quite an interesting talk. He congratulated Mr. Chapman on outlining some measure of beauty for the city front, and he said that the city face was about the meanest part of the whole city, with its unsightly aggregation of coal yards, flat cars, tumble-down buildings, docks, etc. People did not get a fair impression either of the magnitude of Toronto or its real beauty upon entering it by boat. He commented on the endeavors of the Guild of Civic Art, which he believed deserved the highest sympathy and support of every citizen in Toronto. He believed that Toronto should have a water front of factories and warehouses in which electric power should be used, thus doing away with the smoke nuisance. However, the influences that were at work all the time were those of railway interests, and he was afraid that they would yet prevent Toronto from having the viaduct scheme carried out. If the viaduct was not built the water front would be lost to the city. He defined that portion of the water front owned by the city and that owned by the railways. He stated that if Toronto was not careful they would find that the entire water front was controlled by the two great railroads. He was pleased to see how this whole scheme of embellishing and beautifying the city had been taken up and he thought that with a little harder work the Ontario Legislature might grant the city power to appoint a Park Commission which should be a permanent body and not an elective one. In answer to a question by Mr. Chapman, if he thought that the city would be justified in taking care of the water front, after defining what was now controlled by the city, he said he thought that with very little trouble sufficient property could be obtained between York Street and Church Street to give the city seven streets, Church, Scott, Yonge, Bay, Lorne and York Streets, all running down to the water front free and clear and absolutely safe from all danger, assuming, of course, that the viaduct would be carried out. When he had been before the Board of Railway Commissioners, His Lordship Judge Killam expressed himself very strongly on the duty of the Board to take up the whole question of these level crossings, and he thought that the Board would work out something that would be satisfactory to the city. The water front east of Church Street, he stued, between West Market and East Market Streets, was owned by the city, then further down the city owned a portion up to Berkeley Street. From Berkeley Street to Cherry Street or Sherbourne Street the city owned the wwhole, thus controlling a very large portion of the water front, and he believed it would be a good idea if Toronto were to buy up all the water front that is available instead of allowing it to get into the hands of the Canadian Pacific Railway.

Annual Banquet

Architectural Education

MR. LANGDON proposed the toast "Architectural Education" and, to say the least, his treatment of this important subject was most masterly. He displayed a rare knowledge of the underlying principles of this important branch of intellectual development. He showed himself to be a thorough student of the many questions that lead up to this, the most important in the architectural world—"Architectural Education."

In a lucid manner he brought out the true connection between architectural education and registration. It is questionable if any present could have failed to be impressed with the almost parallel nature of the two subjects, education and registration.

Mr. Langdon commenced by reciting the efforts that had been put forth with the object of advancing "Architectural Education" in the Province of Ontario and stated that the reason generally given for such agitation was that the safety of the public required it. He maintained, however, that while architects certainly were concerned with the safety of the public, they were concerned with it privately and that the architect should not particularly interest himself in the safety of the public because their safety was concerned with the work done by the architect. He maintained that this question of public safety was one of public concern and that it was the business of the public to insist upon a training of the architect so as to safeguard the public's interests. Mr. Langdon stated that personally he took no more interest for the safety of the public in his own profession than he did in railroading, or the arrival of ocean steam vessels filled with emigrants, and he believed that every one present felt the same. He allowed, however, that there were those present who did not agree fully with the policy of the Association on the matter of education. He said that some did not believe in examinations, because they did not believe that examinations made an architect. This was quite true, but examinations were not the things aimed at, but knowledge of architecture. It was said by some that architects were born, but he believed that those who ventured into the field of architecture without doing any more than having an inclination for design and a taste for beauty would not go very far. The musician with his ear for music posses many hours in patient practice before he becomes a master. The poet, it was true, was born, not made, but architecture was not a language to which one is born. It was a language which was acquired.

TRUE OBJECT OF REGISTRATION ACT.

He allowed that it might seem absurd to some why he should have to dwell on these matters before an audience of architects, but there were always some at their meetings who were not in favor of taking steps toward the higher education of architects. As far as the advancement of architecture was concerned, it was only the safety of the public that required that sort of thing. He believed that, from the viewpoint of the architect, however, that for the advancement of architecture as an art, better opportunities were necessary for the architect to learn his profession, and that was what the Association was endeavoring to urge. He believed that the law must be invoked to make young men train themselves properly to practice architecture, and the only question was—how?

The Hon. G. W. Ross, when Minister of Education, suggested the idea of the organization of this Association, and that it should be to the architectural profession what the Law Society was to the legal profession, a corporation which would contain within its body all members practicing the profession of architecture. All who were practising would come in as a vested interest, but after no one should be admitted who had not passed examinations set by the Association. The Act passed with the exception of one word, the word "Registered" instead of the single word "Architect." A man who qualified might call himself a registered architect. This did not prove satisfactory because students soon found out that the word registered was not necessary in the practice of the profession and the result was that after the first flush of twenty-three or twenty-four, very few made application for admission to the Association. This demonstrated that force was necessary in some way, or the ordinary man would not present himself to be properly educated. The advantage of an Association of this nature which could compel every architect in the country to be well educated up to a certain point, would serve as a levelling up process by which there would be no one not up to a certain respectable line, or not below a certain line of training. That was what was aimed at, to get the architects all over the country to be sufficiently educated to practice decently, to make buildings that would sufficiently conform to good taste.

UNFORTUNATE MIXTURE IN CANADIAN ARCHITECTURE.

Mr. Langdon had been in a French town in which there were no distinguished buildings at all. All of these were of a moderate quality, but they all had the characteristics of good taste from beginning to end, because the builders had the traditions of the classic architect which was practiced by the masons in the country as well as the architects in the city. The style was carried out in thoroughly good taste which made it interesting and delightful to a person coming from this country and accustomed to seeing such a mixture of goodness and badness in different styles.

HISTORY OF ONTARIO ARCHITECTS' ACT.

Mr. Langdon told of the difficulties the Association had had in their endeavors to get the word "Registered" struck out and to use the word "Architect" alone. The idea of closed corporations was contrary to public spirit at the present time and therefore a former plan had been abandoned to the extent, at any rate, of the Association conducting the examination. It was no privilege to conduct examinations. The Association did it because they were asked to do it, and at the present time there was a bill before the Government in which the Toronto University was requested the examinations. This would give the Association nothing whatever to do with the admission or architects.

Mr. Langdon then touched upon another method which was in vogue in some states of the American Union by which the State licensed the architect without reference to any Association at all. He believed that if this proved to be the way in which education could be pressed upon the young man of the country, the Association was quite willing to accept that and let the Government license architects. "Then we shall simply be a voluntary body. We would have no standing in connection with the Government at all and any architect would not necessarily belong to our body. We would become a club like the Architectural Club." He could not say what would be done, but believed that the architects should give all their support to some measure that would impress upon the young man entering the profession, the necessity of architectural education. The question of what that education should be was next taken up by Mr. Langdon in which he stated that the Association had endeavored to help the students prepare for examinations and that they, at this

time, were conducting mathematical classes. Education could be obtained in that way at the Technical School, and in a higher degree at the School of Practical Science. It was not, however, this side of architectural education that was wanting at the present moment. There should be a training in architecture proper, that is in design and it would be a proper thing for the University to take charge of that also. The Association was not in a position to attend to that. It had adopted from New York the studio system and young men were invited to assemble in the evenings and devote themselves to solving some problem in design given them, and architects visited and criticized their work. Mr. Langdon thought that this was entirely an unique system because it invited to invention men who do not know the language of the profession, and it was a principal of all artistic education that the mind should not get ahead of the hand. The hands should keep pace with the minds and it were better to keep a man behind than to give him ideas beyond what he was able to execute. The kind of education that was wanted was that which was a gradual training to possess the technique of architectural design as he possessed his own language. He would have it at his fingers' ends without having to think about it. He would think architecturally and would devote himself not to the difficulty of getting out the idea but the way to perfect that idea. The way to do that was long and painful.

EDUCATION IN TECHNIQUE OF ARCHITECTURE.

Mr. Langdon saw the process in operation in London at the school of the Architectural Association, an admirably conducted school. The system consisted in taking apart the design of old work and putting it together again. The student analyzed and learned all the parts of the building and then were given the problem of putting them together, not inventive problems but problems in reproducing what they have already studied and taken apart. Lectures should be given at the same time to make them thoroughly acquainted with the state of society existing at the time these ancient buildings were erected and the conditions of which these buildings were the outcome. In that way the student would understand how architecture originated and he would have the mind of the cultured man, and having travelled over the paths made by other men would be able to put himself in their thoughts and to do this with so many generations of men. His mind learns to do its work as others have worked and when confronted with a new situation he would think readily and only in regard to it.

TRAINED MINDS NECESSARY TO GRAPPLE WITH NEW PROBLEM.

Mr. Langdon continued: "We are a new country. We have no traditions. The abstract question of architectural design is before us and in order to wrestle with that question properly and not to produce crudities, a man must have his mind trained so that the abstract question of design is what he is capable of treating.

"It is not only that we are in a new country, but new methods of construction are coming along. It is impossible to reproduce in modern material such as reinforced concrete, the old design without doing violence to every instinct that an architect should have

"If we are to design truely and freely in a new country and a new period, we must have architectural culture which can only come by a long and patient course of study supervised by a cultured teacher. That is what we want to impress upon the attention of the University as an addition that is necessary to a school of practical science."

Mr. Langdon then cited the experience of "Old Gorgon Graham," in the "Letters of a Self Made Merchant to His Son," which brought out the great truth that "although the Prince of Wales may set a good style in hats, when you are outside the sphere of influence of the Prince, it is better to take your style in hats from that set by the hotel clerk, and that if you want to sell clothes go to the city where everybody seems to have plenty of them. If you want to sell mess-pork go to the country where everybody raises hogs."

These truths Mr. Langdon believed had a significance in the profession of architecture, as well as in the business of a travelling salesman, for, "If you want to produce good architecture go where plenty of other people are producing good work, for that is where there is a taste for it, and the means of gratifying it. If you cannot go there and want the place where you are to be such, why you can have it by doing good work yourself and trying to get as many people as possible to produce good architecture and thus you will have a chance of producing good architecture. That is what the Ontario Association of Architects wish to accomplish."

Dr. Falconer Speaks

Dr. Falconer, President of Toronto University, spoke in connection with the toast "Architectural Education," proposed by Mr. Langton. The doctor did not feel prepared to make any extended deliverance on behalf of the University in regard to its policy in the matter of "Architectural Education." He believed that if he had been in the University for five years he would have known the situation better and would then have been willing to venture something. He touched first on the function of the architect in the community. He believed that it was more than utilitarian. It was a function of educating as well as surrounding the community with ideas of beauty. The architect was not merely one who builds structures in which one might live with a sense of security, but one who erects buildings in which is found the ideal element of beauty. Dr. Falconer believed that the architect like any other educated man should be one who understands the underlying principles that apply not to one time or to one place, but should be capable of discerning and dissecting beauty of architecture of other lands and of adapting them to the situations in which he lives, not in an imitative way.

Dr. Falconer emphasized the point brought out by Mr. Langton that we are a new country, and while our people have a large amount of brilliancy and cleverness there was not yet true refinement nor the deeper sense of beauty. There was good material for it and great opportunity. He believed that architects had a means before them of educating the people to beauty as painters have not. He said: "Give us some generations and we ought to be an artistic people; but as architects you are at the beginning in enablingus to realize ourselves in this deepest way, in the way of beauty. The attainment of beauty in our schools, our homes and our churches, so that unconsciously we get these types into our spirits and we become artistic. Beauty is the opposite of display. Vulgarity is based on ignorance as though mere show; gaudiness, flashiness were beauty. The real beauty is the simple thing that is done with knowledge that goes down to the principles of which our artistic nature is constructed."

THE ARCHITECT AND THE UNIVERSITY.

He believed that the architect and the University should come very closely together in this function. The University was not merely a technical school, which turns out tradesmen that merely earn their living, but it aimed to develop educated men who understand the meaning of their profession. This same principle should apply to the University in architecture. Dr. Falconer spoke of the faculty in architecture that was gradually being built up in the University. He stated that he certainly believed that the University was the place in which architecture should be taught. It was a fine art turned to utilitarian purposes. It was a profession that ought to be given a place in the University. The Doctor then pointed out the importance of the human side as well as the technical side of the profession. A man could not understand a profession unless he had a conception of the breadth of humanity and human life, and so an architect who was educated in a University spirit through literature, history, economics should go out a broader minded man. President Falconer then spoke of the bill that was before the Legislature and was referred to by Mr. Langton. He stated that he was not fully acquainted with the details, having only hurriedly ran through it, but he gave assurance that it would be given consideration almost immediately. He did not know what the results would be, but hoped that the work being done by the University would expand with the expanding needs of the profession and that the Association would find in the University its most natural sympathizer.

Science in Architecture

Dr. Ellis, Actnig Dean of the Toronto University, then delivered a short address in which he spoke of the work being done by the School of Practical Science in the teaching of the scientific side of architecture. He believed the scientific part of an architect's profession to be the most important, and that the profession of the engineer, like that of the architect, was founded upon science, but that the architect differed from the engineer in the artistic side of his profession. The architect should combine the two opposite characteristics; that of the scientific man and that of the architect. In this, however, he believed the architect was particularly happy in having the inspiration of art to cheer him while his character is founded upon the truths of science.

President Burke announced regrets from Mr. Dunlop, President of the Canadian Institute of Architecture, and Mr. Chausse, the Secretary of that Society, and Mr. Eden Smith, of the Toronto Architectural Club. Mr. Gouinlock, the Chairman of the Banquet Committee, was absent through illness.

Exhibit of Architectural Drawings

Mr. F. M. Bell-Smith, the President of the Ontario Association of Artists, was then announced. After thanking the Association for the honor done him as President of the Ontario Society of Artists in inviting him to attend the banquet, he stated that there was a feeling of regret existing in the minds of the artists of Canada that in their exhibitions they were not favored with more architectural work. It had been made apparent to his Society by several members of the architectural profession that they had felt slighted because the few drawings which had been sent to their exhibitions had been crowded into corners. This was owing to two facts; one, that the Association's buildings were not sufficiently large, and the other because the exhibits sent were so few in number that it was impossible to make an effective arrangement. He trusted, however,, that it might fall to the lot of some of the architectural profession to erect a building worthy of our country and one in which it would be possible to show effectually all branches of art. Mr. Smith then recited the "Bells of Shandon," which was received with applause.

Civic Improvements

Mr. Wickson proposed the next toast: "The City of Toronto and Future Improvements." He commenced in a humorous way by telling of the experience of an architect friend of his who had a client come to him one day stating that he wanted to build a house, requested plans for the basement, "as he wanted to commence work tomorrow." The architect, rather than take a chance of losing the

work, made a plan that could be put on top of the foundations whether it was a right plan or not. The house all through was built very much on the same principle, without system and without plan. Mr. Wickson believed that this was very much the same manner in which a large number of cities were built, and thought it required a definite plan to build a city, just as it required a plan to build a house. He spoke of the several addresses lately delivered before the Guild of Civic Art, and drew attention to the improvements that had been made at Ottawa under the rule of the Ottawa Improvement Commission. He called attention to the experiences of the Commission, as related by Senator Francis Frost, and quoted him as saying: "We began by getting a plan of the City. We do as much as we can all along the line of the plan and expect to do a great deal more, but always in conformity with the plan with which we started out."

He spoke of the address delivered by Mr. Chas. Woodruff, of Philadelphia, in which he (Mr. Woodruff) stated that they had tried to create public sentiment in Philadelphia, as similar organizations had attempted in other cities, and that Toronto, in his opinion, was on the verge of greatness and he urged its citizens to seize the opportunity and work on an intelligent plan that would be suitable for many years to come. According to Mr. Woodruff, said Mr. Wickson, "Forty-two American cities have under consideration comprehensive plans for the building up of their city." Mr. Wickson then spoke of the address by Mr. Stillwell from Mexico, in which he had given an enthusiastic description of the work that had been done in the City of Mexico, and how the Government was spending something like $100,000,000 in improvements, $10,000,000 of which was being spent on a park. Mr. Stillwell told Mr. Wickson that they had been working along the lines of a carefully defined plan.

He then read a resolution lately passed by the Washington Chapter of the American Institute of Architects which demonstrated clearly that the plan idea had been carried out in that city quite carefully.

An extract from the North American Review dealing with design as applied to cities was then read, which was most instructive.

Mr. Wickson described the plan of the Guild of Civic Art in Toronto, and then told of the studious, careful and patient labors of the plan committee in getting this plan in some definite shape. He believed that widened thoroughfares, a park rainbow, and a systematic plan of park improvement should be attained without bankruptcy. He believed it impossible to proceed without some definite carefully worked out plan.

Necessity of Permanent Park Commission

Mr. A. R. Morine, of the Guild of Civic Art, answered the toast "The City of Toronto and Future Improvements," and in his address very forcibly and eloquently told of the necessity of a permanent commission. He spoke of the importance of the work of the Guild of Civic Art and that their object was the formation of a permanent commission or committee to take in hand the work of beautifying the city and improving its parks, play-grounds and works of that kind along some plan. The Guild had adopted as a principle that the body which was to carry out the work of improving the city's parks should be of a permanent character. The detail as to whom they should be appointed by and for how long was a matter to be taken care of later. While the Guild, in adopting this principle, did not wish to reflect upon the City Council, it simply said that there were certain difficulties inherent in elective bodies that make such bodies incapable of doing justice to a work of this character that must extend over a number of years. The Council of the City of Toronto was as good or better than the Council of any other city, but the fact that the members had to stand for election once every year necessarily very materially interfered in the adopting and carrying out of a definite plan. The members of the Board of Control, for instance, may be defeated at the polls on questions altogether foreign to that of park improvement, and in this manner an elective body was by no means competent to carry out such an undertaking. He agreed with Mr. Wickson on the advisability of adopting a plan, but thought that a permanent commission should first be appointed, and that this commission should adopt the plan. It would take a period of ten, twenty, thirty or forty years religiously following out a definite plan before any great changes could be brought about. A commission might be appointed by the City Council and it might be representative of the city inthat way, but he believed that the membership ought in the main to be during good behaviour. The personel of such a commission was an important point.

The frequent objection to such schemes that they involve many millions of money was without foundation, because the adoption of such a scheme does not mean the expenditure of nearly as much as people are liable to think. There is a large park area already in Toronto and if a plan were adoped it would be found, perhaps, the quantity it would be necessary to buy to connect that system would not be very great. He pointed out very forcibly the danger of making improvident bargains by buying a piece of property here and there, without having regard to a definite scheme. He believed that a commission of this kind should have certain borrowing powers and that in this respect it should be more or less independent of the ggeneral financial business of the city. Such a commission should have powers to acquire property and to expropriate property from time to time and to issue debentures for payment of it. A commission having such powers, and acquiring property at the right time, could dispose of a portion of it at sufficiently advanced prices to pay for the whole cost of the property. Mr. Morine believed that a great deal had taken place to encourage the Society. The Mayor in his inaugural address had declared along the line of what the Guild had been fighting for. He did not believe that the commission should be elective, as suggested by one of the Controllers, and believed that the scheme would be better in the hands of the City Council than those of an elective committee. He saw no reason for appealing from one elective body to another. He believed that the City Council should appoint a commission and that commission should be composed of men so prominent and so thoroughly respected that throughout Canada that we shall hear nothing but "Well done, Toronto." Toronto had a great deal to thank nature for. It had a great deal to thank its citizens for, but it would have a great deal more to be proud of if it advanced as he believed public sentiment desires. The City Council should take the question up within a few days and should demand the enactment of a bill which should place in its hands power for the appointment of a commission and give that commission powers to deal with that question. "There are so many opportunities and so much to do. We ought to lose no time talking about this. We ought to be up and doing and have our views put upon the Statute Books of the Province before the close of the forthcoming Session of the Legislature."

Toronto, a Poorly Planned City

Mr. Burke then introduced Mr. Ewan of the Toronto Globe, who had written the articles appearing in that paper in connection with the Civic Improvement Scheme. Mr. Ewan spoke with reference to the proposed amendment of the Charter of the Ontario Association of Architects and advised that this Association would not attempt to make a close corporation such as that of the medical or legal professions. He did not believe it would be wise to attempt to have laws enacted that would haul before the Courts the village carpenter who assays to build a house for his neighbor. He believed if that was avoided the attempt made by the profession in making every man who practices it understand that not only the grammar of his art, but every branch necessary to its practice would be a great service to the public. Mr. Ewan then proceeded to criticise quite severely the lay out of Toronto's business centre and ventured the very broad statement that it was inferior to that of almost any other city that he had ever visited. He believed a great mistake had been made in not making Yonge Street a little wider. He spoke of Winnipeg's broad streets and also of the fact that in his young days he used to take great pride in ween's Park, but as he grew older he found, to his amazement, that this beautiful spot was not the property of the city, but belonged to Toronto University. He then spoke of what nature had done for the city of Toronto, but he thought that the citizens had done little to improve on nature's work. He believed in the adoption of a plan, and that the Guild of Civic Art had labored faithfully and enthusiastically.

Controller Harrison Talks

City Controller Harrison then addressed the banquet, in the absence of the Mayor. He was not prepared to make a definite statement as far as the position of the Council was concerned, relative to the proposals made by the Guild of Civic Art. The parks of the city were under the consideration of the City Council at the present time. He did not believe that the City Council in the past had been altogether derelict in their duties, and he believed that the Council would appreciate very much the kind works spoken of them by Mr. Morine. Dr. Harrison did not attempt to give any definite statement as to whether he was or was not in favor of the appointment of a permanent commission, but through a lengthy recital of what had been done heretofore by the Council aimed to more or less "side-step" the question of a permanent park commission, and while he would not agree as to the appointment of a commission, he was anxious that some arrangement should be made whereby a definite plan of management of the city's parks and park system might be acquired. He spoke of the driveway to the north and of the car service to that section, all of which he believed to be matters for serious consideration. He would be glad to see a definite proposition put before the City Council for running streets diagonally through the city. He believed it to be imperative that we plan for a city of at least 600,000 people, and that the practical side, as well as the architectural and beautiful side should be considered. Dr. Harrison did not appreciate Mr. Morine's remarks about politicians and elective bodies, and said that the citizens of the city of Toronto were intelligent voters and that they were quick to show their appreciation of honest, earnest work. The Council appreciated the work of professional men, such as those associated with the Guild of Civic Art and other bodies of a similar nature that took an interest in public questions, which are often helped when they come before the Council by being taken up by bodies of men such as those referred to. He believed the efforts of the architects to improve the education of the members of the profession were of the highest importance to the future of both city and country.

Architectural Education

By W. S. MAXWELL

BEFORE launching into this subject it is well to consider just what the term Architect should imply. The Committee on Education of the American Institute of Architects produced this definition which covers the ground comprehensively:—

"An Architect we defined as one ranking in the class of men of culture, learning and refinement, differentiated from the others of

his class solely by his function as a creator of pure beauty, as an exponent through material forms of the best secular, intellectual and religious civilization of his time, and as an organizer and director of manifold and varied industries and activities." What are the favorable conditions and methods which will develop the student until he can reasonably be considered an architect? Many colleges in all parts of the world are at work solving this problem. Some apparently achieving greater success than others. The most active influence at work to-day is that which emanates from the parent of modern schools the Ecole des Beaux Arts of Paris; consequently I wish to dwell somewhat in detail on the principles and results of this training.

THE ECOLE DES BEAUX ARTS.

The Ecole des Beaux Arts is a government school conducted on the most noble of principles. There are no fees for tuition and its doors are open to any one, the only condition of entrance being that one shall pass an examination, the vacancies being filled by those who do so most creditably. Students usually prepare for entrance by studying in a preparatory atelier. The subjects for admission include a small problem in architectural design, consequently students with no aptitude for the profession rarely get into the school. There are no fees paid for tuition, and a student may enter when he is sixteen and continue to be a member until he is thirty years of age. Unless a student does successfully one programme in design in a year he ceases to be a member of the school. These excellent regulations make it possible for a man to support himself by working in an office, his position as a student in the Ecole being maintained by devoting a few months of the year to the problems in design. A course is given which covers the mathematical and constructional phases of education and which above all things aims to thoroughly educate the student in the artistic side of architecture. Planning and design are the subjects to which most importance is attached. The process followed develops the creative and imaginative powers and produces men who are able to logically study problems of great magnitude as well as those of a simple nature.

The school may be said to be separated into minor schools for the design and planning is carried out in ateliers, which, with one exception, are outside of the school group of buildings. These ateliers are under the supervision and direction of a patron, who visits them at least twice a week and gives to each student criticism on the problem upon which he is working, and the warmest ties of affection bind these men to these teachers and patron. In all cases the patrons are architects of the highest standing, several being members of the Institute of France. The fact that they are practising architects is of great importance, as they bring to their work not only the book learning and theory of a professor, but minds which have matured by practical experience with the very class of work which they are teaching. It would be as reasonable for a man to study painting under an artist who never painted as to study architecture under a man who never had a building erected from his designs and under his supervision. The programmes in design are given out at intervals to the students who report at the school. They are placed "en loge," as they call it, that is to say, they are separated from one another and are obliged to make a rough study within a limited time. This rough study drawn in elevation, plan and section is of the simplest indication and represents what the student considers as the most suitable solution of the problem. The study is traced and the original given to the guardian in charge. In the atelier the student develops his conception and is obliged in a broad sense not to depart therefrom. When the finished drawings are exhibited along with those of the other men the original sketch is attached, and if he has seriously altered his conception his drawings are not eligible for an award. What would be the results if this principle was not followed? The students would proceed to examine examples of similar problems and the result would be the production of an archæological solution. The weak students would to a great extent be influenced by those who are strong, and copying would be the result. The esquisse principle justifies itself on the following grounds: First of all, the student uses his own powers and exercises his imagination, skill and judgment producing a conception of more or less excellence. Secondly, he has a basis upon which to work; he is forced to become a thinker and is at once concerned with the principles of design and in the development of his idea within the broad limitations of his own imposition, is occupied all the time with a problem which develops those powers which must become proficient before he can rightly be considered an architect. In the atelier he receives the criticism and direction of the patron as well as the friendship and advice of older students. During the first year he must do "Nouveau Service," which means that in addition to his studies he must stretch paper, grind ink, run messages and so forth. This is a very workable system; even a genius should know how to stretch paper.

ADVANTAGES OF ATELIER LIFE.

In considering the advantages of atelier life, there must be taken into account the comradeship which exists and the inspiration received from observing the work of the older men. The new student is not only concerned with his own problems but takes the keenest interest in those of the older men. When the time approaches for delivering drawings at the school he makes himself useful and often works at inking in plans. In certain schools in America, every stroke of the pen must be the work of the author; in the Ecole students may render assistance to one another, the result being that they spend all the time they can spare in developing to the fullest extent their conception, and if they are behind hand the men in the second class help those of the first to complete their drawings; this being possible as the problems of the first class are not handed in at the same time as those of the second class. Although the draughtmanship at the Ecole is of a very high standard, it is never considered as being of equal importance with the conception and development of the design. The exhibitions in a large hall at the Ecole exert a powerful influence, they get a man out of the rut, stimulate his imagination and broaden his point of view. The effect of many solutions of a problem all intelligently worked out cannot be other than broadly educative. The statement is sometimes made that the Ecole training has a tendency to kill the individuality of a man. I fail to see why it should; if a student's work is eccentric and not logical he certainly requires the discipline which a rational system of education will impose. If on the other hand he possesses an individual and open mind, the effort of the patron is always towards fostering and developing his personality.

The course in design is divided into two classes. A man in the second class is concerned with less important problems than are given to the men in the first class. Mentions are given for excellence in planning and design as well as for the other subjects, and when a man has obtained a certain number he graduates into the upper class. The diploma of the school is awarded to a man who does a thesis after all mentions required have been gained. The thesis is a problem of the student's own selections and must be developed not only in the artistic sense but practical details of construction, mathematically figured out, must be furnished, and an oral examination passed thereon. The diploma drawings may be produced at any time during the life of the applicant.

No description of the benefits of the Ecole is complete, which leaves out the inspiring effect of living in Paris. I doubt if in any other city such a high level of artistic culture is apparent, and where can be found such a remarkable series of buildings illustrating architectural masterpieces, extending from medieval times to our own. The course at the school should be frequently interrupted and excursions made to the surrounding provinces, where fresh impressions will be received from the monuments of a glorious past.

ADVICE OF PROFESSOR DESPREDELLES.

I remember well some advice which Professor Despredelles of the Massachusetts Institute of Technology gave to a class of students in the Boston Architectural Club. He was talking to us about the study of old work and the gist of his remarks was that the important thing to do was to put one's self in a receptive frame of mind and to feel the beauties of a building, the reasons why it was constructed in such a way, the intention of the designer, and the real inner meaning of the structure, not to rely on the sketch book and the camera, but impress these realities on the brain, and not feel hurried. These are not his actual words, but my remembrance of his remarks. Just how much importance there should be attached to the careful measuring of buildings is a debatable point. While believing in the usefulness of this kind of work, on exceptional occasions, I am not in favor of it as a common practice: in any case it is best to first of all become thoroughly imbued with the meaning of a structure before getting out the tape line or the camera. If work is to be measured, I think that the drawings should be washed and the shadows cast, even if in the simplest manner; by these means we are able to express the third dimension and to appreciate the massing and color qualities. I think draughtsmen should frequently design with a six B pencil and a few pots of color as a corrective to the T square and hard pencil polish usually sought after. How often we are confronted with buildings in which the use of color and material is out of value and disagreeably spotty.

