CANADIAN ARCHITECT AND BUILDER

THE INDUSTRIAL ARTS: DECORATION FURNISHING CONSTRUCTION SANITATION ENGINEERING

VOL. VI.—No. IV. TORONTO AND MONTREAL, CANADA, APRIL, 1898. PRICE 20 CENTS $2.00 PER YEAR.

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	60 days.	*270.40*	240.10	187.		60 days.	*203.50*	183.50	138.
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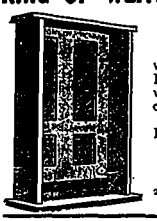

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CANADIAN ARCHITECT AND BUILDER.

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—THE—
CANADIAN ARCHITECT AND BUILDER,
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Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The "Canadian Architect and Builder" is the official paper of the Architectural Associations of Ontario and Quebec.

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THE Association of Building Commissioners and Inspectors of the United States has resolved that buildings for the care of children and invalids should not be more than two stories in height, unless constructed of fire-proof material.

WE have to record another accident, with fatal results, due to the collapse of a derrick. This occurred on the 24th of March in connection with the new Wellington bridge in course of construction by the Dominion Government on the Lachine Canal, Montreal. Two workmen, Michael Owens and Timothy Gallivar, were killed by the falling of the derrick mast. As the result of an inquest to enquire into the circumstances, the jury suggested that the Government should employ more competent men on works of this kind.

IT is pleasing to note from a recent return made by Mr. E. Coatsworth, City Commissioner for Toronto, that there is a marked increase in the value of the buildings, especially dwellings, now being erected. In 1891 it appears from the report that the average cost of 1,100 houses built, was $2,700 each. While in 1892 the number of dwellings erected dropped to 529, the average cost was $3,000. It is a good indication of the thrift and frugality of the people of Toronto when out of the 30,000 dwelling houses now in the city, 50 per cent. of them are owned by the occupiers.

THE Victorian Institute of Architects announces three competitions. One, open to all resident architects in the Australian colonies under the age of 30 years, is for the best design for a school of art and picture galleries. The other two are for probationers and students of the members of the Institute. Additional interest in architectural matters and a more rapid development of architectural taste and skill would be likely to follow a movement of this character on the part of the Councils of the provincial Architectural Associations in Canada. The expense of one or two competitions each year would probably not be deemed sufficient, apart from other considerations, to prevent the attempt being made.

IN December last the Toronto Incandescent Electric Light Co. reduced their price to customers from one cent per hour to eight-tenths of a cent per hour for 16 c. p. lamps. This step, the company state, resulted in almost doubling the volume of their business. Thus encouraged they have announced within the last few days their decision to further reduce the price to six-tenths of a cent per lamp per hour. At this price incandescent electric lighting should displace gas in business establishments at least. It is said to be the intention of the gas company to meet this cut in rates for electric lighting by a corresponding reduction in the price of gas.

IN the matter of the dispute which has arisen in connection with the erection of the new city and county buildings at Toronto, application was made on the 4th inst. by Mr. Neelon (the late contractor) for an injunction to prevent these works being completed other than according to the order granted by the court September 10th last, which, it was contended on behalf of the applicant, allowed the work to be done only by day labor. An arrangement was come to by which the order referred to was enlarged so as to allow the work to proceed by contract and extending the rights of the applicant as relating to his action for damages, if the work was so carried out.

IN our correspondence department this month will be found a letter on the subject of "tendering for works." No doubt this is an important question, and it would be well if a remedy could be found which would prevent the acceptance of tenders at figures below actual market prices, and from parties who have not much reputation to lose should they fail to satisfactorily carry out the works. There are difficulties, however, in placing this matter on such a footing as many contractors would prefer, and it is not an easy matter to interfere with the freedom of contract; nevertheless, contractors should be required to furnish good security for the due performance of their work. In this way the competition of incompetent and financially irresponsible contractors might be largely avoided.

THE accumulation of snow and ice on the streets of Toronto has been greater during the winter which is about to close, than for many years previous. This, coupled with the fact that the Street Railway Company had barely time to get some of its lines into running order when winter set in, placed them at a serious disadvantage so far as preparation for keeping their tracks clear and maintaining an efficient service were concerned. Many of the citizens, appreciating the unusual difficulties against which the company have had to contend, have been both greatly pleased and astonished at the energy and skillful management by which a first-class service has been provided throughout the winter. It is safe to say that more serious difficulties are never likely to be met with in the future operation of the system.

THERE has been a substantial increase of late in the price of Canadian lumber, due to an increased demand for the same in the United States market. This should have the effect of increasing considerably the cost of building, but if we are rightly informed such will not be the case so far at least as Toronto is concerned. The greatly reduced volume of building enterprises during the last two years has given rise to excessive competition for such contracts as have been offered, and thus the advance in material is offset by lower tenders. We are informed that stone work is being done at eight dollars per toise, and brickwork, which a few years ago cost fifteen dollars per thousand, costs at present but eleven dollars. And this, notwithstanding that the price of labor has greatly advanced in recent years.

THE fire losses in the City of Montreal during the first three months of the current year amount to upwards of half a million dollars. These losses, it is stated, will absorb three-fourths of the insurance companies' premiums for the year. So serious a condition of affairs has led to an investigation of the condition of the fire-protective appliances and of the fire department. As a result, the water pressure is declared to be insufficient, the pumping plant at the waterworks inadequate, and the fire department not up to the standard of efficiency required. The insurance companies have in consequence decided to advance rates 25 to 30 per cent. on certain classes of risks. This will no doubt lead to improvements being made which will lessen the opportunity for such destructive conflagrations as have this year visited the city.

SOME architects profess to be able to see no advantages to be derived from connection with the O. A. A., and have withdrawn from membership therein. They appear to have overlooked or underestimated all benefits accruing from the Association to the profession, except such as might be computed in dollars and cents. This view of the subject must be admitted to be a narrow and selfish one. Notwithstanding, we have information which indicates that membership in the Association carries with it a certain monetary value. The Public School Board of a certain town in Ontario were about to erect a school building. Two architects sought to secure the work. The question was asked of each of them: "Are you a member of the Ontario Association of Architects?" The reply in one case was in the affirmative; in the other in the negative. The choice turned on this point, the Board at once selecting the architect who was a member of the Association. They required some guarantee as to the competency of the person they would employ to carry out the work, and membership in the O. A. A. was considered sufficient.

IT has been universally acknowledged that there is greater economy in machinery as compared with hand labour, but the application of motive power to the various branches of joinery has not been extensively appreciated. It is impossible to overrate the value and importance of machinery in joiners' shops, yet the use of such machinery can be overdone. A proper number of machines is most essential, but four machines will be generally found sufficient, viz: a portable deal frame capable of sawing at one time two deals (14x4) into boards of any required thickness, a self acting saw-bench, a planing machine, and a general joiner which will do all the necessary working tenoning and such work usually executed by hand. These machines can be worked by a 12 horse power steam or electric motor, and, if solidly fixed on stone bases, they can be driven at a great speed without vibration. There seems a general idea that machinery can only pay in very large establishments, and unless a builder can have separate machines for each operation he had better be contented with hand labor. But we are lead to believe that every man having a thriving business would find a great saving could be effected by a moderate outlay on machinery of this description.

IT is a frequent subject of complaint on the part of successful architects that features of their designs which have been thought out at the expense of much time and mental effort, are appropriated by persons claiming to be architects, but who are without the ability or disposition to evolve original ideas of their own. An effort was recently made by the Ontario Association of Architects to secure under the Copyright Act protection for the authors of architectural designs, but it was found not to be practicable to do so. Our attention was recently called to a case of pirating which will serve to illustrate the audacity of those engaged in the business. A Toronto architect recently met the officials of a church in a neighboring town, who had under consideration the erection of a new edifice, and was shown another set of drawings which had been submitted. These proved to be an exact tracing from one of his own designs. A copy of the CANADIAN ARCHITECT AND BUILDER in which the design was published a couple of years ago, has since been forwarded to the building committee. It is a satisfaction to know that in this instance at least the pirate has unintentionally played into the hands of the architect the reward of whose labor he sought to reap.

AT the recent convention of the National Association of Builders a member introduced a resolution providing that means be taken to secure the affiliation of the Canadian builders' exchanges. The secretary is reported to have moved in amendment that action on the resolution be deferred until after annexation. This, from the Canadian standpoint, will be taken to mean that the question has been shelved

"It may be for years
or it may be forever."