Before finishing my direct references to the Ecole des Beaux Arts I wish to mention the influence of the teachings on domestic architecture and on the small problems in design. French domestic work, leaving out the residential flats and important houses, is not up to the standard which we demand, and the French admit that the English and American work is superior, for this we cannot blame the theory of the system but may reasonably say that our superiority is due to the place which the home occupies in the life of the Anglo-Saxon. Our pleasure and our social life in reality revolve around the home. The great number of houses put up in late years has evolved a standard of excellence which we strive to maintain. Frenchmen who have lived in this country are enthusiastic over our small houses and their many conveniences. That the graduate of the Ecole can do good domestic work is proven in American practice. As to the ability of the schoolman to design small work, an examination of the streets and parks of Paris will decide the question in the affirmative.

OTHER SYSTEMS IN ARCHITECTURAL EDUCATION.

In considering other systems which are a factor in architectural education I would mention the following, which are active in America:—

1. The Colleges.
2. The Beaux Arts Society.
3. The Architectural Clubs.
4. The Schools of Correspondence.

Most of the college courses have been developed on lines which had their roots in the French Ecole, but they are being modified almost yearly as wisdom dictates. At Columbia College they have

gone in for the Atelier system, one being in the school building, and two in New York City under Mr. McKim and Mr. Hastings. Professor Hamlin is authority for the statement that "the results have vindicated the departure." One tendency noticeable is that the requirements for entrance have been raised, the contention being that in the past the time devoted to design has been just about sufficient to produce a good draughtsman. While teaching design is recognized as the most important function of an architectural school, there is always recognition given to the fact that a graduate should be furnished with an equipment of general culture, which will enable him to appreciate the dignity and significance of his art. It is somewhat regrettable that the work produced in American schools to all appearances might have been turned out in French Ecole, a fact largely due to the influence of books which illustrate the prize drawings of the Ecole des Beaux Arts. I can only look upon this as a temporary matter. It is in the nature of things that as schools become stronger there will remain but the old sound principles to guide the students and the work produced will be an expression of the traditions and social conditions prevalent in the centres of teaching. In any case, this is the professed ideal which the American schools are trying to realize.

In Harvard College, the students in advanced design spend eight hours "en loge" and then their conceptions are criticized before the class. The problems given are based upon conditions as they actually exist in America, and while ideally treated are founded on this practical basis. Lectures on the problems are given, also the requirements and theory of the building, based upon existing structure, is gone into in detail.

The Institute of Technology has conduced on the site special courses on American buildings. On one occasion the "old colonial" work received consideration, and on another an extended visit was made to the World's Fair at Chicago, where the students produced measured drawings, sketches, photographs and working plans. This going straight to the fountain's head is of great value as a supplement to the regular course. Summer courses of travel and study have been conducted in Europe under the competent guidance of an instructor or professor. These features seem to me to be of the greatest importance, furnishing as they do the link between theory and practice. For a detailed study of what the American schools are teaching, I would refer you to the illustrated articles published lately in the "Architectural Record," of New York.

SOCIETY OF BEAUX ARTS ARCHITECTS.

The greatest movement to assist draughtsmen who cannot afford to attend college is that instituted by the Society of "Beaux Arts Architects" of America. This society aims to help the man who is not in a position to go through college. In all parts of the United States, and I believe some parts of Canada, there are ateliers conducted by practising architects. Programmes are sent out from headquarters to the different patrons and then given to the men who are studying in their ateliers. The esquisse principle is followed and the men study the problems during their spare time, and receive criticisms from their patrons. In some cases they work part of the day in an office and part in the atelier. The drawings are sent to New York and are exhibited and judged by a jury of architects, mentions and medals being awarded. This society is doing a remarkable work, and in many of the regular schools several of their programmes are followed each year. The quality of work produced is very fine and the belief is held that by this system there will possibly be evolved an architecture which will suitably represent the ideals and conditions of this country. The prize designs are published in the magazine named "Architecture," and the competitors who are unable to attend the exhibitions can at least examine those solutions which were deemed most worthy. Any practising architect of standing may by application start an atelier.

We are all more or less familiar with the architectural clubs, which exist in every large city. They are in reality the home of the draughtsmen, especially for those men who have come from other cities. Strong ties of friendship are formed and enthusiasm born which cling to one in after years. I had the good fortune to belong to the Boston Architectural Club for three years, and can look back upon this period as the one when I first seriously realized the greatness and nobility of architecture. On the weekly club evenings one could always listen to a lecture or paper worth hearing and round off the evening with indigestibles, pipes and good fellowship. Well attended classes in design under Professor Desprad'elles, of the Institute of Technology, were held twice a week, also classes in modelling drawing from life and water color painting, which kept us occupied on most of our evenings.

I think that architects should take an active interest in these clubs. We have all at one time or another participated in the advantages they afford and should realize that we can occasionally contribute something which will lend interest and possibly new life to an institution which deserves all the encouragement we can furnish.

DESIGN CANNOT BE BOUGHT BY MAIL.

We are constantly made aware that Schools of Correspondence exist which profess to double the salary of a man in about three weeks. Architectural courses are conducted and receive considerable patronage. I know that they are accomplishing much good work in teaching the technical side of the profession. In our office many of the men have been greatly helped by this system. I have little to say about their claims to teach design. As I do not believe this can be carried out satisfactorily by mail. Teaching in design is greatly dependent upon not only the ability of the teacher but upon that personal and sympathetic relationship which should exist between him and the student.

My knowledge of the workings of the system in vogue in England is based entirely on conversations I have had with English architects and draughtsmen, and on literature on the subject. The dominant tradition is still that of serving an apprenticeship, but the thin edge of the wedge is already at work, not that there appears to be any tendency to abolish apprenticeship, but there is a growing feeling that it requires supplementing by organized education supplied from outside the office. The weakness of the apprenticeship system is that some practitioners conscientiously train their pupils, while many do not. In some cases brilliant men are produced and in others students with capacity for development have every ambition blunted.

In Glasgow, that home of the "modern in art," they have secured the services of a French architect to conduct a course in architectural design in the School of Art. The effects of the system on the ambitious and modern Scotchman will be interesting to follow. In all probability the infusion of reasonable discipline which the ecole system will supply will result in individual work, which can bear the tests of criticism. In London several of the leading men are conducting ateliers on lines which are a modification of those followed in Paris.

The Royal Institute of British Architects has planned to establish teaching centres in various districts in Great Britain, under the advisory control of an Educational Committee. In America the American Institute is considering the advisability of directing in an official way a course of architectural education and has in mind the founding of a post graduate school of architecture in Washington.

One of the interesting features of a system which will represent all parts of the United States should be the differing character of the work produced in the extreme west when compared with that turned out in New York. This plan may prove a step forward in the development of an architecture which suitably expresses the life and ideals of our friends to the south.

So much for systems and movements on foot in countries other than our own. I have said very little about travelling abroad, but believe that we should make a point to every few years seek inspiration among the monuments of a past which held to standards of beauty and truth more devotedly than we do nowadays.

ARCHITECTURAL EDUCATION IN CANADA.

In considering the subject of architectural education in Canada one finds that of late years there has been a distinct advance made. In McGill University, under the able direction of Professor Nobbs, a comprehensive course is given which, while making use of some of the principles in vogue in France, aims distinctly to foster in the students an appreciation of the fact that our architecture should have its roots in the English school, and yet frankly be expressive of Canadian life and climatic limitations.

In the Ecole Plytechnique Professor Doumic has taken charge of the course in architecture. Here we may expect an interesting development, as Mr. Doumic is a graduate of the Ecole des Beaux Arts. There certainly is an opportunity in the Province of Quebec for architectural expression which will recall the old ties with France. At the Ecole Plytechnique a night class in architecture fulfils a long-felt want. The draughtsman unable to attend a college course has in Montreal another chance to better himself by belonging to the Sketch Club of the Province of Quebec Association of Architects, which has a course in design as well as other educational features.

In Toronto, I believe, your Association conducts classes in the mathematical and practical phases of education. In other large cities there may be educational advantages, but the fact remains that there is need in Canada for a course in design which will reach the draughtsman in the smaller centres of the country. It seems to me that the newly formed Institute of Architects of Canada has in this problem one of its great opportunities. As a possible solution, a course in design could be conducted on the same general working lines which the Beaux Arts Society has adopted in the United States. Of necessity, one course should be elementary. There are in most centres of population architects who could form ateliers. The best drawings of each competition should be sent to the different towns and exhibited with written criticisms attached. Scholarships should be inaugurated and diplomas given to students obtaining a certain number of mentions. Such a course is needed in Canada, and it should be our aim to develop our architecture along lines which recognize our country and its traditions and associations. We can well in our designing seek to assimilate that which is good and suitable in Great Britain and at the same time leave ourselves open to the many excellent influences which emanate from France and other countries. In the Province of Quebec, the best old work suggests a satisfactory solution of the climatic problems and a starting-point which should supply us with inspiration. In regard to the other phases of education, it is questionable if these should be attended to by correspondence, may we not hope that technical schools will be provided to educate not only draughtsmen but the working men of the country.

SKETCH CLUB OF Q. A. A.

Before concluding you may be interested to hear of the work done in the Sketch Club of the Province of Quebec Association of

Architects. During the fall and winter months the club holds competitions in design, which are divided into two classes. The conduct of these competitions is in the hands of three practising architects, who draw up six programmes for each class, one month being allotted to each competition.

In Class B the problems are comparatively simple and often include the use of an order or of arcades, etc. In Class A the programmes are more elaborate, the one which is being worked on this month being a small Art Museum in a Park. In Class A an esquisse is made during the evening on which the programmes are given out. This is the third year of these competitions, and the very noticeable improvement in the quality of the work leads us to believe that our labors have not been fruitless. During one season some students made it a point to study carefully books on architecture and give a review of the contents to the members. This is a delightful feature, which makes for a higher level of culture. Talks by contractors, illustrated on the blackboard and by samples, were instructive and of practical value. Visits to buildings in course of erection have been made on Saturday afternoons, while other features of interest and benefit have been trips to the old towns of the province, sketching trips, classes in water color, etc.

The need of art museums, such as those of South Kensington and the Metropolitan, in New York, is badly felt. We have no collections of merit which illustrate the artistic crafts of the past. Small collections of architectural casts decorate the draughting rooms and staircase hall of some colleges—it is more than this that we need. The Government of Canada should become interested in this matter and contribute liberally to the founding of museums in Toronto, Winnipeg and Montreal. The educative effects on the public, not to mention the architect and craftsmen, would well repay any outlay. A nation is judged not only by the tons of steel rails produced, but by the level of cultivation which the buildings and art of the country express. Do we judge the Greeks solely by their literature? Let our legislators give the matter serious thought and the wisdom of assisting this cause will be apparent.

The place France gained as a nation which furnished the world with artistic manufactures was the result of encouragement and assistance from the Government.

So much for the systems of an educational nature, many others exist that may in the future modify our present opinions. Let us cultivate broad-mindedness and progress will be the inevitable result. The fact that the Government of Canada has held a competition for an important group of buildings indicates that we are accomplishing something in educating those who have but an indirect interest in the profession. Let us continue advocating this principle of competitions for public buildings. If representative architecture is to be produced, political patronage must be abolished and every encouragement given to the profession at large.

In conclusion I would say that there will always exist artistic souls who cannot bear the limitations of school training, they will continue as in the past to lead us from the conventional and the common-place and enrich us with the creations of these geniuses. They may even show us that we have wandered from the eternal truths and like Brunelleschi lead us into paths hitherto untrodden.

Discussion

After a vote of thanks to Mr. Maxwell for his excellent paper, President Burke announced that there were twenty minutes left for discussion, which was opened by Mr. Wickson, who asked Mr. Maxwell if the students who took part in the competitions conducted by the Q. A. A. received any education other than that which they acquired in the offices. Mr. Maxwell stated that the students took an active interest in the Club and that most of them who attended the courses were men who had not been through any architectural college whatever. Some who had come from Glasgow had had experience in the School of Fine Arts there. Two classes had been instituted, "A" and "B," the latter being very simple, the former being more difficult.

MORE ABOUT Q. A. A. SKETCH CLUB.

The Sketch Club, of which Mr. Maxwell was speaking, had got the students to work on the esquise principle of the Ecole de Beaux Arts. They tried to educate the students so that they would be equipped with conceptions of how to study a problem. The Club had been running three years. The first year it had one class in design, but they found that they were not reaching the men who should be assisted, the work being very uneven, some being good, others might be termed infant class work. It had been found necessary to help those men who were getting the rudiments, as well as to deal with men with two or three years' experience, and they were aiming now to reach the men who do not know anything, but possibly the fact that columns are used in architecture, as well as the man who has had several years' experience in an office.

Little difficulty had been encountered in getting architects to take part in the teaching. Only three teachers were required and these were changed in order that things would not get stale. The most important thing was to get the students to take it up. The architects could be found to teach them. Five students took part in the first competition conducted by the Sketch Club. This year ten or eleven men attended the first night and it was expected that there will be six or eight renderings. The Association aimed to make the prizes of substantial value as an inducement for the students to enter the competition.

Toronto Technical School Represented

President Burke then called upon Mr. Kirkwood, of the Toronto Technical School, to give a brief outline of the work being done by that organization, which Mr. Kirkwood said was more of a technical nature than instruction as to design. He had been endeavoring to get up a competition spirit advocated by Mr. Maxwell which he thought was excellent. He thought there was nothing that added more interest to students' work than to have some form of competition. The technical school gave the student a very good foundation in mathematics and also some work in mechanics and strength of materials. Night classes were composed chiefly of students who were carpenters, bricklayers and plumbers working from an artisan standpoint. A certain percentage, however, of night students were pursuing work from an architectural standpoint. A little more stress was laid on simply getting the men familiar with the reading of working drawings in the night classes. Mr. Kirkwood believed that there were many ways in which they could advance, and while they now had only a three year course, they hoped in the near future to be able to give a four year course. He had enjoyed Mr. Maxwell's paper very much and felt that it had been profitable for him to be present.

Mr. Gemmell believed that competitions were an excellent thing and that the architects who took part in the recent Ottawa competition learned so much by so doing that they had been compensated for their labor and expense.

ABOUT STUDENT CLASSES.

Mr. Gregg thought that when in the great city of Montreal only half a dozen students attended the classes, with only three architects in charge, there was little reason for discouragement in the difficulties encountered by various architectural organizations in getting students to attend the classes. He thought that the Ontario Association should go ahead more determined than ever with the work.

Mr. Maxwell wished to correct the impression that the Sketch Club had only five students in all. The average in the first competition was only five, but in the second class it had a better average that would reach probably eleven men actually working each month. In the evening they would have lectures attended by from fifteen to thirty-five men. He did not want the impression to prevail that the activities of the Club were confined to five or six men.

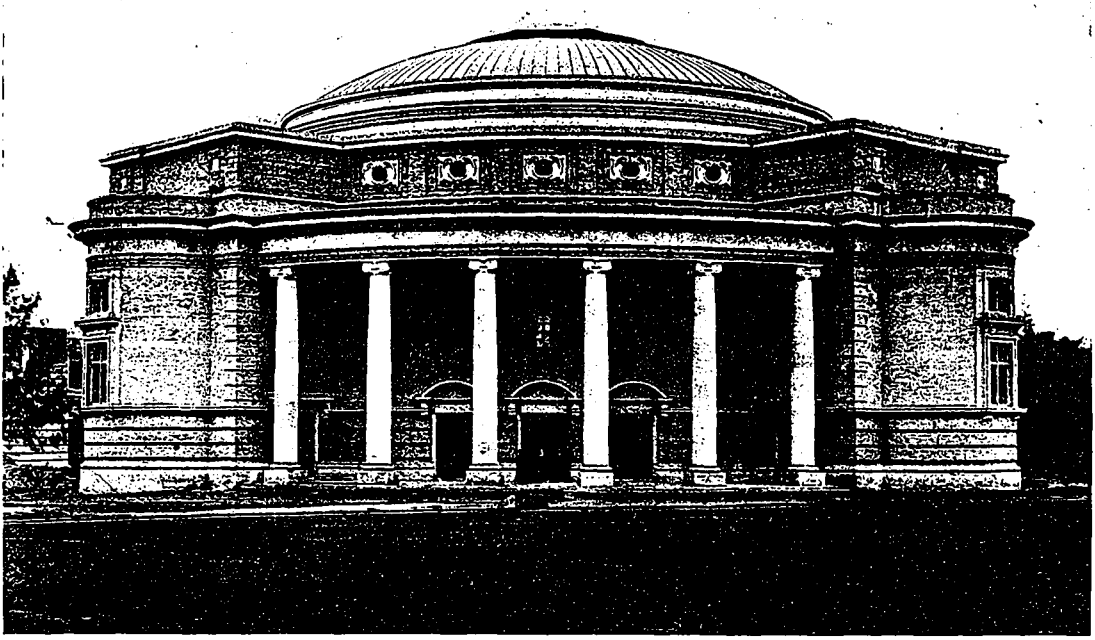
Mr. Gray thought that the Association had reason to be encouraged by the words of Mr. Maxwell, when the Toronto classes had an average attendance of about eleven, with a membership of from fifteen to sixteen. He believed that a great deal of discouragement had arisen from the problems being too elaborate for the students. If the Government took over the dissemination of education, he thought that the Association should impress upon the gentlemen who would have it in hand, a consideration of the methods in vogue in the United States and France. He had represented the Toronto Chapter on the Board of the Technical School and his impression was that the standard there, so far as mechanics were concerned, is not high enough.

Mr. Langton believed that there was one point that Mr. Maxwell spoke of that contained a hint for the Ontario Association in so far as the lectures referred to by him (Mr. Maxwell) he understood were upon certain books that the members had prepared themselves to discuss. Mr. Maxwell stated that this was not the case. The lectures referred to were from professors at McGill and from practising architects. They had had students take up books within their own circle and then review them.

Mr. Langton said that this attracted his attention because, at one time they had had a book on the table in Toronto called "English Cottages," which he thought a very useful work and affording a very interesting subject for a paper. The members thought that it would be too difficult to analyze a book and present the resulting study. He would like to know whether the example succeeded and whether it was not one that the Ontario Association of Architects might follow.

Mr. Burgess stated with regard to the programme the Province of Quebec Sketch Club was carrying out, that he was elected president at the beginning. It was decided to meet once a week and that one night in the month should be devoted to design. Another was to be given to a lecture by a student. The student's lecture was to be a resume of a book by a standard author; another night to some practical subject, such as sanitation and plumbing, and tradesmen were secured to speak on these subjects. On the fourth night it was aimed to get some one of professional standing to lecture. Mr. Burgess had listened with the greatest interest to Mr. Maxwell's paper, but was not convinced that the Ecole system would not tend to produce men who look upon design as something that is to be handed out to them by some authority above them. He thought that it encouraged the academic sort of design, which contrary to Anglo-Saxon principles. The Englishman's ideas of design were not derived from some school or academy. He looked upon it rather as something which comes to the man who has worked up from humble beginnings. Mr. Maxwell stated that the great strength in the Ecole des Beaux Arts was that it trained a man to do large work. It trained a man up from smaller work in the second class to enormous things in the first class. In the United States the Beaux Arts men have nine times out of ten swept the board and taken all prizes. In regard to domestic work he did not think that much could be learned from the French without going back to the sixteenth century, or earlier. He believed that the French needed an exchange of professors. He had prefaced his remarks about esquise by saying that the men should go

(*Concluded on page 57.*)



NORTH-EAST PERSPECTIVE, CONVOCATION HALL, TORONTO, UNIVERSITY, SHOWING BROAD EXIT DOORS STRAIGHT ON, AND AFFORDING GLIMPSES OF TWO ONTRANCE DOORS AT EXTREME ENDS OF THE LOGGIA. DARLING & PEARSON, ARCHITECTS.

Convocation Hall---Toronto University

A Circular Temple in the Style of the Georgian Period Lately Erected for Toronto University. A New Departure From the Design of Old Structures. A Step Toward Modernizing the University Group

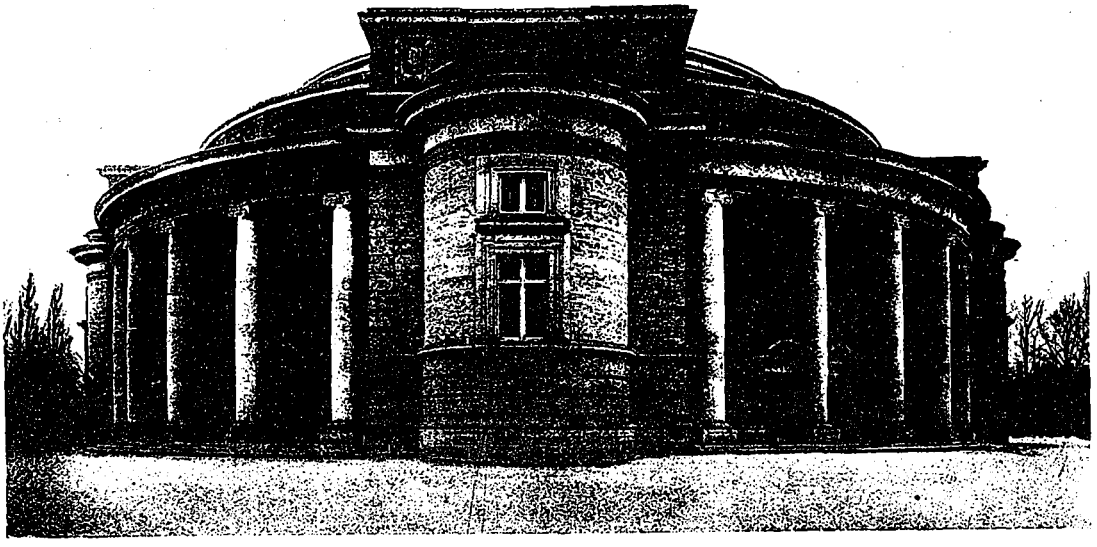
STANDING on the door steps of the main Toronto University Bui'ding—that delightful centrepiece of a grand campus, which might have been designed by one of the master architects of the Byzantine period—the eye of the visitor is suddenly drawn across the lawn to a structure modestly nestling among the trees. This is Convocation Hall, designed for the periodical gatherings of the faculty, a lecture hall and, most especially, for convocation purposes.

Just recently completed, this new addition to the University group will appear at its best after the surrounding grounds have been put in shape; but in the meantime it is none the less a most imposing building.

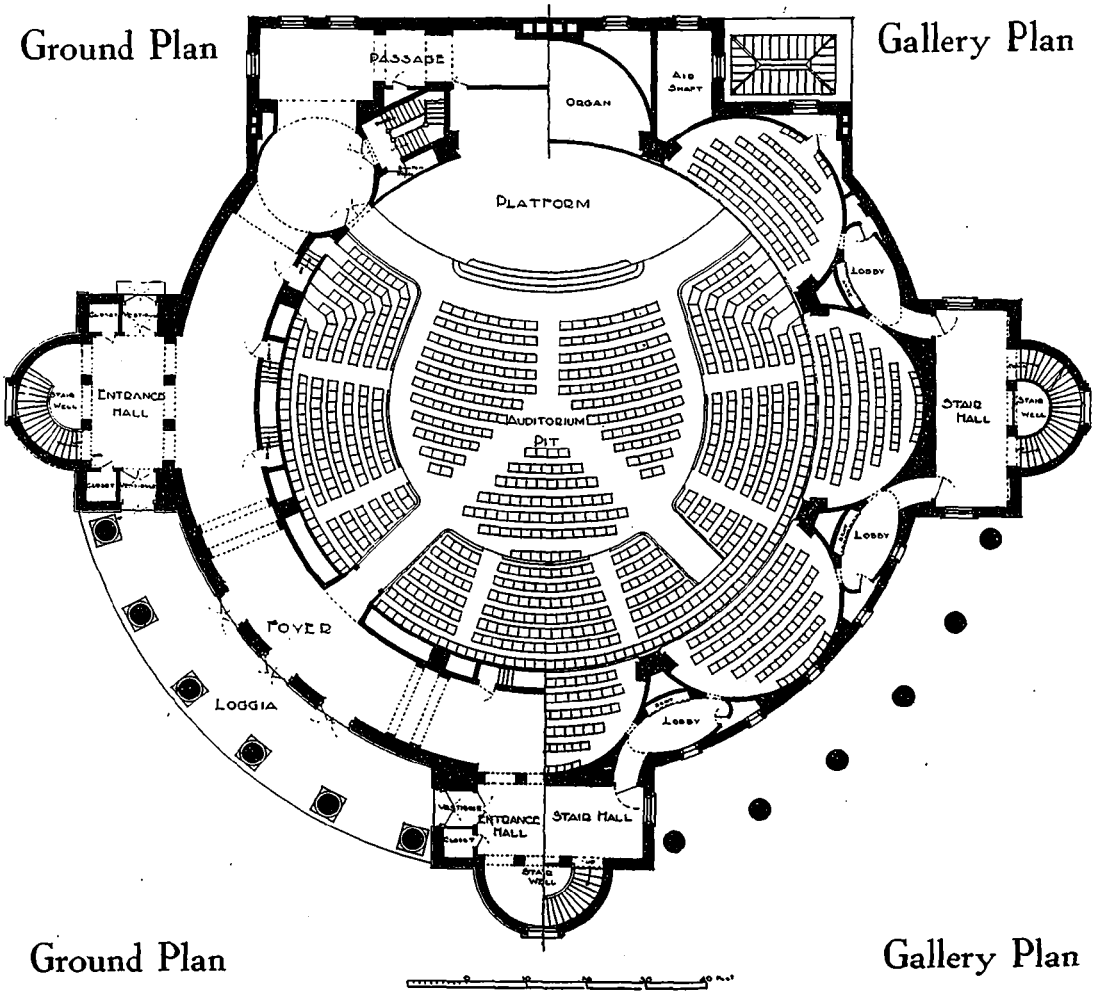
Convocation Hall in its style of architecture is different from any type or design employed in the present University structures. This departure comes as the result of a decision arrived at by the University architects, Messrs. Darling & Pearson, of Toronto, to employ the Renaissance style, as lending itself to easier advantage where economy is the important factor.

A great circular building with brick walls relieved by stone columns supporting a circular cornice forty feet above the ground, the whole being crowned by a curved roof and skylight, is the first impression as one views it from the lawn. Facing north-east and south-east are loggias thirty-five feet high and screened by six stone columns of thirty-two feet in length. Each loggia, about eighty feet long and fifteen feet wide, gives entrance to the gallery staircases by means of two doors placed in the extreme ends. These entrance doors are really a secondary feature. The six large and centrally located doors are the entrance doors to the ground floor. The importance of these doors in emptying the building is obvious. Located, as they are immediately opposite the exit from the Auditorium proper, they permit of rapid dispersion of the audience under all possible conditions.

VISTA ALONG FOYER ENCIRCLING THE MAIN AUDITORIUM OF CONVOCATION HALL. DARLING & PEARSON, ARCHITECTS.



EAST PERSPECTIVE, COVOCATION HALL, TORONTO UNIVERSITY. DARLING & PEARSON, ARCHITECTS.



COMBINATION PLAN SHOWING ARRANGEMENT OF GROUND AND GALLERY FLOORS OF CONVOCATION HALL. IT WILL BE NOTICED THE THREE LARGE DOORS IN EACH LOGGIA ARE NOT ENTRANCES, BUT EXITS FROM THE CIRCULAR FOYER. DARLING & PEARSON, ARCHITECTS.

The simplicity of the interior is the first impression gained upon entering the building. Plain stucco walls, unrelieved by mouldings or cornice, iron and slate staircases, are scarcely what one might expect after a survey of the exterior; yet the effect obtained by this absolute wanting of ornate embellishment is not disappointing. The various entrances lead into a circular Foyer or Promenade

VIEW TAKEN FROM SPIRAL STAIRWAY IN ENTRANCE TOWERS, SHOWING ENTRANCE DOOR AND PORTION OF CIRCULAR FOYER. DARLING & PEARSON, ARCHITECTS.

which runs entirely around the building. Looking up and down this broad Foyer, it will be noticed that the ceiling section forms a double curve, the purpose of which is to destroy any possibility of echo, so objectionable in the corridors of public halls. The effect of this curved ceiling along the circular Foyer is particularly pleasing. Access to the ground floor of the Auditorium is gained from the Foyer by means of four doorways placed at regular intervals as will be seen in the arrangement of the floor plan. The Auditorium is a large circular hall sixty feet high, and ninety feet in diameter; simple in design and devoid of all ornaments save a plastic crown of Greek design below the ceiling light. The peculiar features of the Auditorium—aside from the fact of its being circular —is that the walls, ceiling and gallery fronts appear to be a succession of innumerable curves. These curves have been carefully and studiously worked out by the designers in an effort to obtain the desired acoustic properties, and in this as other features the efforts of the architects have been highly successful, there being a noticeable absence of the deafening echo usually found in halls of this character.

The general tone is a buff in two tints, with just enough red burlap on the ground floor to brighten up the ensemble. The lower part of the auditorium is saucer-shaped, filled with about eight hundred comfortable leather covered chairs. The rim of the saucer strikes a continuous circular dado forming a railing for the first gallery. Both the first and second galleries are formed with seven ingenuously arranged semi-circular niches penetrating the walls of the main auditorium. Each gallery section seats about seventy-five people, making a total seating capacity of over sixteen hundred.

Upon the raised platform (from which the large interior view on page is taken) provision is made for the seating of an additional one hundred and fifty people. Over the platform a similar niche completes the octagon. This latter space has been left vacant with the idea at some future time of installing therein an immense pipe organ. It is intended that this instrument shall be considerably the largest in Toronto.

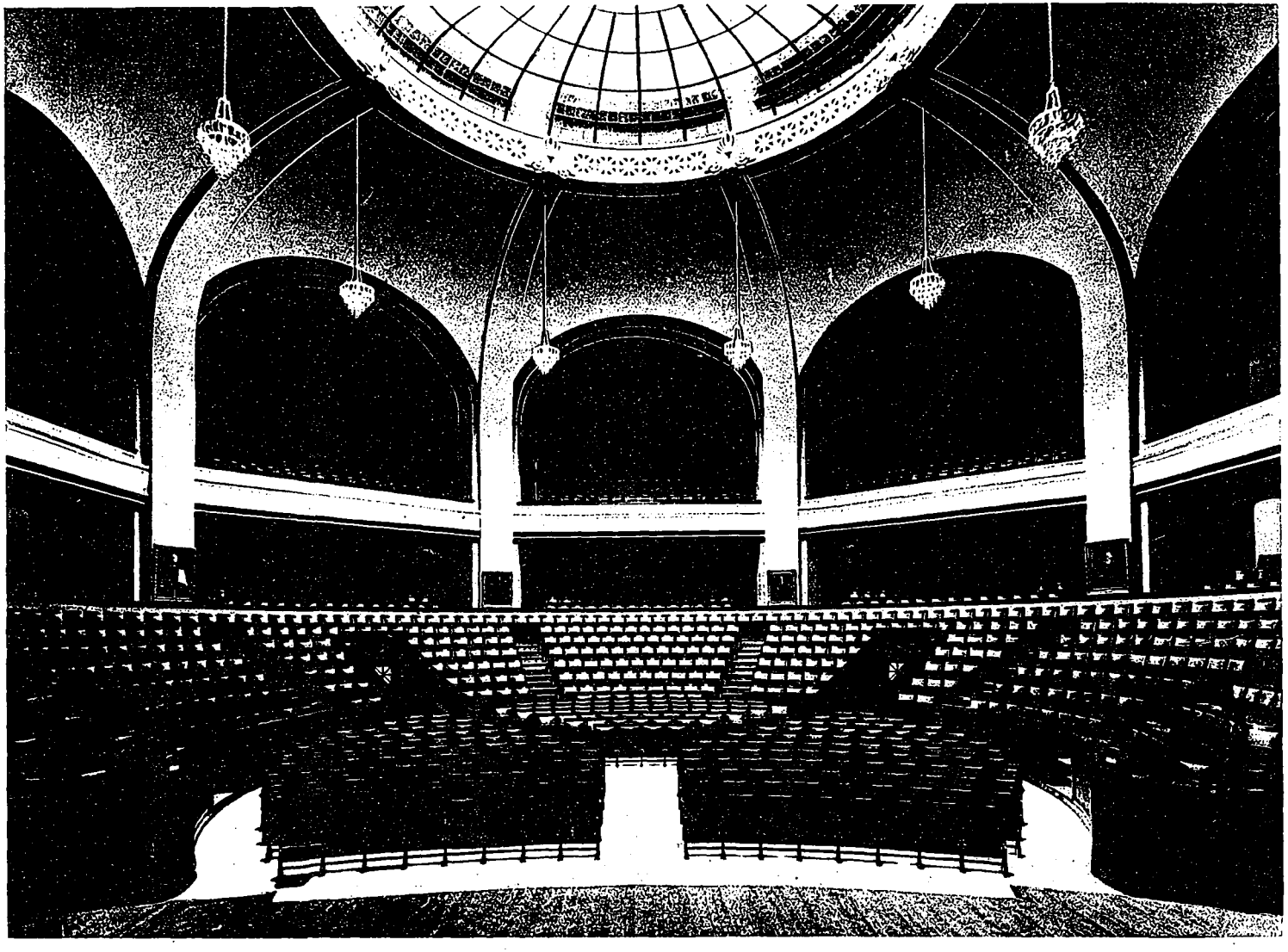
Eight piers, joined by arches, support the graceful domed ceiling, which is tapped by a large circular skylight forty-five feet in diameter, its base being sixty feet above the floor. A reference to the full-page half-tone illustration of the interior which accompanies this article, will give a comprehension of this arrangement, about one-half of the depth of the ceiling light being visible. The building has been so designed as to provide light for the entire auditorium in day time, from the single ceiling light, and the color effect in the theatre has been selected to ensure the proper diffusion of light. The first and second galleries are reached by two wide semi-circular staircases leading into spacious stair halls, and these in turn communicate with a series of quiet little oval lobbies from which the galleries are reached. These galleries are semi-circular in shape, thirty-two feet wide and eighteen feet deep.

The method of lighting these galleries is unusual. A row of lights in the rear ceiling throw light on the backs only of the occupants, and another row of ceiling lights in the moulded part of the gallery front overhead, cast sufficient light down on the auditor without shining directly in the eyes. Suspended from the centre ceiling light of the auditorium are eight chandeliers of simple and chaste design. The sight lines from every seat in the galleries are well worked out, each seat commanding an

PORTION OF ONE OF SIX SMALL LOBBIES THROUGH WHICH ACCESS IS GAINED TO THE GALLERY SECTIONS. DARLING & PEARSON, ARCHITECTS.

unobstructed view of the platform and a goodly portion of the ground floor.

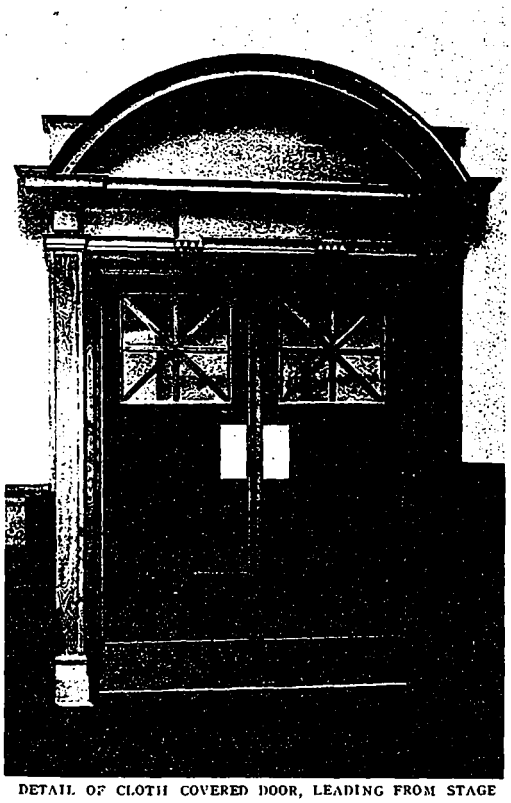
The dressing rooms, cloak rooms and lavatories are



AUDITORIUM OF CONVOCATION HALL, UNIVERSITY OF TORONTO, GIVING GOOD IDEA OF THE SEATING ARRANGEMENTS OF GALLERIES AND PIT. TOTAL CAPACITY, 1,700 PEOPLE. LARGE CENTRAL SKYLIGHT PROVIDES DAYLIGHT FOR THE ENTIRE HALL. THE CURVED CEILING IS DESIGNED TO PRECLUDE ANY POSSIBILITY OF ECHO, SO COMMON IN TEMPLES OF THIS CHARACTER. DARLING & PEARSON, ARCHITECTS.

located in the basement, to which two easy and commodious flights of stairs lead from the circular foyer.

A very elaborate system of heating and ventilation has been employed. To the south of Convocation Hall, just behind the new physics building, is the Power house. A masonry tunnel sixty feet long connects the two buildings and contains all the supply and return pipes. The



DETAIL OF CLOTH COVERED DOOR, LEADING FROM STAGE FRONT TO FOYER. DARLING & PEARSON, ARCHITECTS.

circular foyer and all other parts of Convocation Hall except the auditorium are heated by steam. The auditorium proper, is heated by hot air. A seven foot fan driven by a motor draws the cold air down an air shaft through a screen of steam pipes. The air thus warmed is driven through the fan into a plenum chamber, approximately 50 by 60 feet in dimensions from which a series of ducts and openings carry the warm air through the floor and eject it under the seats in the auditorium. Other ducts run up the hollow piers and supply the galleries. The foul air is drawn up into the roof space by an exhaust fan run by an electric motor and ejected through a ventilating screen. Two exhaust fans and motors are located in the basement for the ventilation of the dressing rooms.

The exterior walls of the building are faced with brick, yellow pressed brick being used in the high base course and ordinary stock brick above, with cut stone and Roman stone trimmings. The foundations are concrete. Owing to necessities of economy this building could not be made fireproof throughout. However, the main staircases, the dressing rooms, and the construction of the ground floor and gallery floors are concrete.

The structure throughout is cement plastered on expanded metal lath. The elaborate hardwood trim is limited to the entrance halls and a few doors, principally in the auditorium. All other door and window openings are finished in plaster with edges protected by patent steel angles. The floor of the circular foyer is plain marble mosaic, relieved by simple colored marble mosaic borders. All other floors are hardwood. The steel roof trusses are supported on the outside brick walls and on eight steel columns. These columns form the eight piers visible in the auditorium. The domed ceiling, the gallery alcove and the arches are all formed by a steel framework covered with expanded metal lath and cement plaster. Complete, the building cost approximately $170,000.

Convention Proceedings

(*Continued from page 52.*)

to a preparatory atelier first. It was assumed that student before he went to Ecole had a certain knowledge of architecture. In the Sketch Club Association of Quebec in class "B" there was no esquise. He did not assert that a man should be trained in architecture first of all by starting him on a problem in design in esquise. He held the opinion that a man should become thoroughly conversant with the order of antiquity, the various types of windows and arches and decorations of all kinds before he could attempt designing.

[Mr. Cecil S. Burgess, A.R.I.B.A., read a paper at this juncture, entitled "Applications of Lessons of Ancient History With Reference to Modern Design," but same was not received in time to be incorporated in these proceedings. This paper, with the discussion that followed, will be given in the March number of Construction.—Ed.]

Election of Members of the Council

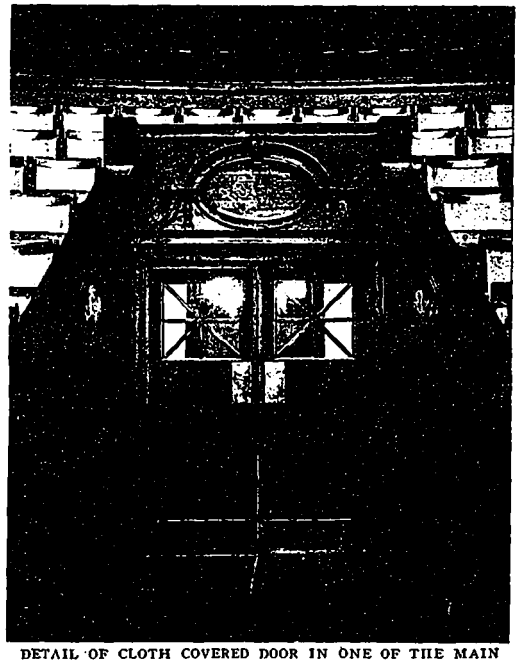
On the first ballot Messrs. Henry Sproat, J. Francis Brown and Murray White were elected members of the Council.

Mr. W. R. Gregg moved a vote of thanks to the Ottawa members for their attendance, and extended congratulations to them on their work in Ottawa. Seconded by Mr. A. H. Gregg, and carried with applause.

Mr. Langton suggested that a committee be appointed to wait on Dr. Falconer, at his request, in order to give him an understanding of the proposed legislation. The President said that the new Council would have the duty of appointing such a committee.

A vote of thanks was moved and seconded to the Toronto members for the pleasure that and been afforded the members of the Association attending from other places.

A vote of thanks to the President was carried with applause, to which he responded, saying that with him the work of the Association was a work of love, and he hoped that in the near to come a very great deal would be accomplished in advancing the interests of the Association and the profession.



DETAIL OF CLOTH COVERED DOOR IN ONE OF THE MAIN AISLES, SET DEEP AMONG THE SEATS RISING SAUCER-LIKE TO THE RAIL OF THE FIRST GALLERY. DARLING & PEARSON, ARCHITECTS.

The following officers were elected for 1908: H. B. Gordon, of Toronto, President; John W. H. Watts, of Ottawa, and George Gouinlock, of Toronto, Vice-Presidents; A. H. Gregg, of Toronto, Treasurer, and W. R. Gregg, of Toronto, Registrar.

Convention of Canadian Civil Engineers

Progress and Development of Society Reflected at the 22nd Annual Meeting in Montreal Where Over 400 Members and Delegates From all Part of the Dominion and the United States Were in Attendance. Many Important Engineering Topics Discussed

THE 22nd annual convention of the Canadian Society of Civil Engineers, which opened in Montreal, January 28, was by far the most successful meeting in the history of this organization. Over 400 members and delegates were present from all parts of the Dominion, as well as from the different sections of the United States, to attend the daily sessions.

The many interesting lectures and valuable papers occupying each session were warmly received, and in the discussions that followed, the theoretical and practical problems of engineering were debated in a thorough and able manner. Every phase of ancient and modern methods was fully taken up, and the progress and accomplishments of the profession in the past twenty years were reviewed in detail.

At the morning session the President's report showed that the society is prospering, both financially and in membership. During the year the number of members has increased by some 400, and the membership, including the honorary associate and student classes, now numbers nearly two thousand.

At the afternoon meeting of the convention it was resolved that a special meeting be called for March 12, for the purpose of voting a sum of not more than $500 towards the Quebec battlefields commemoration scheme.

In a discussion regarding the engineering status there was a general consensus of opinion that the time is approaching when, in regard to the educational standing of members seeking admission, who are not graduates of engineering universities, they shall be required to undergo an examination similar to that demanded by the Institute of Civil Engineers of Great Britain, *i.e.*, in a modified form an examination approaching the standing of the college graduate.

There was a deprecation of any desire to make the society a close corporation or to exclude members of other nations in discussing the subject. "In the States," said Mr. Frost, "the question asked was not 'to what country do you belong?' but, 'Can you do the work required?'"

The question of engineers without status was discussed, and led to the opinion that the Quebec act should be more strictly enforced. With regard to Ontario, it was thought that it was hopeless to expect legislation.

MUNICIPAL OWNERSHIP.

At the evening meeting of the first day the retiring President, Mr. W. McLea Walbank, delivered his address, which was notable in its criticism of municipal ownership, referring to Glasgow as an example to bear out his arguments. He called attention to the low wages paid in that city, and compared the antiquated equipment and accommodations of its system to the modern and up-to-date service in American cities. The Institute of English Bankers, he declared, a short time ago attributed the widespread depression that existed in England at the time to the engagement in municipal trading. He further observed, that it was his belief that a close examination of most gas, electric and public utility companies will reveal the fact that the public, and the taxpayer in general, derive more benefit than the shareholders, whose money had made them possible.

"Just so sure as a nation becomes a commercial producer, competing against its own citizens, just so sure will the seeds of its own disintegration be shown. There is no finality to municipal enterprise."

The best remedy to solve the problem, in Mr. Walbank's opinion, is public control.

At the annual banquet, which was held at the Windsor Hotel, the evening of Jan. 29, an optimistic sentiment prevailed, and the speakers dwelt with qualified emphasis on the part that is still to be played by civil engineering in the development of Canada.

The chairman, Mr. McLea Walbank, proposed the loyal toast, after which Mr. Wm. McNab proposed "Our Guests."

Mr. Charles MacDonald, President of the American Society of Civil Enginerring, responded, tendering the congratulations of the older society to its younger sister. Nearly fifteen years ago he had represented the society in Montreal on the occasion of the establishment of the McGill Engineering School, the gift of Sir W. Macdonald. It had done much for the advancement of the standard of the engineering curriculum. To-day, said Mr. MacDonald, the engineering profession stood far higher than in those days.

It required the prophets to vaticinate that there was a glorious future before the engineering profession in Canada.

Railways were being extended, and there were canals to be built. The twentieth century belonged to Canada. When the century closed the engineer would be found to have been a momentous factor in the nation's development.

Dr. Adams spoke on behalf of the Canadian Mining Institute, pointing out the closeness of the connection between the two institutions. He recalled the fact that Sir William Logan, director of the Geological Survey, had been responsible for the idea that the Huronian rock formation extended northward as far as Abitibi. Sudbury, and, subsequently, Cobalt, had substantiated the accuracy of his view, with results well known to all.

What a factor mining was now of Canada's prosperity might be gauged from the fact that the annual product of the mines to-day amounted to $83,000,000.

TRENT CANAL.

Mr. Kilburn pointed out the results to accrue from the Trent canal from Georgian Bay to Quinte. Of this canal 160 miles had already been constructed, and it possessed two of the finest lift locks in the world. These were situated at Kirkwell and Peterboro'. The canal was the work of Canadian engineers. It would shorten the journey for grain to Liverpool by about 500 miles, and bring a great influx of trade to Montreal. When completed it would be a great boon to the St. Lawrence route.

In regard to the statement that the twentieth century was Canada's, just as the nineteenth was that of the United States, Mr. Kilburn said: "In Canada there are more good things than were ever dreamed of in the States. The people to the south of us know this well to-day."

Mr. Kilburn remarked upon Canada's possession of practically boundless horse-power waiting to be developed, and then referred with gratification to the way in which Canada had sustained the stress of the recent financial crisis.

Mr. R. S. Logan, of the G. T. R., spoke of the obligations of the railways to the engineers' society. The G. T. R. was one of the great monuments to the skill of Canadian engineers. But much remained to be done by the

men who "blazed the way," when new continents are to be won."

Mr. C. H. Catelli, President of the Chambre de Commerce, referred to the value of McGill and Laval to the engineering profession. A training in these universities was a passport to the profession in any country in the world.

The toast of the society was proposed by Principal Peterson, in a speech which took to task Mr. Harold Begbie, the British journalist, for his criticism of a young country like Canada. Principal Peterson declared Mr. Begbie did not visit Canadian universities during his stay in Canada, and had he done so he might have observed the help which Canadian universities had been in bridging the gulf between the learned professions and practical work.

TECHNICAL EDUCATION.

With regard to technical education, Principal Peterson said: "You will have no technical education worthy of the name until you have improved the educaton by which it should be preceded. This had been the case in Germany. It was elusory to be talking of technical education at a time when more attention should be concentrated on the improvement of common school education.

Mr. M. J. Butler, Deputy Minister of Railways, stated that up to about a dozen years ago the engineer had been regarded as a superior kind of tradesman. Now they had risen to the rank of a profession. Mr. Butler also remarked upon the fact that Canada, with a population of six millions, had an enginering society with a membership of 2,000, whereas he remembered the day when the States, with a population of sixty millions, had a similar society of only 1,000 members.

The election of officers resulted in Dr. Galbraith, of Toronto, being honored with the presidency of the society. The other officers selected for the ensuing year are:

First Vice-President, W. F. Tye, Montreal.

Second Vice-President, H. M. McLeod, Winnipeg.

Third Vice-President, G. H. Duggan, Sydney, N. S.

Conucil: F. S. Busteed, Vancouver; N. J. Ker, Ottawa; R. W. Leonard, St. Catharines; A. H. Mitchell, Toronto; J. E. Schwitzer, Winnipeg; Roderick McColl, Halifax; A. A. Dion, Ottawa; A. E. Doucette, Quebec; W. R. Butler, Kingston; F. P. Gutelius, Montreal; H. H. Holgate, Montreal; R. S. Keisch, Montreal; R. J. Durley, Montreal; C. M. Odell, Glace Bay, N. S.; W. H. Breithaupt, Berlin, Ont.; J. B. Porter, Montreal; J. G. Kerry, Toronto; F. W. Robb, Amherst, N. S.; T. H. Wicksteed, Montreal; Wm. Kennedy, jr., Montreal.

Nominating Committee: Messrs. Rust, Ker and Dill, Toronto; Messrs. Lordly and Monserrat, Montreal; W. Dodard, N. S.

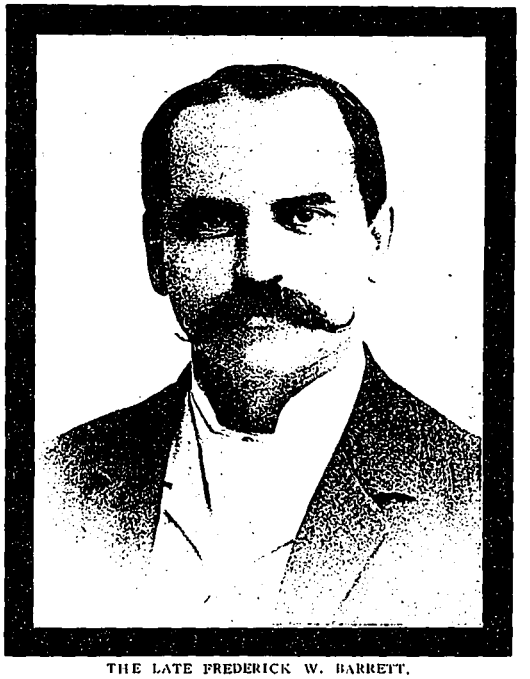
The Late Frederick W. Barrett

IT is with deep regret that we have to chronicle the death of Mr. Frederick W. Barrett, secretary of the Expanded Metal and Fireproofing Co., of Toronto, who suddenly passed away at Montreal on Sunday, January the 26th. The deceased was a most prominent active member of the building contracting fraternity of Toronto, and was widely known throughout the Dominion as one of the pioneers in the promotion of concrete construction, and as one of the strongest exponents of substantial fireproof building methods in Canada. Toronto as well as many of the largest cities in the Dominion are indebted to the efforts of Mr. Barrett for the fireproof qualities of many of their finest structures.

For the past fourteen years the late Mr. Barrett had been associated with Mr. T. W. Horn, in the Expanded Metal & Fireproofing Co., and the Luxfer Prism Co., with offices and factories at 100 King street West, Toronto. He was about 51 years of age, being born in Port Hope, his father having been the late Mr. William Barrett, well remembered in that section.

Mr. Barrett graduated at Victoria University, and after taking up a legal course was admitted as a member of the Upper Canada Law Society. After a brief period of practice at London, he joined the management of the Polson Company, having been prominent in connection with that firm's shipbuilding enterprise in Owen Sound. Subsequently he entered the legal firm of Messrs. Horn & Barrett, of the city of Toronto, a combination of forces which continued when Mr. Horn launched the Luxfer Prism Company, and later the Expanded Metal & Fireproofing Co. He married the only daughter of Mr. Robert Wightman, druggist, of Owen Sound, by whom he is survived. The funeral was held in Owen Sound on Wednesday, Jan. 29, a special train conveying from Toronto many of the members of the office and factory staffs of the two companies, together with a number of family friends and relatives.

The deceased was a splendid representative type of the self-made Canadian business man. Personally he was



THE LATE FREDERICK W. BARRETT.

of an affable, jovial and kindly nature, and will not only be missed by his business associates and acquaintances, but his death is mourned by a large circle of personal friends. He was a member of the National Club, Toronto, the Canadian Manufacturers Association, and many other well known influential bodies.

New Empress Hotel, Victoria, B.C.

THE Empress Hotel, Victoria, B. C., recently erected by the C. P. R., at a cost of $1,000,000, has been opened to the public. It occupies one of the most beautiful sites in that city, being located on Government street, facing James Bay, and is without doubt the finest hostelry on the Coast. In character of construction the Empress is fireproof throughout, no expense being spared to incorporate every element of safety within the walls of its seven stories. However, to guard against any unforeseen contingency that may arise, it is provided with heavy wrought iron exterior balconies and stairways.

Cement Users Convention

Fourth Annual Meeting of National Association in Buffalo, N.Y.—The Most Successful Gathering in the History of the Organization.—Proceedings Replete With Timely Topics and the Discussions of Important Subjects

MEMBERS of the National Association of Cement Users are a unit in declaring the fourth annual convention of that organization held at Buffalo, January 20th to 25, the banner one in the history of its successful meetings. Out-of-town attendance numbered several hundred men actively interested in the cement industry, a larg percentage of whom were Canadians, owing principally to the fact that this was the first convention held near the border line.

The exhibition was held in the largest building available, the old 65th Armory, and the interior was lavishly lighted with electricity. Booths of cement, decorations of cement, statues, frescoing and hangings of the same material made every inch of the big building interesting and attractive. Houses built wholly of cement were made to act as offices for some of the exhibitors.

ADDRESS OF WELCOME.

President Richard L. Humphrey formally opened the convention on Tuesday morning, after which Mayor J. N. Adam, of Buffalo, welcomed the association in the following words:

"I understand you have come to us with a concrete proposition. Your purpose is to cement our interests with your own, to mutual advantage, and therefore we most heartily bid you welcome to our city.

"Cement construction for a while seemed to be one of the lost arts. We used to hear of Roman cement, and when I went to Rome and saw what it was I wondered why it had been superseded. Perhaps it was because builders had found a way to mix it to their advantage and in the end had killed the goose that laid the golden egg. Some people in Scotland say whisky is bad, especially bad whisky, and I am sure there is nothing so bad in concrete as bad concrete.

"If our friendships are cemented by unworthy motives they will not last very long. So it seems the real secret of your business is integrity, and, after all, that is the real secret in everything. Your moulds may be all right, the separate component parts may be all right, but if the mixture be disproportioned all goes wrong.

"You have come to Buffalo with a double purpose—to advance your own interests and to advance ours. This is a community of interest that should be encouraged. You have brought with you an exhibit of your materials and appliances that we may have ocular demonstration of the value of your suggestions. Seeing is believing. We shall look with both eyes. For we have an idea that you have got a good thing and something that may be of use to us. We have some good examples of your craft in Buffalo. I hope that ere long we shall have many more. Those we have are spoken of as fireproof, waterproof, weatherproof, insect-proof, sound-proof, earthquake-proof—proof against almost everything in fact.

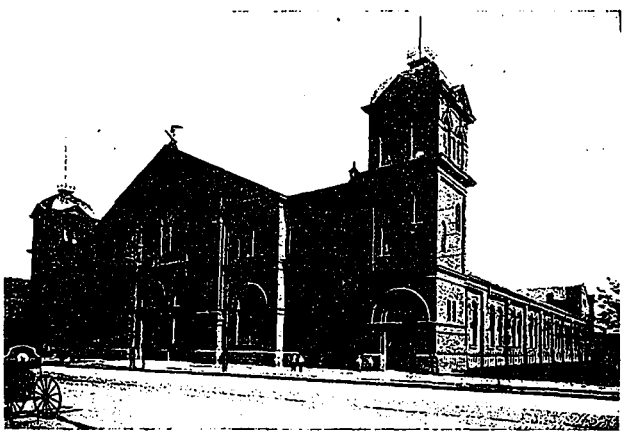
At the opening session, Mr. Humphrey announced a change in the number of sections from eight to five in order to avoid confusion, as some were included in others. Hereafter the sections will be those on testing cement, cement walks, art and architecture, cement products, cement machinery, insurance laws and ordinances, reinforced concrete.

ELECTION OF OFFICERS.

Election of officers took place on Wednesday morning, when Richard L. Humphrey was re-elected to the presidency of the association. It was an endorsement of his policies and a tribute of appreciation of his labors in the past three years to further the interests of the organization. Many of the other officers were also re-elected. Following is the new board:

President, Richard L. Humphrey, Philadelphia; first vice-president, Merrill Watson, East Orange, N. J.; second vice-president, M. S. Daniels, Suffern, N. Y.; third vice-president, M. S. Newberry, Sandusky, Ohio; fourth vice-president, George C. Walters, Atlanta, Ga.; treasurer, H. C. Turner, No. 11 Broadway, New York; manager fourth convention, Dai H. Lewis, No. 760 Main street, Buffalo, N.Y.

Section vice-presidents: Cement products and machinery, A. T. Bradley, Rochester, N.Y.; streets, sidewalks and floors, W. S. Schouler, Newark, N.J.; reinforced concrete, Sanford E. Thompson, Newton Highlands, Mass.; art and architecture, C. D. Watson, Pittsburg, Pa.; testing of cement and cement products, E. S. Larned, Boston, Mass.; laws, ordinances and insurance.