The principal advantage to be derived by Canadian builders from affiliation with the National Association would be the opportunity afforded them to learn the benefits to be secured from a Canadian organization, and the lines upon which it might be successfully conducted. It would be impossible for more than perhaps half a dozen Canadian delegates to attend the conventions of the National Association, and being so few in number, they could not expect to exercise much influence or secure proper consideration of questions affecting the building interests of this country. For this purpose there are required Canadian Associations for the different provinces which should meet semi-annually or annually as do the Architectural Associations of Ontario and Quebec, to consider legislation, forms of contract, prices for labor and other matters of like importance affecting the building interests. The Toronto Builders' Exchange, which is itself an example of the benefits accruing from local organization, might well take the iniatory steps to bring about the formation of a provincial association.

IT is said that the City of Toronto has as great an extent of shop fronts as the cities of Buffalo, Detroit and Rochester combined. Toronto is said to have 27 miles of shop fronts, while Buffalo has only 13 miles. Circumstances are at work in Toronto, which will probably largely transform the character of some of the principal thoroughfares, such as King and Yonge

streets. On these streets there are at present a large number of small shops which it is believed will before many years revert to residence purposes. Two principal causes are at work tending to bring about this change. One is the introduction of rapid electric street railway transit, by means of which residents in the outlying districts of the city can be transported to the business centre within an interval of a few minutes. These facilities for dealing at the larger down town establishments is likely to be taken advantage of to the detriment of the smaller business concerns on the less important thoroughfares. The second cause is the recent development of a few large establishments where goods of almost every class are sold under one roof. These concerns will certainly wipe out of existence a very large number of the smaller stores. It is estimated that one such establishment already in existence in Toronto, is doing the trade which formerly was divided amongst 500 small stores. These changes must seriously affect the value of a large amount of property now used for business purposes.

NOT more than five or six years have elapsed since the manufacture of pressed bricks was commenced in Canada. In that brief period, however, the manufacturing firms have multiplied from one to half a dozen, and the process has been perfected to a wonderful degree. In point of hardness, closeness of grain and perfection of form, the pressed bricks at present being manufactured in Canada will compare favorably with those in use anywhere on the continent or abroad. They are also being produced in a pleasing variety of color. In view of the success which has been achieved by the manufacturers, it is with much regret that we have observed the otherwise excellent effects obtained by the use of this material, well-nigh destroyed in the case of some important buildings recently erected by the efflorescence or lime-like exudation which, working its way through the pores of the bricks, forms a deposit on the surface. So detrimental is this to the appearance of the building, that unless means can be found to avoid it, architects will no doubt feel compelled to cast about for some other material. We learn that the possibility exists of determining in advance of their use, whether or not bricks will effloresce, and at the royal testing station of building material at Berlin, the test has been applied. The process is described as follows: The bricks are gradually heated to the boiling point in a waterbath, and are then suddenly immersed in cold water. They are boiled for one hour in a 16 per cent. solution of common salt and frequently cooled as before. They are again boiled half an hour in 5 per cent. soda lye. They are further boiled half an hour in the same solution, with the addition of 1 per cent. of ammonium sulphate. They are then boiled half an hour in a solution containing 2 per cent. blue vitriol and 10 per cent. common salt. Fragments of the brick are placed for 75 hours in 3 per cent. hydrochloric acid and for 50 hours more in 5 per cent. hydrochloric acid. By further treatment of the fragments with pure 4 per cent hydrochloric acid a fluid clear as water is formed, which, when treated with barium salts, should not show the presence of sulphates which are the cause of efflorescence. These tests determine the quality of the brick as well, and none which fail to stand the test should be allowed to enter into the construction of a building. We hope that the manufacturers of pressed brick will see the advisability of endeavoring to overcome the objectionable feature of their material to which we have referred.