THE ARMORY, BUFFALO, N.Y., IN WHICH THE FOURTH ANNUAL CONVENTION OF THE NATIONAL ASSOCIATION OF CEMENT USERS WAS RECENTLY HELD.

W. H. Ham, Youngstown, Ohio. This, then, are the officers as they were elected.

REPORT ON SIDEWALKS AND FLOORS.

An unusually large attendance of delegates was on hand to hear the report of George L. Stanley, chairman of the committee on streets, sidewalks and floors. Mr. Stanley spoke as follows:

Mr. President and Gentlemen: In preparing specifications for sidewalks for adoption by our association it has been the aim of your committee to bring before you such specifications as when followed will result in good and serviceable walks.

In the United States there is such diversity of materials for the principal aggregates that it would seem almost impossible to specify the amount of cement and have a uniform strength, unless the amount of cement specified varied. If it was only choosing a suitable brand of cement there would be but little difficulty, as most of our cement mills make only high-grade quality of cement.

Both sand and gravel are often of a poor quality, and it is often difficult to get the sizes of gravel suitable for sidewalk concrete. Gravel, of which the average size is one-fourth of an inch requires at least one-fourth more cement than when the sizes are an average of one-half of an inch.

The committee have recognized this as a fact, and given the amount of cement for the minimum size as the safe amount to be used in all sizes.

As to the amount of water to be used, there is a difference of opinion even among civil engineers as well as cement users, but for two-coat work, as is the case of sidewalks, the amount of water used should be such an amount as will insure a solid mass when the walk is finished and hardened.

A perfect union of both top and bottom coats can only be accomplished by tamping the two coats together, and tamping can only be done successfully when just water enough is used to allow the air in bottom and top coats to escape as the walk is tamped. Some may claim that it is too slow work to stop and tamp.

The experience of the chairman of your committee has been that, everything else equal, especially quality and durability, as many square feet can be laid in a day by using the amount of water specified in the specifications as by using more. The delays of waiting for the water to soak or dry out more than offset the advantage of quick spreading and striking off the top coat.

It has been the lot of your chairman to re-lay, take up, and replace many walks. Tamped walks, where good, clean, sharp sand and gravel was used, have been found to re-lay and not show any defects, even after the walk had been in use seventeen years; but, where an excess of water has been used, the walks have been broken by frost, and often the top coats would separate from the bottom coat. The apparent reason seemed to be that the top was not united to the bottom coat and both the bottom and top coats often would not be firmly tamped and worked together and good durable work cannot be the result where work is slighted in such a manner.

Your committee has inserted specifications for the position of shade trees, knowing that in many of our growing villages and cities it would be for the good of sidewalks to pay some attention to the liability of the troublesome root-throwing of sidewalks.

The thickness of walks has been given the minimum amount of concrete to be used, so as to insure good, serviceable walks.

STRONGER ORGANIZATION ADVOCATED.

One of the addresses listened to with keen interest by the association was made by Robert W. Lesley who has been called "the dean of the cement industry in America." Mr. Lesley is president of the American Cement Company, of Philadelphia, N. Y. Mr. Leslie talked on Co-operation; What it is, and What it Can Accomplish. He dwelt upon the need of combining all the users of cement in the United States into one gigantic organization for the promotion of the industry.

Mr. Lesley recommended the national organization admitting into membership all the local and sectional organizations of the country, according to each due representation in the National Association. The speaker said that many objects of the association's work required money and he closed his talk with a suggestion that a new class of members be created, these to be known as "contributing members." This class should be composed of machinery builders and manufacturers of supplies and materials consumed by cement users.

The consensus of opinion was that a committee should be appointed to act on Mr. Lesley's recommendation for providing a class of contributing members. President Humphrey said that to his mind such a provision would relieve the officers of begging for money for every trivial expense of the association. The following committee was named: Robert W. Lesley, E. D. Boyer, John Conzelman, Robert C. Morris and Mentor Wetzstein. The president stated that he would make additions to these later.

MISCELLANEOUS SUBJECTS.

Among the contributors to the convention's program was the professor of civil engineering in Purdue University, Lafayette, Ind., W. K. Hatt. His paper was on "Elementary Mechanics of Reinforced Concrete." The lecture was illustrated and threw considerable light on the principles of concrete construction, together with the structural equasions and tests.

Prof. Hatt was folowed by W. H. Mason, superintendent of the Edison Portland Cement Company, who gave an illustrated talk on "Factory Built Concrete." Mr. Mason showed the advantages of manufacturing columns, beams, girders, and structural members upon a factory basis under rigid inspection, and while he allowed that there were some difficulties to be overcome in handling "factory made concrete" on the job, this is more than offset by the control of the selection of materials, made possible and the improved working conditions.

E. S. Larned, of Boston, Mass., one of the charter members of the National Association, presented a report on "Testing Cement and Cement Products." He handled the subject of specifications for cement mortar blocks and concrete blocks from practical and scientific standpoints.

The report of the committee on "Art and Architecture" has always been entertaining features of these conventions. It was given by the chairman, Charles D. Watson, who talked on the possibilities of concrete for ornamental and classic designing. At Thursday's session, J. W. Pierson, of East Orange, N.J., read an able paper on "Progress in the Manufacture and Use of Cement Building Blocks." Other speakers at the same meeting were Leonard C. Watson, who spoke on "Proportioning and Mixing Cement Mortars and Concretes," and James L. Davis, of New York City, whose topic was "Waterproofing Concrete Structures."

In the evening the visitors were the guests of the local members of the association at a jolly smoker. General arrangements were in the hands of Alfred W. Thorn, of the Thorn Cement Company, of Buffalo. Mr. Thorn is vice-president of the Lehigh Portland Cement Co., Limited, of Belleville, Ont., which is building what is to be the largest cement mill in the Dominion of Canada, at a cost of $1,000,000.

Specifications for Concrete Hollow Blocks

THE Committee on Standard Specifications of the National Association of Cement Users has prepared, through its chairman, Mr. E. S. Larned, a set of Standard Specifications for Concrete Hollow Blocks, which was

presented before the annual convention of the association at Buffalo, Jan. 20-25, and will be suggested for use to all the building commissions in the various cities of the United States. We publish below some of the more important clauses, which will be of interest to Canadian architects, engineers and contractors.. The portions not here printed apply for the most part to general qualities of cement and stone, which are already cared for in other specifications.

Proportions.—For Exposed Exterior or Bearing Walls: (a) Concrete hollow blocks, machine made, using a semi-wet concrete or mortar, shall contain one part cement to, not to exceed, three parts sand and four parts stone. When the stone is omitted, the proportion of sand shall not be increased.

(b) When said blocks are made of slush concrete, in individual moulds and allowed to harden undisturbed in same before removal, the proportion may be one part cement to, not to exceed, three parts sand and five parts stone, but in this case also, if the stone be omitted the proportion of sand shall not be increased.

When less sand or less stone, than in clauses (a) and (b) be used to produce special blocks, the ratio of sand to stone shall not be less than 0.50.

Moulding.—Due care shall be used to secure density and uniformity in the blocks by tamping or other suitable means of compression Tamped blocks shall not be finished by simply striking off with a straight edge, but, after striking off, the top surfaces shall be trowelled or otherwise finished to secure density and a sharp and true arris.

Curing.—Every precaution shall be taken to prevent the drying out of the blocks during their initial set and first hardening. A sufficiency of water shall first be used in the mixing to perfect the crystallization of the cement, and, after moulding, the blocks shall be carefully protected from wind-currents,sunlight, dry heat or freezing, for at least five days, during which time additional moisture shall be supplied by approved methods, and occasionally thereafter until ready for use.

Ageing.—Concrete hollow blocks in which the ratio of cement to sand be one-third (one part cement to three parts sand), shall not be used in the construction of any building until they have attained the age of at least three weeks.

Concrete hollow blocks in which the ratio of cement to sand be one-half (one part cement to two parts sand) may be used in construction at the age of two weeks, with the special consent of the Bureau of Building Inspection and the architect or engineer in charge.

Special blocks of rich composition, required for closures may be used at the age of seven days with the special consent of the same authorities.

The time herein named is conditional, however, upon maintaining proper conditions of exposure during the curing period.

Thickness of Walls.—The thickness of bearing walls for any building where concrete hollow blocks are used, may be 10 per cent. less than is required by law for brick walls. For curtain walls, or partition walls the requirements shall be the same as in the use of hollow tile, terra cotta or plaster blocks.

Party Walls.—Hollow concrete blocks shall not be permitted in the construction of party walls, said walls must be built solid.

Laying of Walls.—Where the face only is of hollow concrete block, and the backing is of brick, the facing of hollow block must be strongly bonded to the brick either with headers projecting four inches into the brick, every fourth course being a heading course, or with approved ties; no brick backing to be less than eight inches. Where the walls are made entirely of concrete blocks, but where said blocks have not the same width as the wall, every fifth course shall extend through the wall, forming a secure bond. All walls, where blocks are used, shall be laid up w.... Portland cement mortar.

Girders or Joists.—Wherever girders or joists rest upon walls so that there is a concentrated load on the block of over two tons, the blocks supporting the girder or joists must be made solid for at least 8 inches from the inside face. Where such concentrated load shall exceed five tons, the blocks for at least three courses below, and for a distance extending at least 18 inches each side of said girder, shall be made solid for at least 8 inches from the inside face. Wherever walls are decreased in thickness, the top course of the thicker wall shall afford a full solid bearing for the webs or walls of the course of blocks above.

Limit of Loading.—No wall, nor any part thereof, composed of concrete hollow blocks, shall be loaded to an excess of eight tons per superficial foot of the area of such blocks, including the weight of the wall, and no blocks shall be used in bearing walls that have an average crushing at less than 1,000 lbs. per square inch of area, at the age of 28 days; no deduction to be made in figuring the area for the hollow spaces.

Sills and Lintels.—Concrete sills and lintels shall be reinforced by iron or steel rods in a manner satisfactory to the Bureau of Building Inspection, or the architect or engineer in charge, and any lintels spanning over 4 feet 6 inches shall rest on blocks solid for at least 8 inches from the face next the opening and for at least three courses below the bottom of the lintel.

Hollow Space.—The hollow space in building blocks, used in bearing walls, shall not exceed the percentage given in the following table for different height walls, and in no case shall the walls or webs of the block be less in thickness than one-fourth their height. The figures given in the table represent the percentage of such hollow space for different height walls:

Stories	1st	2nd	3rd	4th	5th	6th
1 and 2	33	33				
3 and 4	25	33	33	33		
5 and 6	20	25	25	33	33	33

Test Requirements.—Concrete hollow blocks must be subjected to the following tests: Transverse, compression and absorption, and may be subjected to the freezing and fire tests, but the expense of conducting the freezing and fire tests will not be imposed upon the manufacturer of said blocks.

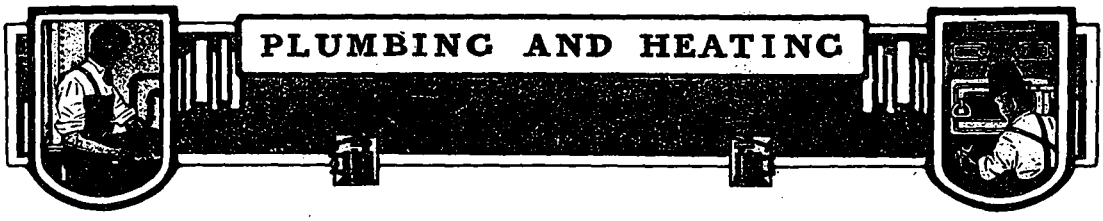
The test samples must represent the ordinary commercial product, of the regular size and shape used in construction. The samples may be tested as soon as desired by the applicant, but in no case later than sixty days after manufacture.

Transverse Test.—The modulus of rupture for concrete blocks at 28 days must average 150, and must not fall below one hundred in any case.

Compression Test.—The ultimate compressive strength at 28 days must average 1,000 lbs. per square inch, and must not fall below 700 in any case.

Absorption Test.—The percentage of absorption (being the weight of water absorbed, divided by the weight of the dry sample) must not average higher than 15 per cent., and must not exceed 22 per cent. in any case.

Cement Brick.—Cement brick may be used as a substitute for clay brick. They shall be made of one part cement to not exceeding four parts clean sharp sand, or one part cement to not exceeding three parts clean sharp sand and three parts broken stone or gravel passing the half-inch and refused by the quarter-inch mesh sieve. In all other respects, cement brick must conform to the requirements of the foregoing specifications.



Principles of Steam Radiation

By Martin J. Quinn, Consulting Engineer

Thorough Knowledge of Proportions of Piping System, as Well as Those of Boiler and Radiating Surface, Necessary to the Successful Installation of Steam Heating Plants

IT will be most readily agreed to by those who have had a large experience, that the successful designing of steam heating plant calls for not only a thorough knowledge of proportions, so far as they apply to the boiler and radiating surface, but also in respect to the piping system, having regard to the class and character of the building in which it is to be installed, and the average architect and builder understands that the conditions existing in each individual building, must be the guide by which the heating engineer will arrive at a decision as to what system will prove most successful from the standpoints of economy, efficiency and convenience, *i.e.*, whether he will use a single-pipe gravity system, a two-pipe system, an overhead system, false water lines, etc., etc.

With the object of making clear what conditions call for the use of these various systems, we will make reference to the accompanying drawings.

In the first place, it must be understood that it is a physical impossibility to maintain the same pressure above the atmosphere at the boiler and the farthest ends of the piping system, and a misunderstanding or ignorance of this fact, has led to more trouble in connection with steam heating plants, than any other feature of them; and so important is it that the designer should have a complete knowledge of the existing physical conditions, that we deem it wise to describe and illustrate some features at greater length, than perhaps, at first sight, would seem necessary in order to provide a proper foundation upon which to base future articles upon the subject.

In Fig. 1, we show a cylinder which may be taken to represent the boiler, having a branch taken from the top representing the steam main, and connected to a loop, which may be taken to represent a return pipe, the latter however, not having any connection with the bottom of the boiler.

If we assume that the cylinder contains air, pumped to a pressure of one pound per square inch, it will be seen that this pressure will be communicated to the loop through the small pipe, and that it will force the water down on one side and up on the other side of the loop, until the difference in the level between the two is twenty-eight inches (approximately), or the amount of the "head" which equals one pound pressure, and this illustrates the conditions which will exist in a steam system where there is a difference of one pound between the pressure in the boiler, and that at the end of the steam main, and if there is a difference of two pounds, the water at the farthest end of the main will be twice the height above the normal water lines, or approximately four feet eight inches; and this being so, it will be readily seen, that, even with the normal water line several feet below the level of the steam main, the latter will become flooded unless proper care is taken to equalize the pressure.

In Fig. 2, we attempt to show the reason for the inequality of steam pressure, throughout the system.

In this case we show a boiler filled with water to the normal water line, and a steam main, which may be for the sake of argument one hundred feet long, and a return main connected to the end of it, as a relief, and passing back and entering the bottom of the boiler.

Let us assume that air is being constantly pumped into the boiler, and maintaining a pressure in the latter of five pounds, and throughout the length of the main it is escaping through a series of small holes, as at "B" "B" "B."

It will be seen at once that if the pipe is at all restricted in size that the pressure will be slightly reduced after it passes the first opening, and reduced again and again as it passes each succeeding opening, so that the lowest pressure will be at the farthest end of the main, while that in the boiler remains constant.

Now, it will be readily understood, that if the pressure in the boiler remains at five pounds, it will be equal in all directions, so that not only will it escape through

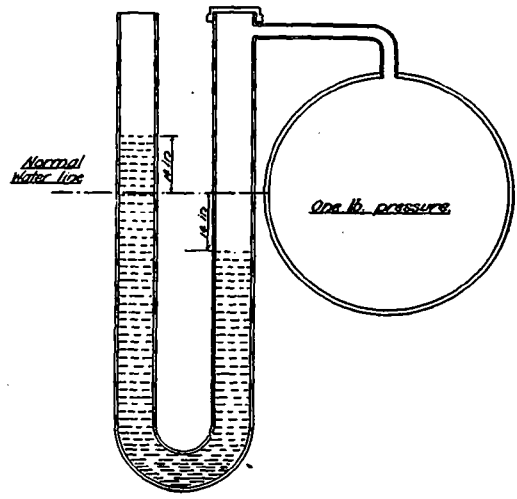


Fig. 1—ILLUSTRATING THE CONDITION WHICH WILL EXIST IN A STEAM SYSTEM WHERE THERE IS A DIFFERENCE OF ONE POUND BETWEEN THE PRESSURE IN THE BOILER, AND THAT AT THE END OF THE STEAM MAIN.

the top pipe, but it will also force the water down and out through the return pipe, and up to a height at the other end of the system, which will depend entirely upon the resistance of the air at that point.

In this instance we show a difference of two pounds, so that the water rises approximately four feet eight inches, or, if there were a difference of say two and a half pounds it will be readily seen that the main steam pipe would be flooded at the far end, and in that event it would either entirely cut off the flow of the steam, or the latter, in forcing its way through the water, would produce

what is commonly known as "hammering" which is the curse to so many systems.

The reader will easily see the analogy between the openings at "B," "B," "B," and the connections in a steam system, which will be taken off at similar intervals, to supply the radiators and will also understand that each succeeding connection will reduce the pressure beyond that point, in the manner already described, and he will also understand the necessity of so regulating the flow of the steam, having regard to both resistance due to friction, small piping, changes in direction of current, etc., and condensation, as will provide for a minimum difference in pressure, and consequently in the water level, between the boiler and the distant portions of the system.

It will be obvious, too, that it is necessary, for the reasons already given, that the steam main should be kept up to the highest possible level, so as to be beyond the reach of this natural elevation of the water level in the returns, and in ordinary cases this is not a difficult matter.

It sometimes happens, however, that the steam mains must run a considerable distance before any connections are taken off, and, under other circumstances to supply very distant radiators in a long building, and while regard must be had in every instance to the size of the main (and this feature will be dealt with at greater length in succeeding articles), it is at the same time possible to keep the steam main above a predetermined level, no matter what this length may be, and at the same time make provision for its relief and proper drainage in the direction in which the steam is travelling.

In Fig. 3, we indicate how this is done.

It must be borne in mind that unless in the case of very short runs, as for example branches to radiators or risers, that the steam main must fall in the direction in which the steam travels, for the reason that, unless pipes are very large, the tendency of the rapidly moving steam is to carry back with it the condensation, which would be travelling in an opposite direction and eventually fill portions of the pipe with water, when the steam, in passing through the latter, will be rapidly condensed, creating a vaccum and drawing the water together with such a force as to result in "hammer" or "pounding" already referred to, so that it is necessary that the two bodies, *viz.*, steam and water should work in harmony, instead of coming into conflict, if a noiseless and effective heating apparatus is to be provided.

In Fig. 3, we show the steam main carried from the boiler to the point "A," which presumably will be a considerable distance from the former, and which is also supposed to be the lowest point at which the main may touch, having regard to the danger of its becoming flooded.

At this point we may rise again as high as possible, and continue to point "B," where the main may rise again if necessary, and so on with constant repetition.

It will be noted that whenever a low point in the system is reached, a "drip" is taken from it to the return main, and this drip connection will effectually rid the

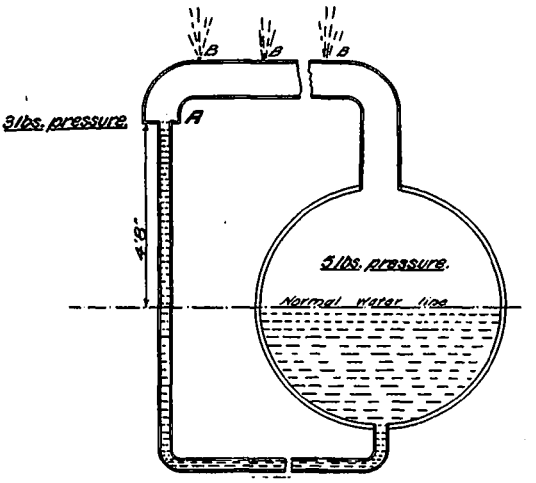


Fig. 2—SHOWING THE EQUALIZATION OF PRESSURE IN ALL DIRECTIONS, THE OPENING AT "B," "B," "B," BEING ANALOGOUS TO THE CONNECTIONS IN A STEAM HEATING SYSTEM WHICH SUPPLY THE RADIATORS.

main of all condensation, not only that produced within itself, but also that resulting from the radiators connected to the risers running up from it, so that if the steam main is of sufficient diameter, having regard to the probable amount of condensation which will result from the surface connected to it, the difference in pressure between the boiler and the distant ends may be so reduced as to effectually prevent any disturbance of the steam circulation from this cause.

An erroneous opinion is sometimes expressed that the Swinging Check Valve, shown in the return main near the boiler, will effectually prevent the water from backing up through the reliefs into the steam main. But this is not the case, for the reason that while the check valve will undoubted y prevent the water from escaping back through the return from the boiler, it will refuse to open and permit the entrance of condensation to the boiler from the heating system, so long as the pressure in the latter is less than that in the boiler, with the result that the check valve will remain closed until the condensation fills the drip pipes to a sufficient height above the boiler water level, to overcome the difference in pressure existing in the system.

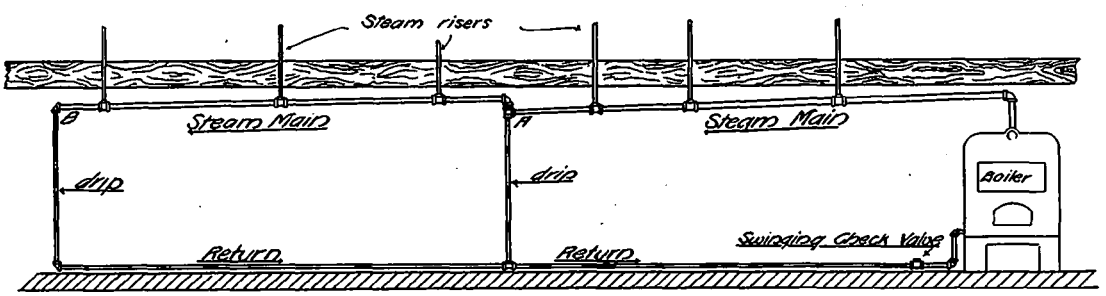


Fig. 3—SHOWING THE GRADUAL PITCH OF THE STEAM MAIN IN DIRECTION IN WHICH THE STEAM TRAVELS, THUS OVERCOMING THE TENDENCY OF RAPIDLY MOVING STEAM TO CARRY BACK THE CONDENSATION BY RIDDING THE MAIN OF THIS ELEMENT AT EVERY LOW POINT THROUGH A "DRIP" CONNECTING WITH THE RETURN MAIN.

Objects to Criticism of Institute of Architects of Canada

ARCHITECT C. L. HORWOOD, of Ottawa, objects to "mass of criticism and denunciation" of registration policy of the Institute of Architects of Canada in January issue of Construction. Believes Prof. Nobbs has no reason for his enmity to the scheme. Thinks Mr. Eden Smith has nothing to substantiate his statement that proposed Act would "fossilize the profession." Maintains one "Horwood's" opinion as good as another. On the whole Mr. Horwood makes a strong plea for the proposed bill of the I. A. C.

Editor Construction:

Dear Sir,—In your January issue you certainly have gathered together a mass of criticism and damnation from professors down to editors, against the proposed legislation to incorporate "The Institute of Canadian Architects," and not one small voice raised in its behalf, although the great majority of practising architects endorse it. Is this accident or design? Far be it from me to assume any brief to take up the cudgels in its behalf, but the arguments used against the measure are so evidently one-sided, that I take an Englishman's privilege of defending the society, to which I have the honor of being a member. The whole of the adverse comments simmered down appears to be:

That the critics object to making the profession a close corporation under an examining body, composed of members of the Institute; for fear of what? Professor Nobbs gives no reason for his enmity to the scheme, but talks of education, bemoans the fact that architectural education is at such a low ebb in the Dominion, and suggests as a remedy architectural museums.

No doubt museums would be a good thing, but with a museum in each of the large centres, how are we to *make* the student study in them, or how help the students in the widely scattered towns of our great country? Perhaps, though, the professor means this as a joke, and wants the museums to incarcerate the "fossils," which Mr. Eden Smith is so sure will be created by the formation of the Institute.

Respecting "fossilizing the profession," Mr. Smith should not rely on such a bald statement off his own bat, without some arguments to substantiate it. Every precedent of "close corporations" in the professions, of which I am aware, has had the opposite tendency; I will instance medicine, law and dentistry; these professions have made gigantic strides since they became "close corporations." And why? Simply because in "union there is strength," for the mind of the whole profession, bent on attaining and studying certain subjects, must be more advantageous than the separate efforts of individuals.

Mr. J. C. B. Horwood objects "because it would be a very bad policy *in these days* to enact such a law, and also because it would not give the public the protection needed." So far as the "bad policy" is concerned I fail to see why the policy would be any worse "in these days" than it would be at any time, and also without very potent reasons (which are not given), why it is a bad policy at all; in fact as one "Horwood's" opinion should be as good as another's, I will later try to show why I think it a good policy.

The protection to the public is not exactly in the preventing of unsafe buildings being erected, though that is a factor, but the greater protection of having a trained body of experts, specially trained for the work, and wearing the honorable title of architect, from whom the unknowing public can select a man with the knowledge that he has the right to use the title, and that he has been endorsed by his fellow practitioners, as a good and safe man. No one would ever question the fact that the proper education and training of the architects of the country, must be a great benefit to the community amongst whom they work, for the standing of the town or city in its culture, and in its progressiveness is largely measured and reflected by its most direct evidences, viz., its buildings; and if you have untrained and uneducated architects, you must have poor cities, and towns, from an artistic standpoint. A poor artist can paint a picture, and hang it in a closet, it hurts no one. A doctor can bury his mistakes, but the architect's work is ever before us in the most conspicuous places, and is an enduring monument either to his ability or incapacity.

The general public have no protection from the unsightly buildings which are erected, and the most direct way of protecting themselves is by making architectural education compulsory, the same as other educational matters are, and the Institute of Architects have this in view in the bill now before Parliament.

As the matter stands at present, any Tom, Dick or Harry can call himself an architect, if he feels that way, without the slightest knowledge of the profession, and in consequence, the standard of the profession is very low and will remain so, until education is enforced.

The architects of the present day have the closest kind of corporation so far as students are concerned, for they have absolute control over those whom they bring into their offices.

The present generation of architects will gain nothing by the legislation sought for, for they will only bring in better trained men into the profession to compete with them. In closing let me beg you to believe that the act of the architects is not selfishness, but a sincere desire for the uplifting of the profession.

Your faithfully,

E. L. HORWOOD.

Bank Street Chambers, Ottawa, Jan. 27, 1908.

Mr. Chausse Approves of Elimination of "Close Corporation" Clause From Proposed I. A. C. Charter

MR. ALCIDE CHAUSSE, secretary of the Institute of Architects of Canada, calls attention to proposed "Bill to provide for the Registration of Architects," to come before the next session of the British Parliament. Approves of the elimination of the "Close corporation" clause in the proposed charter for I. A. C., and the adoption of a law along the lines of the Illinois measure, or the proposed British Bill, after the I. A. C. has been granted its charter.

—Editor Construction.

Dear Sir,—Have you seen the "Bill to provide for the Registration of Architects," which came before the British Parliament in 1905, and which was opposed by the Incorporated Association of Municipal and County Engineers, on the ground that one of its clauses was detrimental to the interests of local authorities and their engineers and surveyors? Since then clauses 27 and 28

have been amended, and the bill will be re-introduced into the next session of the British Parliament, *with the support* of the above mentioned association, and I learn that there, is every prospect of progress for the bill this year.

I have a copy of this bill, which I could lend you for *four days only*, and on the very strict condition that it will be turned to me in the same order and condition I have sent it to you.

The English Architects' Registration Bill calls for the incorporation of the whole profession, and qualifies the members of the nineteen existing societies of Architects in England.

Personally, I would be in favor of the Institute of Architects of Canada, omitting from their bill, now before Parliament, the clauses calling for *close corporation*, and after incorporation is thus granted there should be a joint meeting of representatives of all the architectural bodies in Canada, to discuss the advisability of asking the Federal Government to pass a bill to provide for the registration of Architects, on the same lines as the laws of Illinois or the British bill.

The Council of the Institute of Architects of Canada have been accused of forcing the "close corporation" bill through the House for incorporation. They are only following the instructions of the first Congress of Architects, held in Montreal last summer. I know that among the twenty members of the Council of the I. A. C. there are six or seven who are in favor of "registration" by a Dominion law, on the lines suggested in the recent resolution of the Toronto Architectural Club, and I have not consulted all the members of our Council. There are, perhaps, more.

Yours very truly,

ALCIDE CHAUSSE.

1051 St. Hubert St., Montreal, Feb. 4, '08.

The O.A.A. and Registration

ARCHITECT W. A. LANGTON, of the Ontario Association of Architects, replies to resolution of The Toronto Architectural Club on the question of the form of registration advocated by the Institute of Architects of Canada, and explains the attitude of the Ontario Association on the subject.