BY order of their leaders seventeen hundred carpenters employed on the construction of the World's Fair buildings have gone on strike. This action was taken because a request for an advance of wages from 35 to 40 cents per hour and the dismissal of all non-union carpenters, met with refusal. The extremity of those upon whom rests the responsibility of getting things in shape for the opening of the Fair, five weeks hence, is regarded as the labor agitators' opportunity, and is taken advantage of to the fullest extent. The utter selfishness which under such circumstances prompts the unions to attempt to snatch a slight advantage at the expense of thousands of exhibitors and others who have large business interests connected with the forthcoming exhibition, deprives them of the sympathy which the public would accord to legitimately conducted efforts for the improvement of the conditions of labor. In this connection, mention may be made of decisions recently given by judges Taft and Ricks of the United States Circuit Court, which are likely to exercise an important bearing upon strikes of workmen employed upon works of a semi-public character. In the case of a dispute between the brotherhoods of locomotive engineers and firemen, and the Toledo, Ann Arbor and Northern Michigan Railway Co., Judge Taft granted an injunction restraining the chiefs of these organizations and the engineers and firemen from in any way, directly or indirectly, endeavoring to persuade or induce any employees of the railway companies whose lines connect with the Ann Arbor not to extend to the said company the same facilities for interchange of interstate traffic as are extended to said companies by other railroads. Eight employees of the company, after the issuing of the injunction, at once resigned their positions on being ordered to take out cars containing Ann Arbor freight. Judge Ricks, on being appealed to, ordered the arrest of these men for contempt of court, and in addressing them said:—"This court does not assume the power to compel you to continue your service to your employers against your will, but it does undertake to compel you to perform your whole duty while such relations continue, and does further claim for the purpose of ascertaining whether its orders have been violated, the right to determine when your relation to your employer legally terminated, and when your obligations to observe this order cease." This decision has caused a commotion in labor circles, mass meetings of unionists having been called in New York and other cities to discuss it. Whether or not the conditions upon which it is based would be held to apply to the World's Fair dispute is as yet an open question.

BRICK PAVING.

THIS subject has become of great interest in Toronto on account of the City Engineer having recommended that vitrified brick should be used in future for paving the streets of the city. The advantages claimed for this class of pavement are cleanliness, freedom from noise, sanitary perfection through the bricks being non-absorbent, smoothness, with a good foothold for horses, durability, if made with proper materials, and its price, which will compare favorably with other kinds of roadways. A great difficulty in this work is obtaining the necessary uniformity in the hardness of the bricks, which should always be burnt until a homogeneous section is secured throughout each. If this is not done, the first frost will determine the interior bricks, and the moisture absorbed by such will freeze the bricks and cause crumbling and cracking through expansion.

In the manufacture of bricks for paving purposes the clay to be used is a very important matter. It should be able to withstand a sufficient amount of heat, without fusing, so as to render the bricks hard and impervious to water; but while so much depends upon its refractory nature, reasonable fluxing agents are necessary to make the clay adhesive. It should also be of shale rock nature, so hard in its bed that blasting becomes necessary to remove it. Silica and alumina should constitute the chief refractory parts, but there should not be an excess of the former, as it possesses no binding properties, and bricks made from such clays are rough, and senacious. Potash, soda, lime, magnesia, iron and other elements will be found in small quantities in clays suitable for pavements, and these impurities give a tendency to fusion according to the amount present. Such ingredients should therefore not exist to any large extent; especially is lime to be avoided, as the heat used in firing the bricks will bring about a caustic lime which will absorb moisture when the bricks are laid as a pavement. Iron will make the clay fusible if over 6 to 10 per cent. of the clay is this metal. It is the presence of iron that changes the colour of the brick from that of those made from ordinary clays, and is therefore easily detected. Fineness of clay is most essential, and when this is the case, care only is needed in the manufacturing process to secure good bricks, that is, provided the clay is sufficiently refractory. Coarse clay will require more heat before vitrifying, but the finer the brick earth is ground, the stronger and harder the bricks will become.

The process of manufacture is a difficult problem, and very different from the usual one of brick making. A system that works successfully in one place, will not prove so elsewhere, on account of the diversities of clays. In no case should admixture be employed.

It would be impossible in this short article to describe all the

different methods used in the States to make paving bricks, but a very common one is by using, with modifications, the plant commonly employed for tile making. Taking one case in the United States as a general example: where a brick-maker burns out 1,600 bricks an hour, the system in vogue is along the lines referred to. The clay from the output is delivered to a Blake, when making this kind of brick, and finished with a dry-pan crusher. It then passes to a tempering machine, and is then forced through the desired mold in long lengths, afterwards being cut with a wire by hand to its proper size. The bricks are then removed to a drying house and left until ready for burning. The ordinary kilns are not used, the bricks being packed close together in cylindrical kilns with hemispherical tops giving a down-draught. They are burnt from 70 to 80 hours in a heat sufficient to cause tin to melt and copper to run together. It is here care should be taken that the bricks do not become fusible.