Editor Construction:

Dear Sir,—In your January number, in a report of the annual meeting of the Architectural Club, you print a resolution of the Club on the question of the registration of architects, in which it is said that the club "is opposed to the form or forms of registration put forth by the Institute of Architects of Canada and the Ontario Association of Architects, which would mean giving the control of the profession over into the hands of certain privileged bodies of the profession."

The Institute of Architects of Canada was started in Montreal, and is, I believe, aiming at a constitution of the same kind as that of the Province of Quebec Association of Architects, to which the architects of Montreal are accustomed. If they are in error, I do not wish to defend them; I write only to remove a misapprehension as to the attitude of the Ontario Association towards this question.

It is true that, when this Association first started, its constitution was modeled, on the suggestion, I believe, of the then Minister of Education, on that of the Law Society. Members of the Association were to have an exclusive title, the right to which was to be obtained by passing examinations conducted by the Association.

The purpose of this Act was to oblige young men to train themselves properly for the profession. It failed in this respect, inasmuch as the title of members of the Association was made not "Architect" but "Registered Architect."

When it was clear that the Act as it stood would have no effect upon the educational question, the Association (with whom also the title "Registered Architect" was not popular), represented the state of affairs to the Government and requested that the title be made "Architect."

A bill for this purpose was accordingly put into the hands of a member on the Government side to test the feeling of the House. The feeling of a majority of the House appeared to be in favor of the results aimed at by the bill; but it became clear in committee that there was opposition in the country; not of a statesmanlike character, but an opposition which the committee would not go against.

In its practical bearing upon our question the opposition amounted to a suspicion that if the Association had the power to conduct the examinations by which young men were admitted to practise architecture, it would use that power to refuse them admittance and keep them out of practice. Accordingly, when we brought the question up again in the House, we expressed our readiness to hand over the duty of examination to agents appointed by the Government.

In this form the opposition to the bill, as class legislation, was withdrawn. It did not, however, pass, because of opposition from two architects on the ground that an annual fee should not be made a condition of practice.

This was in 1897, and since that date examination by government agency may be defined as the attitude of the Association to the question of an educational test for persons intending to practice architecture.

At the convention held in January, 1907, it was proposed to bring the matter up again, and the question of how to conduct examinations apart from the Association is now, at the request of the Association, being considered by the Ontario Government.

This position, unless I am very much mistaken, is the very position in favor of which the Toronto Architectural Club "wishes to put itself on record," in proposing the above motion. This is a "form of registration of architects, based on education and under direct Government control" which the resolution calls "a proper form."

We may therefore, I suppose, count on the support of the Toronto Architectural Club, if a measure to that effect is introduced this session.

Yours truly,

W. A. LANGTON,

43 Victoria st., Toronto, Jan. 11.

Just What Draughtsmen Require

Editor CONSTRUCTION,

Gentlemen,—Enclosed please find express money order for which send to the above address CONSTRUCTION, beginning with the January number. I saw your first number of this paper yesterday and am much pleased with the "make up" of it, and am sure your success is guaranteed from the start. It is just what we draftsmen require, and have been looking so long for. Wishing you a Happy New Year.

Yours truly,

ALEX COWAN.

Crieff, Ont., Dec. 24, 1907.

Considers Construction A1

To CONSTRUCTION, Toronto, Ont.

Enclosed find herewith order for one year's subscription to CONSTRUCTION. I have the October and November numbers and consider them A1.

Yours truly,

W. B. ALLAN.

St. Catharines, Ont., Dec. 7th, 1907.

Pointers on Avoiding Lawsuits

By G. W. Cooper

How the Contractor Can Protect Himself Against the Demands of Unreasonable or Unscrupulous Claimants

MANY instances could be cited to show that contractors, through carelessness in recording the transactions involved in their business, frequently make themselves legally liable for losses and damage for which they cannot justly be charged with moral responsibility; and in numerous cases where disputes have been taken into the courts for settlement, the contractor, though manifestly in the right, has emerged on the losing side simply because of his inability to produce documentary proof of the facts. A persistent habit of being in the wrong is not characteristic of the average contractor, therefore his lack of success as a litigant must be attributed to something else. And that something else is often found to be the undeniable slackness of his business methods. His almost proverbial shortcomings in this respect are deplorable—particularly so because of being, in many instances, easily avoidable. A few simple and inexpensive precautionary measures, taken at the proper time, will usually suffice to establish him in such a strong position that, in the event of disagreements taking place, an opponent will hesitate a long time before attacking him unfairly.

The object of these precautionary measures should be the making of a permanent record of every job—a record covering every phase of the undertaking from commencement to completion. This record should constitute a complete history of every act and every incident that may by any possibility be called in question at a later date. Such a record, offered as evidence in a lawsuit, will usually be irrefutable.

TAKE PHOTOGRAPH OF ADJOINING PROPERTY.

One of the most common causes of trouble is the litigation that arises from unfair claims for compensation for damage to adjoining property. Long after a job is finished the contractor may be confronted with an extortionate bill for damages; and a serious predicament he is likely to be in if his former employes are scattered, his witnesses dead or gone, and if he has no way of disproving the charges. Such a possibility as this surely ought to be carefully guarded against. Let the contractor, then, before starting work, have a complete set of photographs taken, showing every part of the adjoining property as it actually is at the time work begins, and especially those parts of structures that exhibit cracks, settlement, or other imperfections: let him cause the photographer and at least one other witness to make affidavits regarding the date on which the pictures were taken; let him supplement the photographs with copious notes describing exactly the appearance, actual condition, and extent of all visible defects; then, as the work progresses, let him take other pictures at frequent intervals to show what, if any, further damage has been done. With evidence of this kind in his possession the contractor is not likely to suffer more than he deserves at the hands of the owners of nearby property.

Another danger spot is reached when the contractor undertakes to erect a structure on piles driven, or on foundations built, by a preceding contractor. In this case, also, enough photographs to show clearly the exact condition of the work at the time the contractor takes hold, and notes and affidavits should be made as suggested above. The contractor should refuse to sign any contract involving work of this kind unless it is so worded that it specifically and entirely relieves him of responsibility for any loss or damage that may result from defects or mistakes in his predecessor's work.

Claims against the contractor for damages on account of delay in completing the work can sometimes be partly or wholly nullified by evidence showing how much of the delay was caused by the failure of the owner to make prompt decisions on questions within his jurisdiction; to time lost while waiting for plans, details, and instructions; or to changes made in the plans entailing disorganization of the working forces. Where the owner himself buys the material and supplies, independently of the contractor, a record of the time lost through his failure to have them delivered promptly should also be put in evidence. In cases like this the contractor should protect himself by giving the owner notice in writing, in ample time beforehand, of the probable dates at which he will require the various kinds of material.

KEEP RECORD OF ORAL INSTRUCTION.

Foremen should be required to make written records of all oral instructions received from the owner, and of all conversations relating to any phase of the work that may come up again later. All letters, telegrams, blue prints, and other papers received from the owner, or from any other source, should be stamped with the date and hour of receipt. A daily report in writing should be made by the superintendent of each job to the home office, in which should be set down, concisely, the exact conditions obtaining at the time the report is written—the progress made; material, plans and instructions received; material, plans and instructions wanted; delays and set-backs experienced and the causes thereof; number of men at work, weather conditions, etc. The value of these reports will be realized when the contractor finds himself on the defensive regarding the progress of the work. His position, in such a case, will be immensely strengthened if he can point to the delays recorded day after day, in the superintendent's reports, as resulting from causes over which he had no control.

In the matter of "extras," which are as a thorn in the flesh to most owners, there is but one safe rule to follow: Insist on receiving definite written instructions describing fully the changes or additions to be made, and naming the price to be paid for them, before departing from the original plans. The contractor who fails to do this places himself in a dangerous position, as any variation from the original terms of the contract renders it null and void.

OTHER PRECAUTIONS.

Numerous other precautions can be taken by the contractor to safeguard his interests. It is not necessary to describe them in detail, but a few of them will be briefly mentioned: In ordering material specify all requirements so clearly that no misunderstanding can occur, and fix a time limit for delivery so that the order can be cancelled if not shipped promptly, without incurring liability for any expense the party who accepted the order may have been put to. The general contractor should require all sub-contractors to guarantee their work for a long enough period to fully protect him with the owner. Keep every job covered by sufficient fire and employers' liability insurance. Erect barriers at dangerous places and take such other measures as may be necessary to protect workmen and passers-by from injury; use "no admittance" and "danger" signs, and post notices forbidding workmen to ride on temporary material hoists. Have all agreements with other contractors for the joint use of plant, scaffolds, etc., expressed in writing. Before

signing a contract make sure that all loose statements and all ambiguity is eliminated from it, and from the plans and specifications; provide for such contingencies as the occurrence of quicksand, storms, and strikes, and make sure that the contract will permit of an extension of time and an increase in compensation, to offset the delay and extra expense entailed by those contingencies. Keep accurate records, as previously suggested, of each step taken in the prosecution of the work, and of the progress made. On account of their peculiar liability to misquotation or misconstruction, have the substance of each telephone message or conversation carefully recorded.

The contractor who attends to all of these small matters systematically will find himself reasonably free from the danger of being imposed upon by misinformed or designing persons. The sense of security he will enjoy as a result of being absolutely sure of his position no matter what disputes he may become involved in, will be well worth the effort put forth in attaining it; and the slight expense incurred will be more than counterbalanced by the financial losses he will avoid.

Experiments for Laying Dust by Coating Compounds

IN stating that the question of the suppression of road dust has been, within the last few years, a subject of constant attention on the part of Canadian local municipal authorities, the following reports upon experimental results in France will prove interesting:

Hitherto water alone was employed for the purpose, but its effect was only transitory, and the treatment had to be renewed every morning. This half measure nevertheless gave satisfaction until automobiles and rod tramways began to circulate, creating, by their speed, an amount of dust as annoying as it was previously unknown. A report has just been presented to the minister of public works, reviewing the advantages and disadvantages of four methods, considered as more or less effective in laying dust—a coating of crude tar mixture, heated petroleum, a solution of water and salts, and construction of a beton and tar surface.

To the mixture of crude tar, tar oil in the proportion of 10 per cent is added to render it more fluid, and before sprinkling it on the road certain conditions are necessary—the road should be more or less cylindric in shape, recently macadamized, dry, and swept of all dust. The tarring should be done in dry and warm weather, while no circulation of vehicles should be allowed until the coating is sufficiently dry.

The durability of the coating varies as to the time of the operation, whether in summer, autumn or winter. If done in the last two seasons, the tarring seldom resists until the following spring. Very frequently it disappears at the end of two or three months leaving in its place an abundant supply of disagreeable mud. As long as the coating of tar endures, the road bed is guaranteed against wear and tear, but once it gets diluted the road becomes deteriorated all the more rapidly, as the mud retains the water with greater facility. Although the quantity of the tar mixture employed varies with the absorbent nature of the road, a proportion of two pounds to the square yard is considered sufficient. Frost does not seem to have any evil effect on tarring, but great heat may soften it and render it slippery. The cost of tarring is estimated at 3 cents per square yard.

PETROLEUM, SALINE AND BETON MIXTURES.

The second method, or that of petroleum heated to boiling point, is used in the north of France and around Paris. The variety of oil employed is that known under the name of "mazout." The oil is placed in reservoirs similar to ordinary watering carts and sprinkled over the roads, previously swept. It is allowed to cool, after which the dust is swept back over it again; the dust is effectively laid and will not adhere to the car wheels. Unfortunately, autumn rains rapidly destroy this coating. In dry climates, however, the above two methods are very effective against dust.

The saline mixture consists in either plain sea water or a solution of certain salts (chloride of calcium or chloride of magnesium), which from their hygrometric properties maintain on the road the humidity of the atmosphere, thus prolonging the effect of ordinary watering. Information, however, is wanting as to the results of the experiments.

Westrumite is tar rendered soluble in water by the addition of ammonia and other cheap products. It is particularly useful in preparing a race track, as its effects are limited as to duration.

The fourth and last method is costly and has not yet been put into operation to any extent in France. It consists in constructing the road with beton or concrete, into which tar is incorporated. Further experiments are about to be made by the government, not only for the purpose of adopting the best dust-laying substances, but also for determining the effect of the operation itself on the roads.

Montreal's New Fire By-Law

MONTREAL has put into force a new by-law providing for the strict inspection of buildings for the better protection against fire. The purpose of the by-law is to have a systematic inspection of all large buildings, which will be done by officers of the brigade in the different districts, from which reports will be made regularly to the head of the department at the City Hall.

It is expected that the work will require many months to get well in hand, as the number of buildings is so large.

The most important clauses in the by-law is found in Sections 14 and 15. The former specifically gives the members of the fire department power to inspect at all times practically every class of building except private residences. It reads as follows:

"The officers of the Fire Department are hereby empowered to enter at any time public buildings, industrial establishments, places of amusement, hotels, apartment houses, educational and charitable institutions, or any place, including all places where explosive compounds, shavings, rubbish or other materials, articles, goods or merchandise liable to cause fire are placed or kept, and to have and order same removed when said explosive compounds, shavings, rubbish and other materials, articles, goods or merchandise liable to cause fire are kept or placed in such a manner, in the opinion of the officers of the department, as to cause fire, or contrary to the by-laws governing such explosive substances, shavings, etc., and in case of neglect or refusal so to do, to cause same to be removed at the expense of the delinquent, who shall also be liable to the fine hereinafter provided."

Section 15 is most important and should be carefully considered by every city not having a similar law equally as explicit and restrictive.

Such a law, if properly enforced, will not only prevent to a large extent disastrous obstructions so often encountered by the firemen in fighting a fire, but will reduce considerably the danger of fatalities in many fires. It reads as follows:

"It is unlawful for any person to pile up merchandise, goods, produce, stock-in-trade, and other articles whatsoever in windows, doors, or such other places as the officers of the Montreal Fire Department may deem necessary for the circulation of the firemen in warehouses, industrial or commercial establishments."

Violations of the above provisions of this new law are made punishible by fine or imprisonment.

PROSPECTIVE CONSTRUCTION

The following information is obtained from our correspondents, from architects, and from local papers. These items appear in our daily advance reports and are herein compiled for the use of subscribers to the monthly issue of CONSTRUCTION. Should any of our readers desire this information oftener than once a month, upon receipt of request, we will be pleased to submit prices for its daily service.

Mills and Factories

Toronto.—Architects Ellis and Connery, Manning Chambers, Toronto, have prepared plans for a two storey and basement 42x98 ft. factory to be erected on Queen Street West for J. H. Smith, near Jamieson Ave. Brick superstructure, stone foundation, composition roofing, metal ceilings, modern plumbing, steam and hot water heating, to cost $9,000.

Toronto.—An explosion of gasoline at James' Dye Works, 153 Richmond street west, badly wrecked the building. It is understood the damage will be repaired.

Toronto.—Architect J. Francis Brown, Board of Trade Building, Toronto, is preparing plans for a five storey building, corner of Duncan and Adelaide streets, Toronto, for the Toronto Engraving Co. Building is to be of mill construction, brick walls, stone trimmings. The top storey will be used as a photo gallery, ceiling and walls to be covered with glass.

Toronto.—Architects Symons & Rae, Toronto, have awarded contracts on the proposed $50,000 factory to be erected for James Morrison Brass Mfg. Co., Adelaide street west, Toronto, as follows: Mason work, Harrison & Lewis, 92 Amelia street; carpenter work, J. C. Scott Co., 108 River street.

London, Ont.—Mr. Thomas Bates, manager of the London Canning & Evaporating Co., London, Ont., states that his company proposes making extensive additions to their present plant.

Port Elgin, Ont.—The Dominion Pressed Steel Co.'s factory at this place was recently damaged by fire to a considerable extent. The building is of concrete construction. The damage is fully covered by insurance and will be repaired at once.

London, Ont.—The Standard Implement Co. will erect a large plant for the manufacture of farming machinery, at a cost of $60,000.

Windsor, Ont.—The Windsor Turned Goods Co., which is a branch of the Pioneer Pole & Shaft Co., of Piqua, Ohio, propose making extensive improvements to their plant at once.

Dresden, Ont.—Architects J. L. Wilson, Son & Arnold, Chatham, Ont., have prepared plans for and will receive tenders from February 20th to March 14th, for the erection of a factory for the Dresden Carriage Works at Dresden, Ont. The structure will be three storeys high, of mill construction, concrete foundation, steam heating, electric lighting, plumbing, gravel roof. Specifications include: Cut stone, brick, tile, fire-proofing, structural iron, fire escapes, freight elevator, fire-proof windows, ornamental columns and caps, plate glass, and suitable machinery for this factory. Estimated cost, $15,000.

Windsor, Ont.—The American Concrete Box Co., of Chicago, Ill., propose establishing a branch in Windsor, Ont., for the purpose of making rough concrete boxes for burial purposes.

St. John, N.B.—Mr. George McAvity and H. N. Stetson, of the Mispec Pulp Mill Co., state that the company will double the capacity of their mill at a cost of $100,000 if the City Council of St. John will give them either an option or a long term lease. This enlargement, it is stated, is necessary to operate the mill at a profit.

Hamilton, Ont.—F. W. Bird & Son, of this city, have decided to build a frame addition to their present factory, in Hamilton East, to cost about $4,000.

Port Credit, Ont.—The planing mill of Wm. Scaife was destroyed by fire, entailing a loss of about $3,000. It is probable that the mill will be rebuilt.

Brantford, Ont.—Messrs. Goold, Shepley & Muir, Brantford, Ont., intend enlarging their plant early next spring by turning their present woodworking shop into a machine shop, and erecting a large woodworking shop two storeys high, at an estimated cost of $4,000.

Port Arthur, Ont.—Wm. Scott, Manager of the Pigeon Lumber Co., at this place, states that a company of United States capitalists which he represents intend erecting a large mill here in the near future for the manufacture of wood pulp into paper.

Welland, Ont.—The Ontario Iron & Steel Co., of this place, propose erecting large additions to their works at once. The furnace building will be 200 ft. long, 180 ft. wide.

Lakefield, Ont.—The Lakefield Flour Milling Co.'s flour mill was destroyed by fire, entailing a loss of $25,000, covered by insurance. The Dixon Co., of Peterboro, own the buildings. They will likely be rebuilt.

Hamilton.—The factory of the Hamilton Coffee & Spice Co., Macnab St. south, was damaged by fire to the extent of $5,000. W. H. McLaren is the president of the company. The loss will be repaired at once.

Chatham, Ont.—Architect A. M. Piper, King St., Chatham, Ont., is preparing plans for a planing mill and box factory to be erected on Queen St. for W. M. Drader. The structure will be three storeys high with concrete foundation, brick superstructure, stone trimmings.

Morrisburg, Ont.—The factory and general offices of the Canada Tin Plate & Sheet Steel Co., at Morrisburg, were partially destroyed by fire, entailing a heavy loss, fully covered by insurance. This Company will rebuild the damaged portion at once.

Hamilton, Ont.—Parson & Parsons, Limited, of Cleveland, Ohio, propose erecting a factory for the manufacture of rubber goods in Hamilton, Ont. Assistant Property Commissioner of this city has full particulars.

Brantford, Ont.—The estimated cost of the proposed building for the Canadian Machine Telephone Co. on Queen St., here, is $10,500. Work will be proceeded with at once.

Halifax, N.S.—The business premises of John Starr, Son & Co., electrical supplies; and Maxwell & Co., Ltd., tailors, were destroyed by fire, entailing a loss of about $30,000.

Oshawa, Ont.—The McLaughlin Motor Car Co. have been incorporated with a capital of $500,000, with offices in Oshawa. The Company propose erecting a plant here for the manufacture of motor cars.

Dresden, Ont.—The ratepayers of this place have passed a by-law granting a bonus of $900 and a loan for twenty years of $19,100 to the Dresden Carriage Co., who propose erecting a carriage factory to cost not less than $25,000. The directors are Mr. Peters, Mr. Fisher and Mr. Cook, all of Chatham.

Kenora, Ont.—The Maple Leaf Flour Milling Co.'s mill and elevator at Kenora, Ont., was totaly destroyed by fire, entailing a loss of at least $1,000,000. The flour mill was six storeys high, 165 x 55 ft., and was only completed about two months ago. Mr. D. S. Cameron, of Winnipeg, is the president. This is western branch of the Hedley-Shaw Milling Co., head office Board of Trade Bldg., Toronto. The company will rebuild.

St. Mary's, Ont.—Mr. Doolittle, of this place, has purchased a site on which he will erect a two storey, 50x72, stone factory building in addition to building a sawmill on adjacent property. Work will be started at once on these structures. The total expenditure will probably be $25,000, of which $6,000 was loaned by the town.

Tweed, Ont.—The powder works of the Ontario Powder Co. at this place were destroyed by an explosion, entailing a loss of about $10,000. Mr. Frank Knight is the manager. The head office of this company is at Kingston. The works will likely be rebuilt.

Campbellford, Ont. — The Campbellford Town Council has entered into an agreement with the Canadian Steel Rolling Mills Co. whereby this company propose erecting a factory here to cost at least $60,000. The plant is to be in active operation by January, 1909. Sheet and bar steel will be manufactured.

Fort William, Ont.—Jas. Tonkin, contractor, of this city, has been awarded the contract for the erection of the proposed dredging and marine repair shops at this place for the Great Lakes Dredging Co. A machine shop, 50x75, blacksmith shop, 60x40 ft., will be built. Both buildings will be equipped with the most modern machinery.

Stratford, Ont.—The Shoddy Cloth Mill here, owned by Benjamin Leckie, of this place, was burned, entailing a loss of $3,000, covered by insurance.

Hopworth, Ont.—The ratepayers of this village have passed a by-law authorizing the loan of $12,000 to the Hepworth Mfg. Co., of this place, who will enlarge and improve their plant to this extent. The company manufacture furniture, bed springs and mattresses.

Barrie, Ont.—The ratepayers of this town have passed a by-law authorizing a loan of $10,000 to the Aerial Ladder Co., of this place, to enable the stockholders to extend their plant. The company will expend at least $25,000 for this purpose.

Windsor, Ont.—The Champion Rivet Co., of Cleveland, propose establishing a Canadian branch. Nothing definite as regards location has been decided upon. Either Windsor or Port Hope, Ont., will be selected by the company.

Ben Allen, Ont.—Mr. Edwin DeLonge, of the Inter-State Investment Co., of Chicago, states that his company proposes spending at least $50,000 for the erection of a cement plant at Ben Allen, Ont.

Barrie, Ont.—The ratepayers of this town have passed a by-law authorizing the loan of $20,000 to the Fleming Aerial Ladder Co., of this place.

Aylmer, Ont.—The cider mill of Messrs. George Caughill and J. Gillette at Aylmer, Ont., was recently destroyed by fire. Loss about $3,000.

Lakefield, Ont.—The planing mill of F. J. Moore & Son was recently destroyed by fire, entailing a loss of about $15,000 to machinery. The building was owned by the Dixon Co., of Peterboro. Insurance on building has not been ascertained. The mill will likely be rebuilt.

Cayuga, Ont.—Mr. E. D. Booth, of Brantford, proposes erecting and equipping a complete butter and cheese factory here.

Greenock, Ont.—A. C. McKee, reeve of Greenock, Ont., proposes erecting a sawmill at this place.

Goderich, Ont.—The ratepayers here passed a by-law authorizing a loan of $15,000 to the Doty Engine Works, of this place. The company proposes spending $50,000 in enlarging its plant.

Lakefield, Ont.—Mr. F. J. Moore, of the firm of F. J. Moore & Sons, whose planing fire, states that the mill will be rebuilt at mill at Lakefield was recently destroyed by once so as to be in operation by the end of two months. The new structure will be of frame construction on concrete foundation, and will require considerable new machinery.

Guelph, Ont.—Mr. Jas. Watt, secretary of the Guelph Board of Trade, has received an enquiry from the Spinelli Corset Co., of Meadville, Pa., asking what inducement the city would offer the company to establish a branch plant in this city.

Guelph, Ont.—Mr. Finlay Marshall, of this city, at the next session of the Legislature wil ask permision to build an abbatoir in this city. The company which Mr. Marshall represents will spend in the neighborhood of $30,000 in the erection of this abbatoir if they secure the necessary power. Ald. Booth, of this city, has been active in furthering the scheme.

Guelph, Ont.—The Linde British Refrigeration Co., Coristine Bldg., Montreal, P. Q., has been awarded the contract for the installation of cold storage machinery in the plant of J. & A. McElrdy here at a contract price of about $8,000.

Winnipeg, Man.—Mr. Frank Peters, of this city, is interested in a company recently formed, called the Manitoba Roman Stone Co., which proposes establishing a plant for the manufacture of "Roman Stone," an artificial product.

Winnipeg, Man.—The Van Bergh Electrical & Mfg. Co. has been incorporated with a capital of $250,000, with head offices in Winnipeg, for the purpose of manufacturing all kinds of electrical instruments. The company intends erecting a factory for this purpose. Hugh John Macdonald, K.C., Hugh Polson, Wallace Macmillan, real estate agent, Wm. D. Pettigrew, financial agent, all of Winnipeg.

Brandon, Man.—The Winnipeg Safe Works, of Winnipeg, Man., Mr. F. H. Robinson, manager, has written to the Brandon Council asking what inducements would be offered them to establish a safe works in Brandon. The company contemplates the manufacture of safes on a large scale.

Saskatoon, Sask.—The Saskatoon Milling & Elevator Co. is considering plans for the building of several mills to be erected along the lines of the new railways. Nothing definite has been decided upon, but in all probability the project will be carried through in the near future.

East Calgary, Alta.—Architects Dowley & Michie have prepared plans for the erection and completion of a packing plant for the Independent Meat Co., Calgary. The proposed structure will have stone foundation, brick and stone superstructure, composition roof, wood interior finish, steam heating, electric lighting, modern plumbing.

Saskatoon, Sask.—The Wilson-Leslie Co., Ltd., of this city, has been incorporated with a capital of $500,000 and they propose erecting a 200 barrel flour mill and an elevator. They anticipate that the elevator will be ready next spring. Mayor Wilson, of Saskatoon, is president of the company.

Calgary, Alta.—Architects Dowler & Michie, Calgary, Alta., are in the market for sundry machinery, etc., in connection with the plant of the Independent Meat Packing Co., Calgary, to wit: One 30 h.p. horizontal boiler, one 30 h.p. engine, three 15 K.W. motors, one 25 K.W. dynamo, sausage machinery, ice machinery, section tracks for slaughter house, lighting, bone mill, hoisting machinery. Kahn system of trussed concrete steel, made by the Trussed Concrete Steel Co., 23 Jordan St., Toronto; belting, shafting, pulleys and hangers, freight elevator, steel tank 3 ft. 6 in. square. The architects will receive prices at any time, but the building will not be ready until about May 1st for the machinery.

Regina, Sask.—The premises of the Scotby Woollen Mills Co. were recently destroyed by fire. Mr. C. C. Julien, the manager, states the losses about $45,000. The company proposes rebuilding.

Saskatoon, Sask.—The Keltic Brick Co. has been organized in this city with a capital of $50,000. The company has purchased 40 acres of clay land about three miles from here and as soon as spring opens up propose erecting and operating a pressed brick plant on this land.

Regina, Sask.—Mr. H. E. Wilkinson, of Regina, has bought out the plant of the Composite Brick Co., Ltd., of this city, which he intends to enlarge and improve early in the spring.

Vancouver, B. C.—W. E. Simpson, banker, of Iowa Falls, Iowa, has formed a company called the North American Timber Co., with offices in Vancouver, for the purpose of erecting a saw mill on Kennedy Lake on the west coast of Vancouver Island early this coming summer. Mr. Simpson is at present in Victoria, B. C.

Vancouver, B. C.—The British Canadian Wood Pulp & Paper Co., 314 Cordova St., this city, has engaged Mr. Chas. B. Price, of Appleton, Wisconsin, a pulp mill architect and mechanical expert, and Colonel T. H. Tracy, formerly city engineer of Vancouver, to prepare plans and superintend the erection of a pulp mill, paper mill, and a 5,000 h.p. electric power plant at the site of their present plant.

Kamloops, B.C.—W. A. McHardy, of Vancouver, B. C., acting for a syndicate of American capitalists, states that his company intend erecting a railway from Kamloops to Salmon River, where it intends erecting a factory for the manufacture of gypsum into plaster paris and other bi-products. He estimates the cost of this plant will be $100,000. Work will commence early in the year.

Cranbrook, B. C.—The Perry Creek Hydraulic Mine near Cranbrook, B. C., has been purchased by the Illinois Steel Co., of Chicago, for $900,000, and it is stated this company will spend a large amount in developing this mine to its full capacity.

Hoctall River, B. C.—J. J. Sloan, superintendent of the Northwest Commercial Co.'s stores, now residing in Vancouver, associated with Mr. K. B. Birkeland, of Minneapolis, Minn., have formed a company which proposes erecting a lumber mill at Hoctall River, near Skeena, B. C., to cost about $40,000. They have already purchased the timber limits in this district.