When laid on a good concrete foundation, and the joints well filled in with pitch or tar, a vitrified brick pavement will stand a crushing strain of over 8,000 pounds to the square inch. The result of some tests in the United States from paving laid with bricks, and others laid with ashpaltum blocks, limestone, or granite are very interesting. The samples were weighed before and after being laid and tested, which was carried out by means of a waggon going over the pavements sufficient to amount, it is supposed, to 9½ years traffic. It was found from this performance, that the abrasion of the brick paving was 9%, the asphaltum blocks 14%, limestone, 10%, while on the granite it was hardly noticeable.

Turning to the cost of this pavement, if used in Toronto, we find that unless the Canadian brick merchants can manufacture good material, the cost of obtaining same from the United States, would bring the price far above that of asphalt. But, if the necessary brick can be made here, such paving laid on a proper concrete foundation should not cost more than $2.30 per yard super., and if a sand instead of a concrete foundation is used, then the price should not be above $1.50 per yard super., but this latter class of work cannot be recommended where traffic is heavy. The present price of asphalt is about $2.60, and cedar block paving can be laid for 70c. to 80c. per yard super. The above prices for brick paving therefore compare very favorably with these. As already stated some of the brick merchants in the suburbs of Toronto are putting in the necessary apparatus for making paving bricks, believing that they have the proper clay in their land to turn out good, durable and uniform material. If this is so, and provided the process of manufacture can also be perfected, there is no reason why vitrified bricks should not be largely used throughout Canada for paving purposes.

VAULTING.

It is interesting to trace the methods of vaulting used among masons at different periods in order to meet the requirements of the architecture of their respective times. This is not only a matter of antiquarian interest, but is an essential knowledge to those studying the art of stone cutting, because, where circumstances will allow, the architectural buildings of the present day follow the styles and orders introduced by the ancient architects.

We learn from ruins still existing that the construction of vaulting was known in the earliest periods, vaulted arches being found amongst the ruins of Nineveh. There is no doubt, however, that this class of work was not employed to any great extent before the Roman era, and even in buildings at this time there is no evidence of scientific knowledge of stone cutting. For instance, if two vaults, of the same height at the crown, but of different spans, are to be made to intersect each other, the method now used is to get the profile of the groin by ordinates; this does not however appear to have been practised by the Romans. Their way of carrying out such work was to start the springing of the lesser arch, making the sections of both vaults of different radii, which left the groin a wavering line. The crowns of these arches were always level, and this prevailed until more complex forms of arches were introduced. The early Norman vaulting was carried out on the same principle as those existing at Rome, being distinguished by its semi-circular arches. This changed however with the introduction of rib work, which then consisted of a frame work of light stone ribs, filled in with courses of stones cut to fit the spaces between the ribs. Although this arrangement was in common use at the time, yet some of the buildings of that age show the introduction of the modern method of making the profile of the groin dependent on the form of the principal arch. During the middle ages ribbed vaulting may be said to have been divided into three forms:

(1) Plain ribbed vaulting, which sometimes had ridge ribs, but was frequently without. These arches were often decorated with paintings, and were much used in French and Italian churches of that time.

(2.) Lierne vaulting, in which the ribs were very numerous, and did not always change the direction of the vaulting surface as in the previous class. These arches, often richly decorated, required a thorough knowledge of projection, and although the work at that time was not probably done by any regular geometrical method, yet the natural power the masonic artists had of conceiving in their mind what they wished to carry out, greatly helped them in their work.

(3.) Fan vaulting seems to have been confined entirely to England. The main ribs in this work had all the same curvature, and very often this class of masonry was found alongside lierne vaulting in the same building. The complex forms of this class became so numerous, the panels so small, that it was found better to build all the vaulting by jointed masonry, the panels being sunk into the undersides of the archways instead of being beded on to the ribs. Henry VII Chapel at Westminster Abbey is built entirely in this way.