Victoria, B. C.—The Victoria Creamery Association will shortly call for tenders for the erection of one-storey brick and stone structure, 60 x 25 ft., to be equipped with first-class machinery necessary in the manufacture of cream, butter and cheese.

Grand Forks, B.C.—J. P. Graves, general manager of the Granby Consolidated Smelting Co., states that the company's smelters will be greatly enlarged and improved in the near future.

New Westminster, B. C.—Mr. Cassady, of this city, has been awarded the contract for the erection of proposed additions to the plant of the B. C. Packers, Limited, in this city, at a price of $40,000.

Victoria, B. C.—C. R. Betts and C. T. Mescher, at present registered at the Victoria Hotel here, state they will erect a sawmill on Salt Spring Island, near this place, early next year. The capacity of the mill will be about 25,000 ft. a day.

Hull, P.Q.—The International Portland Cement Co., of Hull, P. Q., has awarded the contract for the steel work of its proposed new buildings to be erected here to the Phoenix Bridge Co., of Phoenixville, Pa., at a price of $250,000.

Montreal, P. Q.—The Jenkins Brass Mfg. Co. have been incorporated with a capital of $350,000, with head office in Montreal. It is understood the company will erect a large brass foundry in the near future.

Montreal, P. Q.—The paint and varnish factory of P. D. Dodds & Co., McGill St., Montreal, was recently destroyed by fire, entailing a loss of over $50,000. Fully insured.

Longue Point, P. Q.—The Metal Shingle & Siding Co., of Preston, Ont., has secured the contract for the metal roofing and siding for the works of the Vulcan Portland Cement Co. at Longue Point, near Montreal.

Jaquet River Bridge, N.B.—The large saw mill almost completed at Jaquet River Bridge, N. B., was completely destroyed by fire, entailing a loss of $30,000. The structure will be rebuilt and new machinery installed as soon as possible by the owners, the Lawson Lumber Co.

Sydney, C. B.—Alderman Young, chairman of the Property Committee here, has received an offer from the Glendyer Woollen Mills, of Glendyer, C. B., stating that if the council of Sydney will grant it certain concessions it will erect and equip a woollen mill for the manufacture of hosiery and blankets, to cost $50,000. The council is favorably disposed towards this proposition.

Montreal, P. Q.—The factory of Lockerby & McComb, cor. of Ottawa and Ann Sts., manufacturers of building paper, tarred felt paper and roofers' supplies, was recently damaged by fire to the extent of $50,000.

Charlo, N. B.—The sawmill of Wm. Currie, at Charlo, near St. John, N.B., was recently destroyed by fire, causing a loss of about $25,000. Insurance, $14,000. Mr. Currie, M.L.A., will rebuild at once.

Sydney, C. B.—The Sydney Cement Co., of Sydney, C. B., propose installing machinery and erecting additional buildings, and will manufacture slag brick from refuse obtained from steel. A number of lime kilns will also be built. The company's plans are not fully developed as yet, but the above improvements are contemplated.

East Bay, N. S.—The Dominion Iron & Steel Co., of Halifax, N. S., propose erecting a sawmill at East Bay, N. S. About 300 acres of timber land has recently been acquired by the company.

Gas Plants, Elevators and Warehouses

Toronto, Ont.—The storage warehouse of M. Rawlinson & Co., Limited, 11 St. Joseph Street, Toronto, was recently damaged by fire to the extent of about $25,000. Insurance on building, $26,000. Total value of building, $60,000. The building will be rebuilt at once.

Toronto, Ont.—The warehouse of George E. Hees, Son & Co., Bay St., Toronto, was damaged by fire to the extent of $5,000. Fully covered by insurance. The damage will be repaired at once.

Toronto, Ont.—The warehouse occupied by the Dominion School Supply Co., Temperance St., Toronto, owned by C. W. Bengough, Toronto was damaged by fire to the extent of $2,000. Loss is covered by insurance.

Ottawa, Ont.—Robertson Bros., of this city, propose erecting a large warehouse, 99 x 33 feet, on Queen St., early this spring.

London, Ont.—The Hobbs Hardware Co., of this city, T. S. Hobbs, president, Mr. Mathews, secretary, both of London, intend erecting a large warehouse and manufacturing plant here.

Fort William, Ont.—Wm. Whyte, second vice-president of the Canadian Pacific Railway Co., with head offices in Montreal, states that the company proposes erecting a large grain elevator in connection with elevator "D" at Fort William. The elevator will be capable of handling at least 1,000 grain cars per day. W. S. Paynter, architect for company, will prepare the plans.

Aylmer, Ont.—The loss sustained by J. Hambridge, owner of the cold storage warehouse which was damaged by fire recently, is $10,000. The structure will likely be rebuilt. The wareroom of Newell & House were also burned at the time.

Montreal, P.Q.—The Gasometer at the eastern station of the Montreal Light, Heat & Power Co., here, with a capacity of 500,000 cubic feet of gas, was blown to atoms by the explosion of the gas contained therein. The damages is placed at $30,000. It will be replaced at once.

Montreal, P.Q.—The building occupied by the C. P. R. as a storage warehouse and owned by H. Markland Molson, of this city, was totally destroyed by fire entailing a loss of $30,000.

Montreal, P.Q.—E. W. Jacobs & Co., of this city, suffered a loss of about $10,000 to their warehouse here by fire recently. The loss is fully covered by insurance.

Quebec, P.Q.—The Dominion Government has finally decided to expend the sum of $90,000 in the erection of a gas plant at the foot of Yonvalle St., for the exclusive use of the Dominion Arsenal here. Plans are now being prepared and as soon as they are approved by the Government tenders will be invited.

Calgary, Alta.—The American-Abel Engine & Thresher Co., of Toronto, Ont., purpose building a warehouse here in the near future.

Glace Bay, N.S.—The Dominion Coal Co.'s store and warehouse at Glace Bay, N.S., was recently destroyed by fire entailing a loss of $25,000. The structure will be rebuilt at once.

Humbolt, Sask.—The Canadian Northern Railway Co.'s warehouse here, used for storage of supplies, was recently destroyed by fire entailing a loss of $5,000. It will be rebuilt.

Saskatoon, Sask.—The Imperial Oil Co., Winnipeg, is contemplating the erection of a warehouse here.

Saskatoon, Sask.—The Sawyer-Massey Co., of Hamilton, Ont., will erect a warehouse here to cost about $30,000.

Saskatoon, Sask.—The Saskatoon Milling & Elevator Co., of Saskatoon, Sask., are planning the erection of three elevators early this spring; one at Delisle, one at Zealands, and a third at Lanigan, Sask.

Saskatoon, Sask.—The furniture warehouse of R. J. Armstrong & Co., here, was recently burned to the ground, involving a heavy loss to both building and contents.

Lethbridge, Alta.—The Massey-Harris Co., of Toronto, it is understood, have had plans prepared and will commence the erection of a large warehouse here immediately.

Lethbridge, Alta.—The International Harvester Co., proposes erecting a large warehouse here immediately.

Souris, Man.—W. G. Lee's elevator here was recently burned to the ground. Loss, $9,000. Insurance, $5,000. It will probably be rebuilt.

Vancouver, B.C.—Architects Dalton & Eveleigh, Davis Chambers, Vancouver, B.C., have prepared plans for a brick warehouse for J. Leckie & Co., of this place. The building will be 66 x 140 feet, six storeys high, and cost $60,000. It will be used as an office and warehouse building.

Michel, B.C.—The Crow's Nest Pass Coal Co., propose erecting an 800 ft. long coal tipple at Michel, B.C., early next spring, at a cost of $200,000. G. S. Lindsey is president of the company with head offices in Toronto, Ont.

Prince Rupert, B.C.—The Canadian Fish & Cold Storage Co., of Prince Rupert, B.C., composed of the following directors: President, Andrew Kelly, Winnipeg, president Western Canada Flour Mills Co.; vice-president, Jas. Carruthers, Montreal, director of Dominion Bank and grain exporter; J. W. Stewart, of Foley Bros., Larsen & Co., Winnipeg, railway contractors; director and general manager, Mr. Greer Starratt, Vancouver, at present manager of the New England Fish Co., Vancouver, B.C., will erect a cold storage warehouse and refrigerating plant with a capacity of 6,000,000 pounds of fish.

Electrical Construction

Toronto, Ont.—A by-law to authorize the expenditure of nearly $3,000,000 to instal a distributing plant for hydro-electric power was passed recently by the ratepayers of Toronto.

Kenora, Ont.—The Council of this place has applied to the Dominion Government for power to raise $75,000 for the completion of their hydro-electric power plant here.

Gananoque, Ont.—The ratepayers of Gananoque, Ont., have passed a by-law authorizing the expenditure of $10,000 for electric light extensions here.

Napanee, Ont.—The ratepayers of this place have passed a by-law authorizing the expenditure of $10,000 for additions to the present electric light plant here.

Goderich, Ont.—The ratepayers of this place have passed a by-law authorizing the guaranteeing by the town of $150,000 in bonds of the proposed Ontario and West Shore Electric Ry. Co. The company will at once proceed with their plans.

Tilsonburg, Ont.—The town clerk, on behalf of the Council of the town of Tilsonburg, is now ready to receive estimates on a suitable electric light generating and distributing plant for the town of Tilsonburg, Ont.

Brussels, Ont.—Mr. Palmer, owner of the electric light plant of Brussels, Ont., states that he will make extensive improvements to the plant and transmission lines at once.

Prince Albert, Sask.—The ratepayers of this place have passed a by-law authorizing the expenditure of $50,000 for the extension of the electric light plant and the water works system and the purchase of additional fire apparatus.

Montreal, P.Q.—Mr. S. Carsley, president of the Central Light, Heat and Power Co., of Montreal, states that this company intend in the very near future to install a large uptown plant at the corner of St. Catherine and University Streets.

Montreal, P.Q.—A report submitted by Prof. Durley, of McGill University, has been submitted to the Board of Governors which is considering the advisability of installing an independent electric lighting system for all the University buildings.

Halifax, N.S.—Fred. Gelinas, secretary of Public Works Department, Ottawa, received tenders up to January 13th for the supply and installation of an electric light plant at Lawlor's Island Quarantine Station at Halifax, N.S., according to plans and specifications with the Department, Ottawa, and C. E. W. Dodswell, resident engineer, Halifax N.S.

Bridges and Wharves

Toronto, Ont.—J. J. Ward a member of the Board of Control of this city, states that he will propose a by-law to be submitted to the ratepayers of the city next summer, to authorize the expenditure of $1,000,000 for the building of a sea wall extending from Bathurst St. to the Humber River, and to provide for the construction of a boulevard and driveway along this stretch.

Toronto, Ont.—Fred. Gelinas, secretary of Public Works Department, Ottawa, Ont., will receive tenders until March 2, 1908, for the construction of a new western entrance to the harbor of the City of Toronto, according to plans with J. G. Sing, resident engineer, Confederation Life Building, Toronto; H. J. Lamb, resident engineer, London, Ont.; J. L. Michaud, resident engineer, Merchants Bank Building, Montreal, P.Q., and with the Department, Ottawa. Tenders must be accompanied by a cheque for $48,000.

Toronto, Ont.—City Engineer C. H. Rust has recommended to the city council of Toronto the construction of subways at Avenue Road and North Toronto Yonge St. crossings. The council is considering the matter.

St. Catharines, Ont.—The Board of Trade here have appointed a committee composed of W. B. Burgoyne, President Notman, Alex. McLaren, George Burch, A. A. Briggs, Major Burleigh, Col. Carlisle and C. E. Wendall, of this place, to consider the matter and procure an estimate of cost of a high level bridge across the Welland Canal to afford better communication with Hamilton.

Guelph, Ont.—The County Council and the Board of Works of Guelph are considering the advisability of erecting a new bridge to replace the present "Victoria Bridge" at this place, which has become unsafe.

Blyth, Ont.—James Campbell, clerk of the Township of Hallett, at Londesboro, Ont., will receive tenders for the construction of a concrete span of 24 feet and concrete abutments for two steel bridges, according to plans with the above. Bids close Feb. 21.

Brantford, Ont.—The Council of the Township of Brant, with offices in Brantford, has called for tenders for the erection of a 70-ft. bridge over Fairchild's Creek, to have concrete abutments and be constructed of steel.

Chatham, Ont.—The breakwater in front of Tecumseh Park here, made of concrete, has cracked and is crumbling away. Mr. Lamb, Government engineer, London, Ont., states that the damage will be repaired at once.

London, Ont.—James Campbell, clerk of the Council of the Township of Hallett, will receive at Londesboro, Ont., tenders for the construction of two steel bridges of 82 feet and 24 feet span, 14 feet roadway, according to plans on file. Tenders will be received until Feb. 21, 1908.

Owen Sound, Ont.—W. P. Telford, M.P., is promoting a company for the purpose of building a dry dock here. The Dominion Government proposes to guarantee 3 per cent. on the investment and in all probability active operations will begin next summer.

Wingham, Ont.—A. Hill & Co., Mitchell, Ont., were awarded the contract for the erection of the superstructure of the proposed bridge at Wingham, at a contract price of $6,985.

Hamilton, Ont.—Mr. Barrow, engineer of the City of Hamilton, has recommended the expenditure of $2,000 in the construction of a cement retaining wall at Jolley's Cut. The Council has decided to appropriate the necessary amount.

Cainsville, Ont.—The management of the Toronto, Hamilton & Buffalo Railway Co., with offices in Hamilton, proposes erecting a steel bridge with concrete abutments over their tracks, thus doing away with the level crossing.

Charlevoix, P.Q.—M. Napoleon Trudel, of St. Irene, P.Q., has been awarded the contract for the construction of a new head block on the wharf at Charlevoix, P.Q., at a cost of $16,900 for the Public Works Department, Ottawa, Ont.

St. John, N.B.—Hon. Wm. Pugsley, Minister of Public Works, Ottawa, announces that his department will build the extension from the end of the present wharf now being built at St. John, to the harbor line, and extending west along this line at a cost of from $250,000 to $8000,000. Tenders will be called for shortly.

St. John, N.B.—The wharves which the Dominion Government Public Works Department proposes building here, and for which they have called tenders, will be constructed of concrete on heavy timber crib work.

White Point, Scotch Cove, N.S.—Fred. Gelinas, secretary Public Works Department, Ottawa, Ont., have received tenders for the construction of a breakwater at White Point, Scotch Cove, Victoria County, N.S., according to plans with the department, and with C. E. W. Dodwell, resident engineer, Halifax.

North Vancouver, B.C.—A. Wallace, shipbuilder, Vancouver, proposes expending $250,000 in the erection of large marine ways at this place for the dry-docking of vessels, at a cost of $250,000.

Delta, B. C.—The Provincial Government has been petitioned to expend about $15,000 in the construction of a bridge at this place. Mr. Patterson, Reeve, Delta, B. C., can give further information.

Prince Albert, Sask.—The plans for the proposed C. N. Ry. bridge across the North Saskatchewan River at Prince Albert, are on file with the Railway Department at Ottawa and as soon as they have been approved the work will be commenced.

Brandon, Man.—Harry Brown, clerk of the City of Brandon, Man., will receive tenders until Feb. 20 for the erection of a bridge over the Assiniboine River at this place, as follows: (a) Tender for a reinforced concrete bridge; (b) Steel bridge with approaches. Plans, specifications, etc., on file in office of above party.

Brandon, Man.—The old First St. bridge here is being removed to a point about thirty feet up the river. Mr. Shillinglaw, chief engineer of the city, is preparing plans for the new concrete structure to cost about $60,000, as soon as these are completed tenders will be invited.

Winnipeg, Man.—The Dominion Bridge Works Co., of Montreal, have been awarded the contract for the proposed Redwood Bridge here.

Winnipeg, Man.—Kelly & Sons, of Kenora, Ont., have been awarded the contract for the building of piers to support the Redwood bridge here.

Winnipeg, Man.—The Canadian Northern Railway intend erecting a railway bridge over the Red River here and plans have been prepared for same. Negotiations are now in progress between the Canadian Northern Railway, the City of Winnipeg, the City of St. Boniface, and the Winnipeg Street Railway Co. to build a joint railway, electric car, traffic and passenger bridge.

Municipal Improvements

Toronto, Ont.—The chairman of the Board of Control of this city, will receive tenders until Feb. 18 for the laying of asphalt, virtified block and bitulithic pavements on various streets, according to specifications and particulars with the city engineer, of Toronto, C. H. Rust.

Toronto, Ont.—C. H. Rust, city engineer of Toronto, Ont., has recommended to council the construction of concrete sidewalks on various streets in this city, aggregating $28,160.

Hamilton, Ont.—S. H. Kent, clerk of the City of Hamilton, Ont., will receive until Feb. 18 tenders for the supplying of portland cement, paving block, brick, gravel, lumber; also castings for the Board of Works and the Sewer Department, according to specifications with the city engineer. Tenders must be separate for each material.

Brampton, Ont.—The committee on roads and bridges at Brampton, Ont., will receive tenders until February 29 for the supply of gravel and stone, to wit, 500 cubic yards of gravel and 100 toise of stone, to be delivered by May 1 next.

Kingston, Ont.—The City Engineering Department is preparing plans and specifications for the laying of about five miles of concrete sidewalks here this coming spring and summer.

Notre Dame de Grace, P.Q.—The council of this town have passed a by-law authorizing the expenditure of $275,000 in civic improvements, including macadamizing the roadways, and laying cement sidewalks.

Winnipeg, Man.—The Government of Manitoba has purchased the plant and business of the Bell Telephone Co., in the Province of Manitoba at a cost of $3,500,000. The Government expects to enlarge the system considerably. The provinces of Alberta and Saskatchewan will shortly follow the step taken by the Manitoba Government.

Winnipeg, Man.—The council of this city propose expending the sum of $59,654 in the laying of asphalt pavements and $35,666 in the construction of sewers in certain streets.

Water Works and Sewers

Toronto, Ont.—The chairman of the Board of Control of the City of Toronto, will receive tenders until February 18 for the supplying of 16-inch and 20-inch cast iron pipe and 16-inch and 20-inch valves. Specifications and forms of tender with the engineer, C. H. Rust.

Montreal, P.Q.—Mr. Janin, superintendent of the Waterworks Department, Montreal, has completed plans and specifications for the construction and supply of a twelve million gallon pump to be delivered in eight months to the City of Montreal.

Winnipeg, Man.—The Canadian Pacific Railway Co., have entered into an agreement with the City of Winnipeg, whereby the company will pay for the sewer connections to its proposed car shops here, at a cost of $24,000. Work on the sewers will commence immediately.

Victoria, B.C.—A by-law will be submitted to the ratepayers of this city very shortly authorizing the expenditure of $619,000 for the purpose of enlarging the waterworks pumping capacity and the laying of additional water mains.

Victoria, B. C.—The Council of the City of Victoria, B.C., are having a survey made, preparatory to erecting a large water reservoir on what is known as Smith's Hill, near this city. This is part of an extensive scheme of waterworks improvement to be undertaken by the City of Victoria.

Vancouver, B.C.—The Canadian Fairbanks Co., of this city, have been awarded the contract for the supplying of brass goods and galvanized iron pipe in connection with the proposed Seymour Creek System.

Hamilton, Ont.—S. H. Kent, clerk of the Corporation of the City of Hamilton, Ont., will receive tenders until Feb. 14 for supplying the corporation with sewer pipe, lime, sulphate of alumina and sewer brick required during the year 1908, according to specifications with the city engineer. Tenders must be separate for each material.

Hamilton, Ont.—The Beach waterworks, for which new tenders were recently called, the following contracts have been let: Motor, the Canadian Buffalo Machine Co., of Montreal; tank tower wells to the John Inglis Co. of Toronto, and the work of laying the mains and service pipe to Mercer & Lovejoy, of this city. The piping was let to Garlshore Thompson Pipe Co. Aggregate price of contracts is $14,000.

Peterboro', Ont.—L. K. Jones, secretary Department of Railways and Canals, Ottawa, will receive tenders until March 12 for the works connected with the construction of Section 3, Ontario Rice Lake Division, of the Trent Canal. Plans and specifications and forms of tender with the department on and after Feb. 1, 1908, and at the office of the Superintending Engineer, Trent Canal, Peterboro.

Sarnia, Ont.—The ratepayers of this place have passed a by-law authorizing the expenditure of $6,000 for additions to the waterworks system of this place.

Stratford, Ont.—The Board of Works of this place will recommend to the council the expenditure of $30,000 for the purpose of installating a suitable drainage system for Romeo ward here. The matter will come up at the next meeting of the council.

Beamsville, Ont.—The ratepayers of this place have passed a by-law authorizing the expenditure of $5,000 for sundry alterations and additions to the waterworks system here.

Port Arthur, Ont.—The Council of the City of Port Arthur is considering the expenditure of $40,000 for the purpose of laying an auxillary force pipe from Current River Power House to the city mains.

Guelph, Ont.—The ratepayers of this city have passed a by-law authorizing the expenditure of $125,000 for the purpose of additions and extensions to the waterworks system at this place.

Port Stanley, Ont.—The City Council is considering the advisability of installing a waterworks system at this place.

Aylmer, Ont.—James Me, of this place, has been awarded the contract for the laying of the water conduit from Baker's Wells into this town at a contract price of $10,650. Work will be commenced at once.

Aylmer, Ont.—The ratepayers of this town have passed a by-law authorizing the purchase from Messrs. Poupore & Fraser, here, of the waterworks system for $50,000 for proposed extensions thereto.

Markdale, Ont.—The Council of Markdale, Ont., is considering installing an up-to-date waterworks system for the needs of the town. K. L. Aitken, E. E., 1003 Traders Bank Building, Toronto, has prepared plans and specifications for the improvement at an estimated cost of $19,500.

Berlin, Ont.—The ratepayers of this place have passed a by-law authorizing the expenditure of $38,000 for a waterworks system for this town. H. J. Bowman, engineer, has been appointed to take charge of the work.

Railway Construction

Toronto, Ont.—The Grand Trunk Railway has decided to have galleries built around their present baggage room at this place to accommodate light baggage. This change will probably mean the expenditure of at least $3,000. Address Mr. Quick, baggage agent.

Montreal, P.Q.—The contract awarded to Foley Bros. & Larson, of Winnipeg, Man., and St. Paul, Minnesota, for the construction of 126 miles of the G. T. P. Ry., is for that part of the road extending from six miles east of Edmonton to Wolf Creek, 120 miles west of that city. The cost is between $40,000 and $50,000 per mile, a total of between $5,000,000 and $6,000,000.

Montreal, P.Q.—Frank Morse, General Manager of the Grand Trunk Railway, states that a branch will be built from the main line of the G. T. P. into Montreal. He also states that tenders would be called for a section of the road east of Prince Rupert to be about three miles and run through Hazelton, B.C.

Hamilton, Ont.—The Dominion Power & Transmission Co., of this city, have had plans prepared by Architect Chas. Mills, Bank of Hamilton Building, Hamilton, for new freight sheds, car shops and car sheds, to be used in connection with the terminal station lately completed in Hamilton.

Ottawa, Ont.—The National Transcontinental Railway Commissioners, Ottawa, Ont., have issued a call for tenders to be submitted by March 10 for the construction of 335 miles of railway. Full particulars may be had on application to the commissioners.

Ottawa, Ont.—The McFarlane & Douglas Co., sheet metal workers, of this place, have been awarded the contract for sheathing the new elevator of the Grand Trunk at Tiffin, Ont., at a price of $20,000.

Hamilton, Ont.—The car barns of the Hamilton Street Railway Co., corner of Locke and Kerkimer streets, were recently destroyed by fire, together with three cars. The loss is estimated at $10,000. These barns will be rebuilt at once.

Barrie, Ont.—An agreement has been reached between the town of Barrie, Ont., and the Grand Trunk Railway Co. by which the Grand Trunk Railway proposes to spend at least $150,000 for shops, etc., at this place before December 1909, in consideration of a fixed assessment.

Port Arthur, Ont.—The Canadian Pacific Railway Co. will erect large additions to their freight sheds at Port Arthur, Ont.

Lachine, P.Q.—The Dominion Car & Foundry Co., of Lachine, P.Q., have been awarded the contract for the construction of 400 wooden cars for the Canadian Pacific Railway Co. The Dominion Car & Foundry Co. have placed the order for the steel work for these cars with the Nova Scotia Steel Co., Halifax, N.S.

Winnipeg, Man.—C. A. Young, chairman of the Transcontinental Railway Commission, Montreal, states that as soon as frost is out of the ground, work on the proposed large car shops at St. Boniface, near Winnipeg, Man., will be commenced for the Grand Trunk Pacific Railway.

Winnipeg, Man.—Wm. Mackenzie, president of the Canadian Northern Railway Co., states that he will be ready to call for tenders for the erecting of a union depot and terminal station at this place before April 1. Plans are now being prepared, and as soon as weather permits the work of construction will be started.

Springfield, Man.—The Grand Trunk Railway Co. have received tenders for a roundhouse, engine house, machine and repair shops to be erected at Springfield, near Winnipeg, to cost in the neighborhood of $1,000,000.

Calgary, Alta.—Alexander & Budd, of this city, have made a proposal to the city on behalf of a Mr. J. Balfour, of London, England, who wishes to secure a franchise for fifteen years, with a view of constructing and operating a street railway system in this city. The council is considering the proposal.

Red Deer, Alta.— The Canadian Pacific Railway Co. propose spending $130,000 in making this place a divisional point. They will erect roundhouses, repair shops, etc.

Edmonton, Alta—The council of this place have passed a by-law authorizing the expenditure of $144,000 in extensions to the street railway system here. Further information can be obtained from Commissioner Kinnaird, Edmonton, Alta.

Grand Forks, B.C.—The roundhouse of the Great Northern Railway was recently destroyed by fire. Loss, $15,000. The structure will be rebuilt at once.

Fernie, B.C.—The Canadian Pacific Railway Co., propose erecting large additional freight sheds, to cost $50,000, here early this spring.

Prince Rupert, B.C.—The Grand Trunk Railway have decided to call for tenders for the construction of a section of one hundred miles from Prince Rupert, B.C., eastward through the coast range. Experts figure a great part of this section will cost $100,000 per mile, involving extensive rock cutting and side-hill work.

Edmonton, Alta.—The council of the City of Edmonton will apply to the next legislature for authority to build and operate a street railway in that city, and within a radius of eighty miles thereof.

Public Buildings

Vancouver, B.C.—F. C. Wade, K.C., Professor Odlum, of the Art, Historical and Scientific Society, of Vancouver, propose soliciting subscriptions for the erection of a large museum and a situable monument in memory of the early navigators.

Victoria, B.C.—Mr. Smart, secretary of the Agricultural Association of Vancouver and Victoria; T. Patterson and Alderman Henderson and Mr. Smart, compose a committee formed to call for plans and competitive tenders preparatory to the erection of the proposed grand stand and exhibition buildings to take the place of the onces recently destroyed by fire.

Penetanguishene, Ont.—The Council of this town have accepted the offer of $10,000 for a library from Andrew Carnegie. It is expected work on the structure will be begun early next spring.

Victoria, B.C.—The Exhibition Building in the Exhibition grounds at Victoria, B.C., valued at $15,000, was recently destroyed by fire. It will likely be replaced with a more substantial building.

Elora, Ont.—Andrew Carnegie has offered the town of Elora $8,000, providing that town raise an equal amount. The Council of this place are considering the offer.

North Bay, Ont.—S. T. Cherry & Co., of this city, have been awarded the contract for installing the heating system in the proposed post office building.

Portage la Prairie, Man.—The Department of Public Works, Ottawa, will submit to the House supplementary estimates which will include a grant for an armory at Portage la Prairie, which the Department of Public Works proposes building early next year.

Alexandria, Ont.—The county of Glengarry propose separating from a union with the counties of Stormont and Dundas, Ont., and propose building a court house and jail to cost $25,000 in Alexandria, Ont., making this town the county seat.

Simcoe, Ont.—Schultz Bros., of Brantford, Ont., have been awarded the contract for the erection of a public building at Simcoe, Ont., for the Dominion Government, at a contract price of $25,400. Work to be completed in twenty months.

Victoria, B.C.—At a meeting of British Columbia Agricultural Association held recently a committee composed of Mayor Morley, J. Smart, J. Sangster and Dr. Tolmie were instructed to have plans prepared and estimates secured for the rebuilding of the grand stand and other buildings recently destroyed by fire. At least $50,000 will be spent on this work. Definite action will be taken by March 1st.

Toronto, Ont.—Brown & Love, Price Street, Toronto, have been awarded the contract for the erection of the proposed astronomical observatory at the corner of Devonshire Road and Bloor Street, Toronto, at a price of $90,000.

New Westminster, B.C.—The Government of the Province of British Columbia, through the Public Works Department, have received tenders for the completion of the superstructure of the telephone building at New Westminster.

Selkirk, Man.—Andrew Carnegie has donated $10,000 for the erection of a library to be erected here.

Welland, Ont.—The Department of Public Works has purchased a site in this town and will shortly call for tenders for the erection of a post office and customs house. Fred. Gelinas is Secretary of Public Works Department, Ottawa.

Toronto, Ont.—The Ontario Government, in the next few months, will in all probability erect a fire-proof building for the accommodation of the archives and library department. The Public Works Department will give further particulars.

Brandon, Man.—Mr. Shillinglaw, engineer of the city of Brandon, is preparing plans for alterations and additions to the city hall of this place. As soon as the plans are completed tenders will be called for.

Meaford, Ont.—The ratepayers of this place have passed a by-law authorizing the expenditure of $25,000 for the purpose of erecting a town hall at this place.

Calgary, Alta.—Architects Dowler & Michie, Room No. 14, Alexander Corner, Calgary, Alta., have prepared plans for the erection of a Rescue Home to cost $7,000. Owner, Geo. H. Woods, North-West Real Estate, Calgary. Building to be constructed of concrete blocks, concrete foundation, composition roof, hot air heating, electric lighting, modern plumbing.

Cumberland, Ont.—E. Hunt, Cumberland, Ont., has been awarded the contract for the erection of the proposed post office for this place, to be erected at a cost of $25,000.

Halifax, N.S.—The Association for the Improving of the Condition of the Poor, C. C. Blacadar, 26 Argyle Street, president, has purchased a site for $2,500, on which they propose erecting a brick building suitable for offices and a soup kitchen, to be built at a cost of $5,000.

Brandon, Man.—The Council of this place have finally purchased a site for a court house to cost $10,000. They also finally passed a by-law authorizing the borrowing of $125,000 for the erection and completion of the proposed building.

Arcola, Sask.—Architects Story & Von Egmond, Box 1344, Regina, Sask., have prepared plans for a court house at Arcola, Sask., to be erected for the Government of the Province of Saskatchewan. It will have concrete foundation, brick superstructure, metal roof, steam heating, electric lighting, oak interior finish, cut stone fire escapes, vaults, sheet metal work, plate glass. Tenders will be called for shortly. Estimated cost $30,000.

Lethbridge, Alta.—Hon. W. H. Cushing, Minister of Public Works of the Province of Alberta, states that the department will shortly call for tenders for the erection of the jail and court house at this place.

Toronto, Ont.—The Parks and Garden Committee of the City Council of Toronto have ordered the City Architect to prepare plans and estimates for a conservatory the committee propose erecting for the housing of plants.

Raleigh, Ont.—The councillors of the township of Raleigh are contemplating the erection of a township hall near Charing Cross, Ont.

Guelph, Ont.—Mr. Lindsay, engineer of this city, has prepared plans for a building to be erected in conjunction with the Winter Fair buildings here. It will be 300 ft. x 120 ft., with roof of iron and glass, and cost about $30,000. A committee composed of Mayor Newstead, Aldermen Kennedy, Nelson and Thorpe, will wait on the Government to urge the construction of this building.

Vancouver, B.C.—The City Electrician has been instructed by the council of the city of Vancouver to have the present city hall rewired, as the present electric system is defective.

Vancouver, B.C.—Architect E. E. Blackmore, of this city, has prepared plans for a two story bath-house, 100 ft. long, of 148 rooms, to be equipped with shower baths, sanitary conveniences, etc. The structure will contain a boat division on the ground floor and will be erected by the city at Kitsalano Beach here in the near future. Cost, $5,000.

Port Dover, Ont.—The ratepayers of this town have passed a by-law authorizing the granting of certain exemptions of Thomas A. Ivey & Sons, of Brantford, Ont., who propose erecting a large range of greenhouses here in the near future.

Ottawa, Ont.—The Dominion Government, now that the Royal Mint is in operation, intend erecting a refinery to cost about $15,000, for the refining of gold and silver ores.

Victoria, B.C.—Lancy Bros., of Victoria, B.C., were awarded the contract for the erection of the proposed immigration building at Victoria for the Dominion Government, at a cost of $63,140.

Guelph, Ont.—Contractors Shaw & Dunbar, of this city, have been awarded the contract for certain alterations in the city hall. This is part of a plan for the reconstruction of the entire interior, which will give more vault accommodation in the civic departments.

Victoria, B.C.—Plans are being prepared by the Public Works Department, Ottawa, and tenders will be shortly be called for, alterations and additions to the post office building in this city. Fred. Gelinas is Secretary of the Public Works Department, Ottawa, Ont.

Arcola, Sask.—The plans for the proposed court house to be erected here, which were prepared by the Public Works Department chief architect, have now been approved and tenders will be called for very shortly. Estimated cost of the building is about $50,000.

North Battleford, Sask.—Architects Sory & Von Egmond, Regina, have awarded the contract for the erection of the proposed court house at North Battleford, for the Saskatchewan Government, to the Saskatchewan Building and Construction Co., Regina. Specifications include: Concrete foundation, brick and stone superstructure, metal roof, steam heating, electric lighting, oak interior finish, terra cotta, metallic lath, structural iron, ornamental iron, fire escapes, vaults, sheet metal work plate glass. Contract price $45,000.

Parkhill, Ont.—Mr. A. Bunnell, civil engineer for the G. T. Ry. Co., has surveyed a site in this place which the Government will acquire for the purpose of erecting a post office building thereon, probably early next spring.

Toronto, Ont.—The Board of Control, Toronto, have accepted the following tenders for the erection of the proposed public bathhouse, for which tenders have recently been called, as follows: Carpenter work, Geo. Henry, $6,233; masonry, Page & Co., $16,392; plastering, Wm. Webster, $1,010; roofing, A. B. Ormsby & Co., $1,393; glass, tile work, Brooks-Sanford Hardware Co., $480; painting, Faircloth & Co., $570.

Toronto, Ont.—The James Morrison Brass Mfg. Co., West Adelaide Street, Toronto, have been awarded the contract for the rewiring of the Provincial Parliament Buildings in Toronto, the work to cost $10,000.

Ottawa, Ont.—Fred. Gelinas, Secretary Department Public Works, Ottawa, will receive tenders until March 2nd, 1908, for the construction of three steel tugs, according to plans and specifications with the Department, Ottawa.

Business Buildings

Toronto, Ont.—The Engineering Contracting Co., Temple Building, Toronto, general contractors for the Canadian Birkbeck Investment & Loan Co., building, have sub-let the following work: Woodwork and finish to the Elmira Interior Woodwork Co., Elmira, Ont.; elevators to the Otis Fenson Elevator Co., Hamilton-Toronto; electrical work, Lahey Electrical Co., Stair Building, Toronto.

Toronto, Ont.—Architect R. J. Edwardes, 28 Toronto St., Toronto, has prepared plans for a $25,000 mercantile and lodge building for the newly organized Parkdale Chapter of the Masonic Order in Parkdale. The structure will be brick, with cut stone trimmings, three storeys, composed of two stores and living apartments in rear; upper floors include smoking, lodge, lounge and kitchen rooms. Hardwood interior finish, modern plumbing, electric and gas lighting.

Toronto, Ont.—Architect Chas. F. Wagner, 28 Toronto St. Toronto, has prepared plans for a block of stores with dwellings above to be erected on Main St. East, Toronto, for W. J. Snell, Toronto. The building will be two storeys high, 30 x 50 feet, of brick construction with plate glass store fronts, metallic ceilings, sanitary plumbing and hot air heating. Cost $5,000.

Ottawa, Ont.— The Ottawa Improvement Commission propose spending the $100,000 derived from the sale of the Major Hill Park Property, toward the purpose of constructing a driveway and boulevard from Nepean Point to Rideau Hall.

Picton, Ont.—The skating rink here known as Boulter's Arena, owned by Mr. Boulter, of this place, was completely demolished by the roof collapsing. The estimated damage is $20,000. It is probable that the structure will be rebuilt.

London, Ont.—The council of the City of London is gathering data with a view of installing a civic asphalt plant here.

Guelph, Ont.—W. Johnston, of this city, has been awarded the contract for extensive alterations in the buildings of the firm of J. & A. McElardy.

Brantford, Ont.—The Misses King, of this city, have secured a permit for a brick addition to a building owned by them on Market St., to be of brick. The improvement will cost $4,000.

Chatham, Ont.—Architects J. L. Wilson, Son & Arnold, of this city, have prepared plans for the complete renovation and rebuilding of the Alexander Block here for J. B. Stringer & Co. The building was recently damaged by fire. Estimated cost of improvement $5,000.

Niagara Falls, Ont.—Abtonia Bova, of this city, proposes erecting a brick business block on Park St., to replace the structures recently destroyed by fire.

Alvinston, Ont.—The business block of Richard Code, of this place, was damaged by fire to the extent of $3,000. The building will be repaired at once.

Montreal, P.Q.—The Canadian Pacific Railway Co., with head offices in this city, have entered into an agreement with the city of Montreal, whereby it will spend $180,000 in rebuilding the cattle market at this place before May 1, 1908.

Montreal, P. Q.—The store of Arsene Lemay at the corner of St. Denis & Duluth Ave. was recently destroyed by fire, entailing a loss of $75,000.

Winnipeg, Man.—The Canadian Iron & Foundry Co., Fort William, have been awarded the contract for the supply of water pipe and specials for the City of Winnipeg. Contract price, $75,000.

Carberry, Man.—The Bazaar Building, owned by Thos. White, of this place, was recently destroyed by fire entailing a loss of $10,000, fully covered by insurance.

North Battleford, Sask.—In a fire at this place, the following buildings were destroyed: Branch of the Bank of British North America, offices of Earle & Keith, store belonging to Mr. Keith, the Customs Office and the office building of the Saskatchewan & Battle River Land & Development Co.

Vancouver, B.C.—Architects Parr & Fee, Vancouver, B.C., have completed plans for the erection of a six storey office building for Messrs. Martin & Robson, according to plans and specifications at the office of the architects.

Vancouver, B. C.—The National Construction Co., of this city, have been awarded the contract for the erection of a brick office building, six storeys high, at a cost of $100,000, for the J. Song Mong Lin Co. according to plans prepared by Architects Hooper & Watkins, corner Hastings & Homer Sts., Vancouver, B.C.

Vancouver, B. C.—Joo Gee Wing, of this city, has had plans prepared for a six storey store and office building to be erected on the corner of Hastings and Abbott St. here, at a cost of $125,000. The structure will be of reinforced concrete construction throughout.

Fernie, B.C.—Dobson & Willingham, of this city, propose erecting a four storey brick business block of fireproof construction on Victoria Ave., early next spring.

Banks

Streetsville, Ont.—The Metropolitan Bank, of Toronto, propose erecting a branch bank at this place to cost in the neighborhood of $6,500.

Montreal, P.Q.—The Montreal City and District Savings Bank will remodel and enlarge its present premises early next spring at a cost of $75,000.

Brantford, Ont.—The Bank of Hamilton will commence the erection of a branch bank building at this place as soon as the old building now occupying the site is torn down.

Brantford, Ont.—The Bank of Nova Scotia has taken out a permit and will commence alterations at once to the store of W. F. Cockshutt, in Brantford, which will be used as a branch of this institution.

Victoria, B.C.—The Royal Bank of Canada, with head offices in Toronto, Ont., have purchased a site on Government St., in Victoria, on which it proposes erecting a branch bank building. It is understood the lease on this property does not expire for eighteen months.

Clubs and Societies

Toronto, Ont.—Architects Chadwick & Beckett, 18 Toronto Street, Toronto, are preparing plans for the remodelling of the top floor of the Toronto Arcade, on Yonge Street, into club rooms for the Toronto Ladies' Club. Alterations will be made to provide two drawing-rooms, committee rooms, large and private dining rooms, sitting-room, hall and kitchen department.

Hamilton, Ont.—The Board of Management of the Y. M. C. A. here have appointed Architect Henry H. Hussey, of Chicago, Ill., to prepare plans and specifications for the building the Y. M. C. A. propose erecting here in the near future.

London, Ont.—The Board of the Y. M. C. A. here propose erecting a branch of their association near the railway yards here, for the accommodation of railway men.

Winnipeg, Man.—The Men's Own Association here, of which R. D. Richardson, Mr. Henshaw, secretary, and Mr. Fraser, all of this city, are the leading members, has asked the Board of Control of the city of Winnipeg for a grant towards their association. They have collected $10,000 which they propose applying towards the building of a suitable club house for the association.

Saskatoon, Sask.—The Building Committee of the Elks Club, of Saskatoon, Sask., propose erecting a large lodge building here early next spring.

Swift Current, Sask.—G. E. Hutchinson, of the firm of Hutchinson-McGlashen & Co., of Regina, Sask., architects, has been commissioned by the Masonic Order of this place to prepare plans for a Masonic Temple, 25x85 ft., to be built of pressed brick. The ground floor will contain stores and offices and the second floor will be used for lodge purposes.

Saskatoon, Sask.—Architect W. W. La Chance, Saskatoon, Sask., has prepared plans for a club house which the Commercial Club and the Saskatoon Club have amalgamated to build.

Saskatoon, Sask.—Architect W. W. La Chance, Saskatoon, Sask., has prepared plans for and will call for tenders very shortly for the erection of a Masonic Temple here, to cost $20,000.

Regina, Sask.—The Council of this city have donated $15,000 towards the building of an additional story on the present Y. M. C. A. building here. Work will commence early in spring.

Schreiber, Chapleau, Kenora, and Revelstoke, B.C.—Mr. Budge, secretary of the Y. M. C. A., Montreal, P.Q., stated that the Canadian Pacific Ry. is about to erect Y. M. C. A. buildings at Schreiber, Ont.; at Chapleau, Ont.; Kenora, Ont.; and Revelstoke, B.C. The cost of the building will range from $18,000 to $35,000.

Fernie, B.C.—Gladstone Local, No. 2314, of the Miners' Union, is having plans prepared for the erection of a union hall and lodge rooms here.

Prince Rupert, B.C.—Mr. Budge, Secretary of Y. M. C. A., Montreal, states that the Grand Trunk Pacific has decided to proceed at once with the erection of a Y. M. C. A. building at Prince Rupert, B.C.

New Westminster, B.C.—Amity Lodge, No. 27 I.O.O.F. of this place propose erecting a lodge building to cost at least $6,000.

Stellarton, N.B.—The society building owned by the Loyal Orange Lodge was burned to the ground, entailing a loss of $12,000. It is expected that it will be rebuilt in the near future.

Opera Houses, Rinks, etc.

Elora, Ont.—The skating and curling rink here, owned by Wm. Hall, of this place, was recently destroyed by fire. Loss estimated at $7,000, insurance about one-half. It will probably be rebuilt.

Peterboro, Ont.—The skating and curling rink here was recently destroyed by fire, entailing a loss of $12,000. Insurance, $4,500.

Ottawa, Ont.—Wm. Morris, a theatrical vaudeville booking agent, 1440 Broadway, New York City, is endeavoring to organize a company for the purpose of leasing or erecting a theatre in Ottawa.

Brantford, Ont.—Mr. Frank Johnson, of Johnson & Sons, lessees of the recently burned Stratford Opera House here, states that he has secured subscribers for $15,000 of the necessary $30,000 required to erect a new opera house here. The proposed structure will accommodate 1,600 people.

Winnipeg, Man.—W. B. Lawrence, manager of the Winnipeg Theatre, has filed plans with E. L. Rogers, building inspector, for converting the theatre in a ground-floor playhouse, which will increase the seating capacity by over 400 seats. A permit has been granted for this work, which will cost at least $25,000.

Winnipeg, Man.—Architect H. C. Stone, Winnipeg, Man., has been engaged by the Imperial Theatre Co., to prepare plans for a theatre to cost $95,000. Tenders will be called for about Feb. 15th. Work will be commenced early in March.

St. John, N.B.—C. W. Bennett, of London, Ont., who represents the Bennet Syndicate in Canada, has purchased two stores on Charlotte Street from John White here, which will be remodelled into a theatre.

Asylums and Hospitals

Toronto, Ont.—Dr. John Noble, 219 Carleton Street, Toronto, in company with a number of physicians not now attached to any city hospital, have formed an association for the purpose of building a hospital to cost $150,000. They propose collecting the necessary money by subscription if necessary.

Hamilton, Ont.—The Board of Hospital Governors of this city, Mr. Billings, chairman, have had Architect Chas. Mills, Bank of Hamilton Chambers, Hamilton, prepare plans for the addition of another story on the present isolation hospital building, at a cost of about $10,000.

Belleville, Ont.—Mr. Dolan, of this city, has been awarded the contract for the erection of an isolation hospital here and the construction of 350 ft. sewer connections thereto, at a contract price of $9,100. He will start work in the near future.

Orangeville, Ont.—The Council of this town are collecting funds for the purpose of erecting a hospital here.

London, Ont.—The plans of the proposed tuberculosis hospital to be erected here, which were prepared by J. Lewis Thomas, architect and engineer, London, Ont., have been approved by the Chief Health Officer of Ontario, and it is expected active operations will be begun on this structure in a short time.

London, Ont.—The Council of this city propose spending $75,000 for a site and the erection of an isolation hospital early next spring. The expenditure has been authorized.

Hamilton, Ont.—The Board of Health, according to Mr. Quinn, chairman, has purchased a site in the city of Hamilton, on Paradise Road, on which a small-pox hospital will be erected in the near future.

Ottawa, Ont.—The Ottawa Anti-Tuberculosis Association have secured a site of two and a half acres in Hintonburg, a suburb of Ottawa, on which it proposes erecting a tuberculosis hospital. Sir Louis Davies, of this city, is one of the prime movers in this project.

Kingston, Ont.—Architect H. P. Smith, Crown Bank Bldg., Kingston, Ont., is preparing plans for an orphanage and novitiate building for the Sisters of Charity, Kingston. It will have stone foundation, brick and stone superstructure, steam heating, cement work, cut stone, structural iron, passenger elevator.

Regina, Sask.—The ratepayers of this city have passed a by-law authorizing the expenditure of $100,000 for a city hospital.

Saskatoon, Sask.—Architect W. J. LaChance, Saskatoon, Sask., is ready for tenders for the proposed civic hospital to be erected here at a cost of $50,000.

Vernon, B.C.—Mr. Barnett, architect, Short's Point, B.C., has prepared plans for a hospital to be erected in Vernon, B.C., for the town of Vernon, at a cost of $35,000. The plans have been accepted and it is expected work will be began early in spring.

Quebec, P.Q.—A. B. Whitehead, of the firm of Mitchell & Whitehead, Quebec, P.Q., have called for tenders for the erection of sanitarium buildings for the Lake Edward Sanatorium Association, Limited.

Quebec City, P.Q.—Architects Ouellette & Levesque, 117 St. John Street, Quebec, P.Q., are preparing plans for an orphan asylum to be built in Quebec City at a cost of about $45,000. Work specified: Concrete and stone foundations, brick walls, structural steel, fire escapes, elevators, dumb-waiters, galvanized iron roofing, ornamental columns. Tenders will be received during month of March.

Montreal, P.Q.—The Orphelinage Dardin de la France, on St. Denis Street, was recently damaged by fire to the extent of $5,000. The damage will be repaired at once.

Fredericton, N.B.—The Public Works Department of the Government of New Brunswick is engaged in preparing plans and specifications for a tuberculosis hospital to be erected, probably near Fredericton. The total cost will be about $30,000. As soon as the plans are completed tenders will be called for the work.

Schools

Toronto, Ont.—C. A. B. Brown, one of the Toronto Public School Trustees, will at the next meeting of the Public School Board give notice of motion to have the Riverdale School enlarged at a cost of $50,000, and an addition of six rooms built to Jarvis St. Collegiate Institute. A new school will probably be built at the corner of Avenue Rd. and St. Clair Avenue.

Toronto, Ont.—Rev. Dr. McKay, chancellor of McMaster University, Toronto, states that some time in the near future, suitable buildings for a medical college in connection with this University, will be erected. It is understood an effort will be made to have John D. Rockefeller donate $2,000,000 for the purpose.

Toronto, Ont.—Mr. Bishop, superintendent of schools, Toronto, states that the Board of Education propose erecting a new school to replace the present York St. school, early next year.

Parkdale, Toronto.—Architect J. H. Galloway, 77 Victoria St., has prepared plans for fire escapes and balconies with which the Parkdale Methodist Sunday School will be equipped. A number of alterations will also be made in the building, and tenders will be called for about Feb. 15.

Stratford, Ont.—The Public School Board of this city, have selected a site on which they propose erecting a school to cost $60,000. Tenders will be called for this work before spring, as plans are being prepared now.

Stratford, Ont.—Architect Jas. A. Russell, Stratford, Ont., has prepared the plans and awarded contracts for additions to Loretto Convent here, as follows: J. L. Youngs, brick, stone, and carpenter work; Peter & Sylvester, plumbing and heating; L. Hassell, plastering; J. A. O'Hare, painting and glazing; W. Bennington, electric wiring; all of this city. Structure will have stone foundation, brick superstructure, metal roof, steam heating, modern plumbing slate blackboards hardwood floors. Cost to be about $15,000.

London, Ont.—Mr. Graham, chairman of the London School Board, states that it is the intention of the board to greatly enlarge the Lorne Ave. School. Plans will be prepared and definite action on the project will be taken by early spring.

London, Ont.—The No. 2 committee of the Board of Education, of London, Ont., will have plans and specifications prepared and will call for tenders at once for the installation of suitable ventilating systems in several schools in this city.

Portlaw, Ont.—The ratepayers of School District No. 8, here, have decided to build a school this coming summer to cost about $5,000.

Kenora, Ont.—Architect Jas. A. Russell, Stratford, Ont., has prepared plans for a 24 x 45 ft. addition to the school at Kinkora, Ont. It will be of brick construction with concrete foundation, hardwood floors, metal ceiling and slate blackboards, hot air heating. Cost about $2,000.

Kincardine, Ont.—The ratepayers here have passed a by-law authorizing the expenditure of $8,500 in additions to the Central School.

Guelph, Ont.—The Separate School Board of Education of Guelph proposes adding an additional storey here, to be constructed of stone, the whole building to be altered and refitted.

Woodstock, Ont.—Rev. J. G. Taylor, of this city, proposes erecting an industrial school for colored children, here, to cost $1,000. Nothing definite has been decided for the present, but final arrangements will be made before spring.

Montreal, P.Q.—The building of the Sisters of Providence, in St. Hubert, this city, was damaged by fire to the extent of $10,000. Loss is covered by insurance and the damage will be repaired at once.

Montreal, P.Q.—E. G. Cape, of this city, has been awarded the contract for the three-storey fire-proof school to be erected in Ottawa on St. Ann St., at a cost of $60,000, for the Protestant School Board. Plans were prepared by Architects Edward and W. S. Maxwell, 6 Beaver Hall Square, Montreal. The structure will be built entirely of iron, stone and brick.

Montreal, P.Q.—The Catholic School Commissioners of this city, among whom are: Rev. Canon Dauth, chairman; Hon. Judge Piche; Hon. Judge Lafontaine; Aldermen Gallery, Payette, Lafontaine and Lapointe, propose erecting a school for girls in the Parish of St. Helen in the city early next spring.

St. Remi, P.Q.—The Convent of St. Anne, at this place, was recently destroyed by fire, involving a loss of $50,000. It will probably be rebuilt.

Rimouski, P.Q.—The Convent of the Sisters of Charity, here, was recently destroyed by fire, entailing a loss of $150,000. Insurance is about $100,000. It is understood this structure will be rebuilt.

Halifax, N.S.—The Commissioner of Works and Mines, Halifax, N.S., will receive tenders until Feb. 17 for the erection of the proposed Nova Scotia Technical College Building at Halifax, according to plans and specifications with the above department and with the architect, Herbert E. Gates, Roy Building, Halifax, N.S.

Halifax, N.S.—The Compton Avenue Public School at this place, an eight-roomed brick structure, was recently destroyed by fire. The loss is $20,000, with $9,500 insurance on the building and $1,250 on the furnishings. The school will be rebuilt at once.

Wolfville, N.S.—The Trustees of Acadia University will very shortly commence the erection of a Science Building, to cost at least $30,000. In addition $200,000 will be expended in remodelling the present university buildings.

St. John, N.B.—The Public School Board of this city is considering strongly the advisability of erecting a new school, to be built in the near future.

Sydney, C.B.—The Board of School Commissioners of this place have appointed Messrs. Young, Fitzgerald and Cameron as a committee to procure plans and estimates for a high school building which it is proposed to erect here in the near future.

Edmonton, Alta.—The Board of Trustees of St. Joachim's District, No. 7 have given notice of their intention to borrow $12,000 to be used in improvements to school grounds and the erection and furnishing of a solid brick schoolhouse. The board will apply to the Minister of Education for the Province of Alberta for permission to borrow this amount.

Moose Jaw, Alta.—Wm. Grayson, chairman, and Mr. Irwin, secretary of the High School Board of this city, propose asking the city council for funds with which to erect a high school here. A meeting will be held the last week this month to consider this proposition.

Neelin P. O., Man.—Wm. Easton, secretary of the School Board here, will receive tenders for the erection of a brick veneer schoolhouse, according to plans on file in his office at Neelin P. O., Man.

Winnipeg, Man.—The Committee on Buildings and Sites, including R. D. Waugh and P. H. Stewart, of this city, will shortly call for tenders for the erection of an addition. Plans for the improvement were prepared by the city's building inspector, containing nine class-rooms, to the Mulvey and Strathcona Schools.

Grand Coulee, Sask.—The council of this place propose erecting a large brick schoolhouse here early next summer. They are seeking plans now.

Craik, Sask.—The council of this place have plans prepared for a four-room school of cement blocks, to be built early this spring.

Victoria, B.C.—Architect F. N. Rattenbury, Victoria, B.C., has prepared plans for a school and municipal hall for Oak Bay, B.C., a suburb of Victoria. Building will be two storeys and basement in height, the main floor to contain four school rooms and the upper floor to be used as an assembly hall; the whole building to be provided with steam heat and modern plumbing. Estimated cost, $6,000.

Victoria, B.C.—A company composed of D. R. Kerr, F. B. Pemberton, C. A. Holland, J. S. H. Matson, D. M. Eberts, John Nelson, W. Fleet Robertson, Arthur Robertson, R. V. Winch, all of Vancouver, propose spending $150,000 in the erection of a large boarding-school at Victoria, active work on which will begin in a very short time.

Vancouver, B.C.—Mr. Argue, superintendent of schools for the city of Vancouver, states that the Board proposes erecting a large school and several large additions to the present schools.

Churches

Toronto, Ont.—The Kenilworth Avenue Baptist congregation, corner of Kenilworth Ave. and Queen St., Toronto, have had plans prepared for a new church to cost about $21,000, to be built on the corner of Queen St. and Waverley Rd. Tenders will be called for very shortly.

Toronto, Ont.—The board of the West Presbyterian Church, Toronto, propose spending $2,000 in improving the heating system of the Church. Rev. Dr. Turnbull is pastor.

Toronto, Ont.—The committee of the First Church of Christ, Scientist, has purchased a lot 200 x 195 feet, costing $30,000, on the northwest corner of St. George and Lowther avenue, this city, and will have plans prepared at once for a structure to cost about $250,000.

Toronto, Ont.—The Westmoreland Methodist Church, recently destroyed by fire, will be rebuilt at a cost of $40,000. This project is being supported by the Methodist Social Union of Toronto.

Essex, Ont.—J. W. Brien, M.D., secretary of the building committee of the Methodist Church, Essex, Ont., have received tenders for the erection of a church at this place, according to plans prepared by Architect Frank Brien, Essex.

Willisceroft, Ont.—C. A. Crecine, Willisceroft, Ont., has received tenders for the erection of a church at Willisceroft, Ont.

Stratford, Ont.—The trustees of St. Joseph's Roman Catholic Church here propose laying a new hardwood floor in the body of the church, paving the aisle with tile and rearrange the seating accommodation, early this spring.

Clinton, Ont.—Architect W. J. Ireland, Clinton, Ont., is preparing plans and will be ready for figures after Feb. 7, for the erection of a church for the Roman Catholic congregation here. Structure to have concrete foundation, pressed brick superstructure, slate roof, hot air heating, electric lighting, plumbing, artificial stone, art glass. Estimated cost, $12,000.

Walkerton, Ont.—Rev. Father Kelly, of the Roman Catholic Church, at Walkerton, Ont., has awarded the contract for the interior decoration of the church to the Thornton-Smith Co., 8-10 King St. west, Toronto.

Hespeler, Ont.—Architect E. R. Babbington, 28 Toronto St., Toronto, is preparing plans for a $15,000 church to be erected at Hespeler for the new Presbyterian congregation, to be of brick construction, stone trimmings and slate roof. The heating has not yet been decided upon.

Meaford, Ont.—Jas. Sparling, Meaford, Ont., has been awarded the contract for the erection of a Methodist church here. It will have stone foundations, brick superstructure, Roman stone trimmings, steam heating, circular seats and be 104 x 70 feet in dimensions. Cost about $25,000. Jas. A. Russell, Stratford, Ont., is the architect.

Hampden, Ont.—John Byers, Michael Byers, secretary, and John Cooper, chairman, of the Hampden Presbyterian congregation have received tenders for the rebuilding of their church here.

Ottawa, Ont.—Architect L. Z. Gauthier, 180 St. James St., Montreal, at the instance of Father Jeanotte, of the Church of the Sacred Heart, Ottawa, has prepared plans for a church, to cost $100,000, to replace the edifice recently destroyed by fire, the insurance on which was $91,000. As soon as the plans are returned from Rome tenders will be invited.