Stone cutting, as an art, attained its greatest development in the 15th century, but although the work gained as large amount of perfection in Italy as elsewhere, yet the Roman rounded style of vaulting as mentioned, was never entirely superseded. The great master-piece of the Italian work in vaulting is, beyond a doubt, the dome of St. Peters, at Rome, although defective in form in some points. It was built at the close of the 15th century from the designs of Michael Angelo, and the work is an acknowledged specimen of the successful application of stone cutting to domes.

During the building of this cathedral a celebrated French architect, Philip De Lume, published the first book containing a complete system of lines for stone cutting. From the opinion expressed, it appears that ribbed vaulting had fallen into disuse, but he acknowledges the extraordinary evidences of mechanical skill displayed in vaulting executed by the Italian masons, to which subject reference has already been made.

There is little worth noticing in the progress of the history of this art from that time to the present age, most of the works of stone architecture being copies in construction from the old schools. The vaulted roof of St. Paul's Cathedral, London, shows the architect's thorough knowledge of his work, but the building has only a wooden dome, which is merely a picturesque addition to the structure, not an essential part of the construction. Although there were no remarkable changes, yet masonic art became a necessary study for the architects of the day, and geometrical projection formed an important part of education in the profession.

It would not be proper to close this short historical sketch of vaulting without referring to the introduction of oblique arches for skew bridges. They have come to be used only during the last thirty years, and no doubt the development of railways made a necessity for such bridges for before they were introduced, the railway tracks had to be so arranged that all rivers and roads crossed at right angles which meant much unnecessary expense.

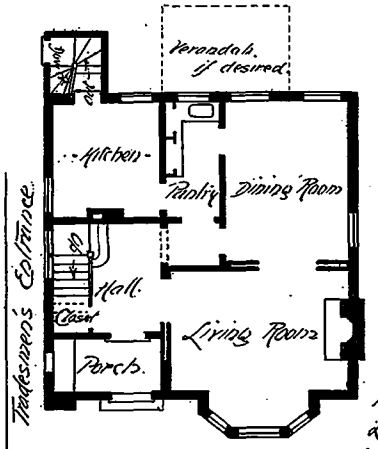
To-day, in Canada and elsewhere, the mason does not obtain many opportunities to carry out his art to advantage, but as the country develops and the fine arts become more appreciated and studied, ancient architecture will revive as it has done before; then artistic stone masonry will take its place again among the chief architectural features of our large buildings.

The second copper covered statue of the group of twenty to adorn the new St. Peters cathedral, Montreal, has been completed by Mr. Grattor. It represents St. John the evangelist.

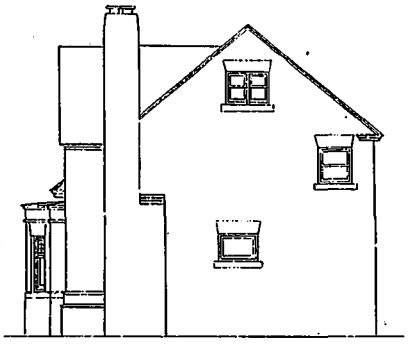
Three large blocks of granite of an aggregated weight of a little over twelve tons have been shipped from one of the up river quarries to Ottawa to form the base of the monument to be erected in the Parliament grounds, Ottawa, to the memory of the late Sir John A. Macdonald.

DESIGN FOR A $3000 BRICK HOUSE

Scale 5 10 15 ft.

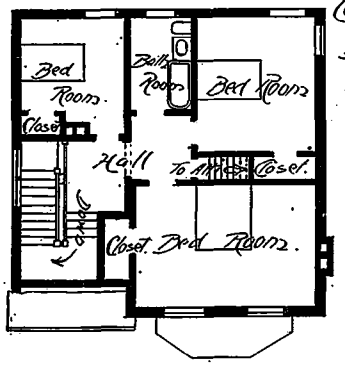


West Elevation.

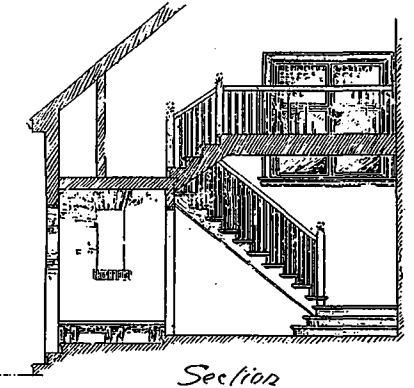


South Elevation.