Montreal, P.Q.—Canon Martin and Archbishop Bruchesi, of this city, have decided to form a new parish here, and have plans prepared for a church to accommodate the congregation.

Black Lake, P.Q.—Architects Ouellet & Lovesque, 117 St. John St., Quebec City, have prepared plans and awarded the contract for enlarging the Roman Catholic Church at Black Lake, Que., to Pierro Belanger, of this place, at a price of $13,100.

Katevale, P.Q.—Verret & Desautels, Sherbrooke, P.Q., have been awarded the contract for the erection of a Roman Catholic Church in Katevale, P.Q., at a contract price of $20,650.

St. Prosper, Que.—Architects Ouellet & Levesque, 117 St. John St., Quebec City, have awarded the contract for the interior finishings of the Roman Catholic Church at St. Prosper, Dorchester Co., P.Q., to Etz. Mativier & Fils, St. Damier, Bellechausee County, P.Q., at a price of $12,145. Work includes white pine ceilings, vaultings, etc., painted white, selenite walls, birch wainscott.

Fraserville, P.Q.—Architects Ouellet & Levesque, 117 St. John St., Quebec, P.Q., are preparing plans for and will receive tenders to April 1 next for the erection of a Presbytery for the Roman Catholic parish at Fraserville, P.Q., to cost $16,00. It will have stone foundation, brick superstructure, galvanized iron roof, hot water heating, electric lighting, modern plumbing, plaster interior.

Lachine, P.Q.—J. F. Savaria, Cure of the Catholic congregation of Lachine, states that the church wardens intend expending $80,000 on the enlargement and improvement of the present church building.

Halifax, N.S.—Rhodes, Curry & Co., of this city, have been awarded the contract for the proposed West End Baptist Church to be erected here at a price of $9,000. Dimensions of structure, 64 feet frontage, 90 feet deep and 44 feet high.

North Sydney, C.B.—Bishop Cameron, Bisnop of St. Joseph's congregation, of this place, has chosen a site 200 x 150 feet at the corner of Archibald Ave. and Peirce St., here, on which a church, to be built of freestone, will be erected early next spring.

Winnipeg, Man.—Architect Arthur Wickson, Winnipeg, has been instructed to prepare plans for a church to cost $40,000, for the Western Congregational Church of this city. As soon as plans are completed and approved, tenders will be called.

Vancouver, B.C.—At the annual meeting if the First Presbyterian Church here it was decided to appoint a committee to consider the advisability of erecting an addition to the present church to cost $15,000.

Vancouver, B.C.—The trustees of St. Andrew's congregation here propose making a large addition to their church and Sunday School, probably early this spring.

Nelson, B.C.—Chas. F. McHardy, secretary of the trustees of Nelson Methodist Church, has received tenders for the erection of a stone church building at the corner of Silica and Josephine streets. Hooper & Watmins, Victoria and Vancouver, B.C.; and McDermid & McHardy, Nelson, B.C., are the architects.

Residences and Flats

Toronto, Ont.—Architect Herbert G. Paull, 395 College Street, Toronto, has prepared plans for the remodelling of a terrace of five houses of frame construction into brick encased structures. This work will include additional story thereon, slate roof, new interior finish throughout and furnace, estimated cost of improvements $7,500. Tenders will be invited shortly.

Toronto, Ont.—The Alpha Kappa Kappa Co., Limited, Dr. D. J. Dwyer, Dr. J. T. Fotheringham, Dr. F. W. Manning, T. D. Wilson, J. G. R. Stone, Dr. W. E. Ogden and Jos. H. Lawson, directors, have been incorporated with a capital of $15,000, to buy or build a situable building to be utilized as a residence for students, and equipping a laboratory and library in connection thereto.

Toronto, Ont.—Architects R. J. Edwards & Saunders, 18 Toronto Street, are preparing plans for a pair of houses to be erected in Toronto for Mrs. J. Edwards, brick construction, hardwood floors, mantels, electric lighting, open plumbing and hot air heating; cost, $4,200.

North Toronto, Ont.—Mr. Dack has received tenders for the erection of a residence 45x45 ft. at Bedford Park, according to plans and specifications at his office.

Toronto, Ont.—Architect Herbert G. Paul, 395 College Street, Toronto, has prepared plans and will receive tenders shortly for a pair of semi-detached residences to be erected on Park Road, Toronto, for John N. Lake, 114 West King Street. Specifications include: Brick and stone construction, spanish tile roof, hardwood interior finish, hot water heating, electric fixtures and mantels. The structures cost $3,500 each.

Toronto, Ont.—Architect P. H. Finney, 43 Victoria Street, Toronto, has prepared plans for a two story and attic residence, 70x40 ft., to be erected at Uxbridge, Ont., for W. T. Giles, 64 Crescent Road, Toronto. The structure will be of brick, shingle and half timber construction, with hardwood finish, brick mantel tile work, electric lighting, hot water heating, refrigerator. A billiard room will be located on the first floor. Estimated cost, $12,000. Tenders will be called for in the spring.

Toronto, Ont.—Architect Herbert G. Paull, 395 College Street, Toronto, has awarded contracts on one pair semi-detached brick residences on Lippincott Street, near Ulster Street, at a cost of $4,000, for Wm. Young, 164 Lippincott Street. Mason work, Cox & Son; carpenter, John McGuire, 48 Henry Street.

Toronto, Ont.—Architect W. A. Langdon, 43 Toronto Street, Toronto, has awarded the following contracts on a two-story and attic, 38x40 ft. brick residence, to be erected on Dunvegan Road (W. A. Langdon, trustee). Mason, Orr Bros.; carpenters, Booth & Co.; plumbing and heating, W. J. McGuire & Co., 86 West King Street; plastering, Hannah & Nelson; painting, Wm. McCausland & Sons, West King Street; tin work, M. H. Hutson.

Blyth, Ont.—Bainton Bros., of this place, are preparing to erect a new house on Drummond Street. It will be three stories high, of concrete foundation and brick superstructure.

Brantford, Ont.—Mr. David Fitness, of this city, has purchased land near Alexandria Church, on Colborne Street, on which he states he will erect a brick residence.

London, Ont.—Architect Wm. G. Murray, London, Ont., has prepared plans for a residence in London Township for Mr. T. A. Shoebottom, of that place. Structure will have brick foundation and superstructure, hot air heating, mantels, stained shingle roof.

St. Catharines, Ont.—The Bemis Bag Company, of this place, propose erecting a number of residences near their works for the accommodation of their workmen.

Chatham, Ont.—Architects J. L. Wilson, Son & Arnold, Chatham, Ont., have prepared plans for the erection of a residence for A. P. Westman, Chatham. Specifications include stone foundation, stone and shingle superstructure, stained shingle roof, birch interior finish, two and a half storeys high, electric and gas lighting, tile, mantels, plate glass.

Chatham, Ont.—Architect A. M. Piper, King Street, Chatham, Ont., is preparing plans for a brick and concrete residence for W. Mann, Chatham, to cost $3,500.

Ottawa, Ont.—The Hon. Mr. Fielding, Minister of Finance, stated that the Public Works Department would shortly erect a residence costing about $30,000, on a site adjacent to the Royal Mint, for the accommodation of the Master of the Mint. As soon as plans have been prepared tenders will be called.

Niagara Falls, Ont.—Mr. A. T. Hawkins, whose home was recently destroyed by fire, intends to erect a new residence on the same site. Plans are being prepared and tenders for the work will be called for shortly.

Sudbury, Ont.—Architect Edward F. Head, Sudbury, Ont., has prepared plans for a residence to cost $8,000, for Larry O'Connor, Sudbury. Building will have stone foundation, brick veneer superstructure, shingle roof, hardwood interior finish, hot water heating, electric lighting, modern plumbing. Specifications include: Cut stone, mantels, dumb-waiter, ornamental columns and caps, plate glass, art glass, refrigerator. Day work, owner supplying material.

Chatham, Ont.—Architects J. L. Wilson, Son & Arnold, of this place, are preparing plans for a reinforced concrete dwelling-house for A. E. Drew, to be erected here. It will be of fireproof construction, with tile floors and electric light. Estimated cost, $5,500.

Chatham, Ont.—Architects J. L. Wilson, Son & Arnold, of Chatham, Ont., have prepared plans for the erection of a stone and frame residence for A. D. Westman, Chatham, Ont.

Sudbury, Ont.—Dickie & Brown, Sudbury, Ont., have been awarded the contract for the erection of a residence to cost $6,000, for Dr. W. H. Howey, Sudbury, Ont., for which Architect F. H. Herbert, 65 East Adelaide Street, Toronto, prepared the plans. Architect Edward F. Head, Sudbury, Ont., is the superintending architect. Specifications include: Cut stone foundation, brick superstructure, shingle roof, hardwood interior finish, hot water heating, electric lighting, modern plumbing, mantels, shingle stain, ornamental columns, art glass. The owner, Dr. W. H. Gowey, is supplying the material.

Fort Arthur, Ont.—A double residence on Nugent Street, in this city, owned by G. Richards, was recently destroyed by fire, entailing a loss of $4,000. Mr. Richards will rebuild.

Winnipog, Man.—R. M. Denistoun, barrister, of this city, has purchased a frontage of 91 ft. on Roslyn Road, on which he proposes erecting a modern residence.

Regina, Sask.—Architects Story & Von Egmond, Box 1344, Regina, Sask., have prepared plans for a residence for Geo. T. Forsyth, Regina, to cost $5,000. Specifications include concrete foundation, brick superstructure, shingle roof, oak interior finish, steam heating, electric lighting, modern plumbing, cut stone, shingle stain, plate glass. Tenders received after February 1st.

Regina, Sask.—Architects Story & Von Egmond, Regina, Sask., have prepared plans and will receive tenders after February 1st for the construction of a residence to cost $4,000, for W. S. Von Egmond, Regina.

Quebec, P.Q.—Talbot & Dionne, architects and contractors, St. Joseph Street, Quebec, P.Q., are preparing plans for a brick residence for Jos. Laflame, of this city, to cost $6,000.

Salisbury, N.B.—Architect W. C. Barnes, Moncton, N.B., has prepared plans for the work of remodelling the residence of V. E. Gowland, Salisbury, N.S. Work: Frame construction, concrete foundation, to have warm air heating, modern plumbing, shingle roof, hemlock and birch interior finish, brick fireplace.

Vancouver, B.C.—Architect S. McClure, Victoria, B.C., has been engaged by Hon. James Dunsmuir, of this city, to prepare plans for a residence to cost in the neighborhood of $100,000. Probably field granite will be used for the lower stories of the structure, with brick for the upper portion, trimmed with Australian stone. The residence will be four storeys high.

Hotels

Norway Point, Ont.—The Canadian Ry. News Co., Toronto, have received tenders for a hotel building to be erected at Norway Point, near Huntsville, for the Grand Trunk Ry. System and the Huntsville & Lake of Bays Navigation Co. The building will be two storeys high, consisting of a centre section 75 x 75 ft., two end wings 175 x 40 ft. each, and a rear wing 100 x 40 ft. The structure will be of frame construction containing eighty-five guest rooms with a bathroom for every two rooms. All bathrooms to be finished in tile. A water supply system and an acetylene or electric lighting system will be provided by the company. Architect G. W. Gouinlock, Temple Bldg., prepared the plans.

Brantford, Ont.—The King's Hotel here will shortly be enlarged and improved, at a cost of $4,000. City Engineer Jones, of Brantford, has issued a permit for the work.

Davisville, Ont.—Mr. Leslie, proprietor of the Davisville Hotel, states that if he can make proper arrangements, he will remodel his hotel into premises suitable for a bank.

Gananoque, Ont.—The American Hotel at Gananoque, owned by Mr. Joseph Church, was recently damaged by fire to the extent of $3,000. This damage will be repaired at once.

London, Ont.—Mr. O'Neil, proprietor of the Tecumseh House at this place, states that he proposes erecting a wing to the rear of the hotel to contain fifty more rooms with bathrooms in connection. This work will be commenced in the near future.

Quebec, Que.—The Provincial Construction Co., 23 Jordan St., Toronto, has been awarded the contract for the first addition of the proposed enlargement of the Chateau Frontenac Hotel, Quebec, owned by the C. P. R. W. S. Paynter is the architect for the company, with offices at Montreal. Other additions to complete the plan of enlargement will be constructed after this first portion is finished.

Sawyerville, P. Q.—Mr. Taylor's hotel at this place was recently destroyed by fire. Insurance $8,500. Loss about $12,000. Mr. Taylor states he will rebuild.

Vegreville, Alta.—McAllister Bros., owners of the Alberta Hotel here, which was recently destroyed by fire, state that they will erect a four storey brick hotel here on the site of the old structure early next spring.

Medicine Hat, Alta.—J. E. Howson, owner of the American Hotel here, states that he will tear down the present frame hotel in the spring and erect a larger three story red pressed brick structure in its place, at a cost of $15,000.

Lethbridge, Alta.—Architect Jas. A. Macdonald, Lethbridge, Alta., will receive tenders from Feb. 3rd to Feb. 14th for alterations to ground floor and an additional story to the Coaldale Hotel, owned by Anderson & Downor, Lethbridge, Alta. Specifications include concrete foundations and floors, brick and galvanized iron superstructure.

Sedley, Sask.—Fitch Bros., proprietors of the Sedley Hotel, at this place, propose erecting an addition to their hotel early in the spring. The structure will be 25x50 feet, of concrete construction.

Nokomis, Sask.—B. A. See, proprietor of the recently burned Nokomis Hotel, states that he will build a new brick veneer hotel on the old site, at a cost of about $15,000.

Red Deer, B.C.—Chas. Reed and Wm. Strickland, of this place, have taken over the Windsor Hotel, which they propose to enlarge early this spring.

Prince Rupert, B.C.—The Grand Trunk Pacific Railway Co. are making arrangements for the construction of a hotel here to cost $250,000. The Grand Trunk Railway Co.'s architect at Montreal is preparing the plans.

Salmon Arm, B.C.—Mr. Alex. Miller, of this place, proposes erecting a large addition to his hotel here in the spring, plans for which are now being prepared.

Jails and Fire Stations

Hamilton, Ont.—The Fire and Water Committee of the Hamilton City Council will shortly call for tenders for the erection and equipping of the proposed East End Fire Station of this city. Mr. Barrow, chief engineer for the city, has full particulars.

London, Ont.—A deputation of residents of the south-east end of the city of London, Ont., will wait upon the mayor and council to urge the immediate erection of one of the two firehalls authorized in the recent by-law in that quarter of the city. It is altogether likely that the council will call for tenders for the erection of these two fire halls very shortly.

Hamilton, Ont.—Chief of Police Smith, of Hamilton, is petitioning the Council to either have the present police station remodelled or a new one built.

Ottawa, Ont.—The Council of this city have appointed Aldermen Grant, Foran, Lapierre, McGrath and Rosenthal as a committee to secure plans and estimates for the reconstruction of No. 6 Fire Hall, and the fire hall in Hontonburg, recently annexed to Ottawa. Installation of suitable apparatus is also intended to increase its efficiency.

Toronto, Ont.—The Northern Electric Co., of Montreal, the Grenfell Electric Co., of New York and Boston, and the Signal 'Phone Alarm Co., of Milwaukee, have tendered for the new police signal service.

Portage la Prairie, Man.—Mr. L. Hooper, provincial architect, Winnipeg, Man., is preparing plans for additions to the reformatory to be made here this spring.

Regina, Sask.—Architects Story & Von Egmond, Box 1344, Regina, Sask., have prepared plans for a jail building to be erected here at a cost of $100,000 for the Provincial Government of Saskatchewan. Specifications include: Fireproof concrete construction throughout, metal roof, steamheating, electric lighting, three storeys high, cut stone, brick, tile, metallic lath, structural iron, vaults, dumb waiter, sheet metal work, fireproof windows. Tenders will likely be called for by the Public Works Department, of the Province of Saskatchewan, shortly.

Saskatoon, Sask.—Architect W. W. LaChance, Saskatoon, Sask., has completed plans for a proposed ward fire hall to cost $12,000.

Vancouver, B. C.—The police commissioners of this city will consider the installation of a police signal system and the erection of four sub-police stations.

Vancouver, B.C.—Architect W. T. Dalton, of the firm of Dalton & Eveleigh, Vancouver, B.C., has been instructed to prepare plans for extensions to the city jail here.

Monuments

London, Ont.—The executive committee of the Daughters of the Empire, of this place, have collected $10,000 with which they propose erecting a soldier's monument in Victoria Park, here. They have decided to advertise for tenders for this work at once.

The English Patent Act

THE new British patent act, which goes into effect on January 1 next, is of great importance to inventors, manufacturers and others.

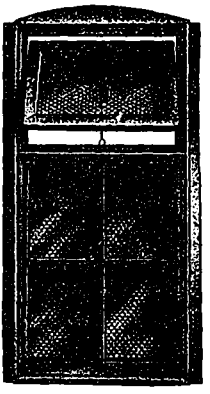
Its provisions are embodied in over 100 sections, divided into three parts—patents, designs, and general. The most important innovations are set forth in an article written by an English chartered patent agent as follows:

If a patented article or process be manufactured or carried on exclusively or mainly outside the United Kingdom, then, unless the patentee prove that the patented article or process is manufactured or carried on to an adequate extent in the United Kingdom, or give satisfactory reasons why it is not so manufactured or carried on, the comptroller may make an order revoking the patent forthwith, or he may make an order revoking it after a specified interval if the patented article or process be not in the meantime adequately manufactured or carried on within the United Kingdom; but in the latter case, if the patentee give satisfactory reasons for the failure so to manufacture or carry on within the prescribed time, the comptroller may extend the period by not more than one year. To obtain such an order, application must be made to the comptroller at least four years from the date of the patent and one year from the passing of the act; moreover, any decision of the comptroller is to be subject to an appeal to the High Court, and no order is to be made that will be at variance with any treaty, convention, arrangement, or engagement with any foreign country or British possession.

This provision, which, according to Mr. Lloyd-George, is the pith of the act, introduces a very important alteration into the law relating to patents. It is true that under the previous law it was possible that a patent might be revoked on a somewhat similar ground—namely, that the reasonable requirements of the public with respect to the patented invention had not been satisfied; but this was only as an alternative to the grant of a compulsory license, and no patent has, at any rate in modern times, been revoked on such a ground. Whether the policy of revoking patents for lack of working in this country is sound or not is at any rate very debatable.

MACHINERY AND TRADE

Fireproof Windows a Factor of Safety



MORE loss of property can be ascribed to the communication of fire through unprotected openings in buildings than to any other cause. Within recent years the widespread devastation of business districts in cities throughout the country only serves to emphasize this assertion. Whole sections of apparently substantial structures have been wiped out, due to the fact that the flames found ready egress and ingress through window openings in spreading from building to building, and in this respect particular attention may be called to the heavy losses sustained in the conflagrations which visited Toronto, Baltimore and San Francisco. In each of these cities, the rapidity with which the flames were communicated to adjoining structures only substantiated the statistics previously compiled that the most vulnerable points in a building were the unprotected openings. It was after these fires that the underwriters began to insist on fireproof construction, especially as to window, doors and skylights, and the result was that a fresh impetus was given to an industry which is an important factor in modern building construction, the manufacture of metal frame and sash, glazed with wire glass for door and window openings.

In order to produce the highest standard of material and workmanship in equipment of this kind, the underwriters imposed certain requirements so as to eliminate the possibility of poorly built sashes and frames of cheap material entering into the construction of a building, and in this manner offered an incentive to manufacturers of integrity in the sheet metal line. One of the best known and successful firms in this field is the A. Ormsby, Limited, with factories at Toronto and Winnipeg and representatives in Montreal, Regina, Calgary, Edmonton and Vancouver. This firm makes a window that strictly meet the underwriters' requirements in every respect, and which has stood the test of fire successfully. Its frame and sash are of twenty-four gauge galvanized iron of a quality that does not break or flake in bending. The bottom of the frame is filled with concrete which makes it strong and substantial and enables it to withstand almost any attack to which it may be subjected. The joints, which are essential points in a frame or sash, are interlocking, giving them ample fire resisting qualities. And in this connection it may be mentioned that if solder is used as a fastener for joints, it melts under the heat of fire and the window collapses, leaving the openings unprotected.

Another feature of this firm's window is that the rabbets are ¾ in. deep so that the wired glass has an actual bearing of ⅝ in. at all joints. This is necessary to resist the effect of the heat of a fire, and the force of the stream of an ordinary fire hose. If the glass depended on putty or brads to keep it in, it would fall out under fire. One of these windows recently underwent a very severe fire test at North Bay, Ontario, where a frame building just one foot away from a large hardware warehouse, caused a very hot fire, but the window in the warehouse withstood the flames and the property was uninjured.

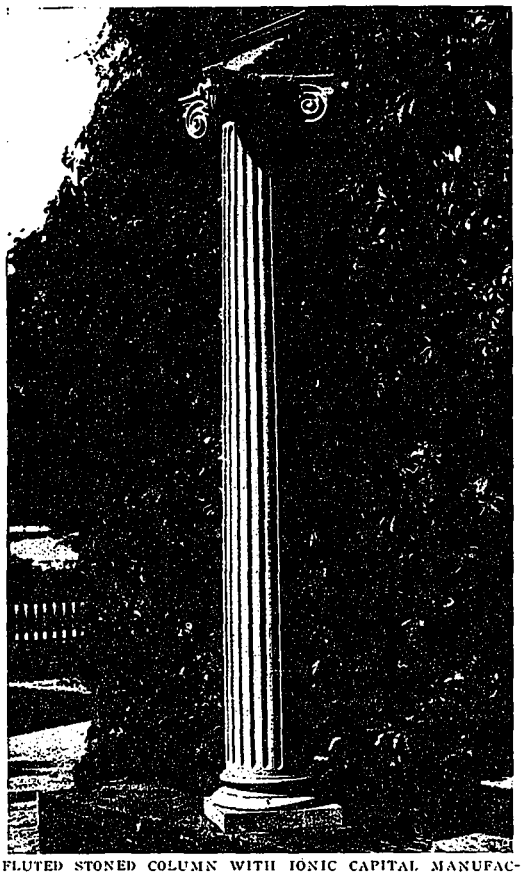
The most popular construction in fireproof windows is the automatic heat closing window, a cut of which is reproduced herewith. The lower sash is stationary or bolted, the upper sash is pivoted. This pivoted sash is held open by a chain on which is attached a fusible link, which, when attacked by fire fuses and closes the sash, which is held shut by a gravity catch. Other styles of sash are sliding, stationary, double pivoted and hinged, and they can be made to suit any need.

The A. B. Ormsby, Limited, name plate appears on every window they turn out. Their windows are in use in most every important town and city in Canada. Both of their factories are said to be most complete in their line in the Dominion, being equipped with the latest and best machinery and employing a large number of skilled mechanics. Architects, builders and owners are especially invited to visit their works and inspect the windows in course of construction. The A. B. Ormsby, Limited, windows are of the highest standard type and their prices are as close as is consistent with first quality work. Windows of fireproof character are not only a protection against the ravages of flame, but they greatly reduce the rate of insurance and prove to be very economical in this respect.

Sand-Lime Brick

A BUILDING product which has been manufactured in America for the past six or seven years and has attracted widespread interest by the quick manner in which it has won favor with the architect, contractor and owner, is sand-lime brick. These brick are producer by the chemical action of high-grade lime and pure sand under a high steam pressure and have a crushing strength of 2,500 to 9,000 pounds per square inch. In appearance, they resemble Indiana sandstone and can be made in any color by the addition of pigments. They are different from natural stone, however, in that the chemical action is uniform throughout, consequently there are no seams or laminations. Sand-lime bricks are not, as generally supposed, mortar bricks, as mortar depends upon the carbonating of calcum for its strength, whereas sand-lime brick is strictly silicate. A silicate is not subject to deterioration, whereas the carbonate is, and yet mortar bricks one hundred years old have been found to be harder than sandstone. Handsome, strong and durable structures can be built from sand-lime bricks, that is, providing the bricks are manufactured in the right way. It is now generally acknowledged by those who have had experience in the manufacture of bricks of this character that too much care cannot be taken in preparing and mixing the materials in order to get the best results. Dr. Lazelle, an authority on sand-lime brick, say there should be no more guess work in their manufacture than there is in the compounding of a prescription by a pharmacist. In the procuring of a definite and accurate mixture too much care cannot be exercised, and it is essential that the mixture should be uniform at all times. In order to get the proper results mechanical means of proportioning should be employed, thus eliminating any possibility of guess work or chance. However, it is most important that the machine used should be so constructed as to meet every requirement to which it may be subjected and do the work in a thorough manner. In this connection, the Scientific System Brick Co., 79 Adelaide St. E., claims that by their system the best possible bricks can be made, as by the use of their preparing machine, Reliance, the mater-

ials are mixed in definite and absolute known quantities, and are at all times under absolute control. Aside from their durable quality, sand-lime bricks, from an architectural point of view, possess great possibilities, and their popularity among builders is growing fast.



FLUTED STONED COLUMN WITH IONIC CAPITAL MANUFACTURED BY THE BATTS, LIMITED, TORONTO JUNCTION. THE STAVES ARE TAPERED BEFORE BEING JOINED TOGETHER, ASSURING THE ENTASIS AND STRENGTH OF THE COLUMN. FROM SQUARE AND TURNED BASE TO CAPITAL THE PROPORTIONS ARE IN ACCORD WITH TRUE CLASSIC DIMENSIONS.

Mechanical Rubber Goods and Tiling

IN the "balmy" days of the bicycle business the making of detachable tires, the "these are the only tools you need" style, kept the Dunlop Company busy and mightily prosperous. In those days the demand for bicycle tires was enormous and this company supplied the entire demand, as only a very small per cent. of the bicycles were fitted with the cemented-to-rim pneumatic tires. But the bicycle business fell on lean days and the Dunlop Company had to look to the making of other lines to keep up its volume of business. It was the present general manager, Mr. John Westren, who directed the first movement towards expansion when the company began the making of solid rubber tires. That movement has been continued, under his direction, and three years ago the incorporate title of the firm was lengthened to "The Dunlop Tire & Rubber Goods Company."

From the making of bicycle tires the Dunlop Company has now extended its field of enterprise until it is to be rated as one of the foremost rubber concerns in Canada. While its output of solid rubber and pneumatic tires greatly exceeds that of any other Candian concern, it is also making rapid gains in the trade for mechanical rubber goods. A new addition to the factory, completed a year ago, affords every modern facility for turning out hose of every variety, sheet and spiral packing, valves, and electrical and engineers' accessories.

In the department of architectural rubber the Dunlop Company has secured the exclusive right in Canada for making "Anchor Brand" tiling. This tiling is cut in curved patter nand presents no sharp angles or corners. The pieces are uniform in size and may be laid over any level floor without the use of cement. The designs are nicely assorted and in greater variety than is usually available in rubber tiling.

With the exception of rubber shoes, gloves, surgical supplies and such articles, the company manufactures everything in rubber. The factory is admirably equipped and the management is ready to tender a price for the manufacture of any line of moulded goods.

The Firm of Alex. McArthur & Co.

ANOTHER firm that has met with general recognition throughout the Dominion is the Alex. McArthur & Co., Limited, 82 McGill street, Montreal. This company is the largest manufacturer and dealer in tarred building papers, felt and asphalt roofing in Canada. The increasing demand for their products, which bear the stamp, "Made in Canada," due to prices that are compatible with the high quality of their goods, have enabled the company to enjoy a patronage second to none in the entire country. Their "Genasco" brand of two and three-ply ready roofing papers has found a universal market and is decidedly popular with building contractors and owners at large. The large volume of business done by the company in 1907 makes it by far the banner year in the history of this establishment.

A Unique Calendar

THIS is the time of year that almost every office is flooded with calendars of various descriptions, and while we have been in receipt of many attractive productions in the printer's art we cannot say that a more appropriate, or attractive calendar has come into our office than that of W. J. Hynes, Toronto, manufacturer of staff and stucco decoration. It is a beautiful panel in staff about about 18 inches wide by about 24 inches deep. This panel is formed by two pillars supporting a frieze, which is perfectly worked out in Greek Doric. In this panel is formed what appears to be a door casement in which the calendar pad is fastened. Above this door (as it were) is an excellent piece of modelling representing the new year driving the old one out through the ocean of time. We do not believe that Mr. W. J. Hynes could have chosen a more appropriate calendar that would have been so much appreciated by the architects to whom it is being sent.

W. Geo. Kent in New Position

MR. W. GEORGE KENT, who has been connected with the Linde British Refrigeration Company, of Canada, for the past twelve years, has resigned his position to assume the management of the Armstrong Cork Company for the Dominion. Owing to a broad experience in the refrigerating business, besides being well known to the trade, Mr. Kent is well equipped for the new duties he has undertaken. The offices of the Armstrong Cork Company are in the Corstine Building, Montreal. This company manufactures and supplies the well known corkboard insulation for cold storage building, packing plants and other purposes.