Note— Laundry, Store, and Furnace rooms in Cellar: and two Bed Rooms in Attic

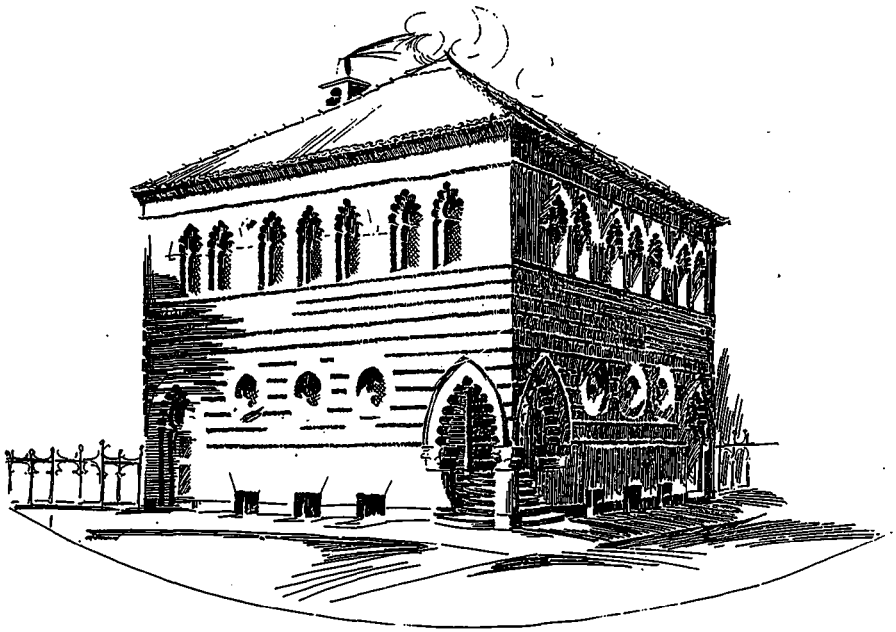


North Elevation

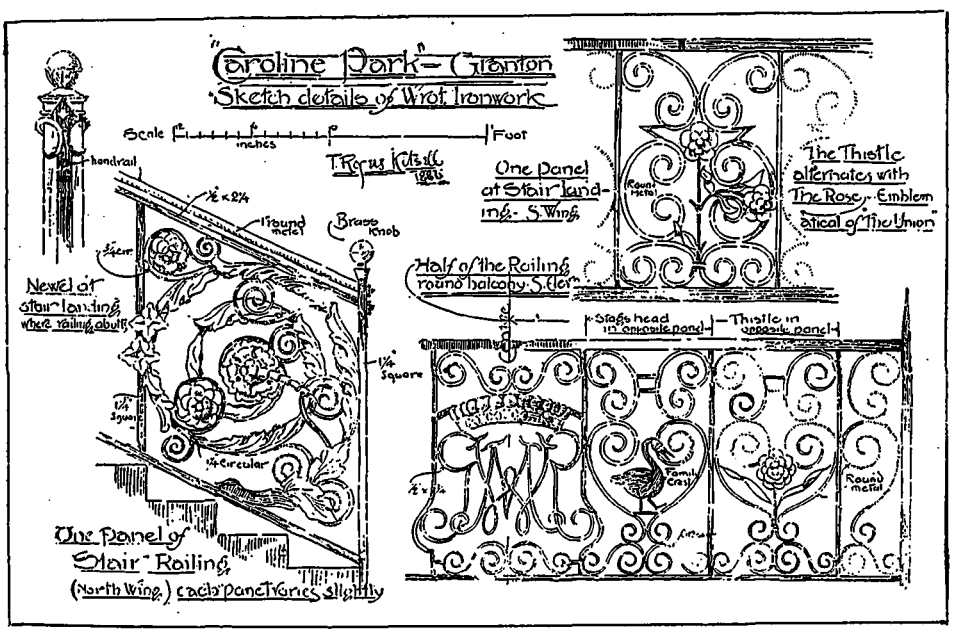


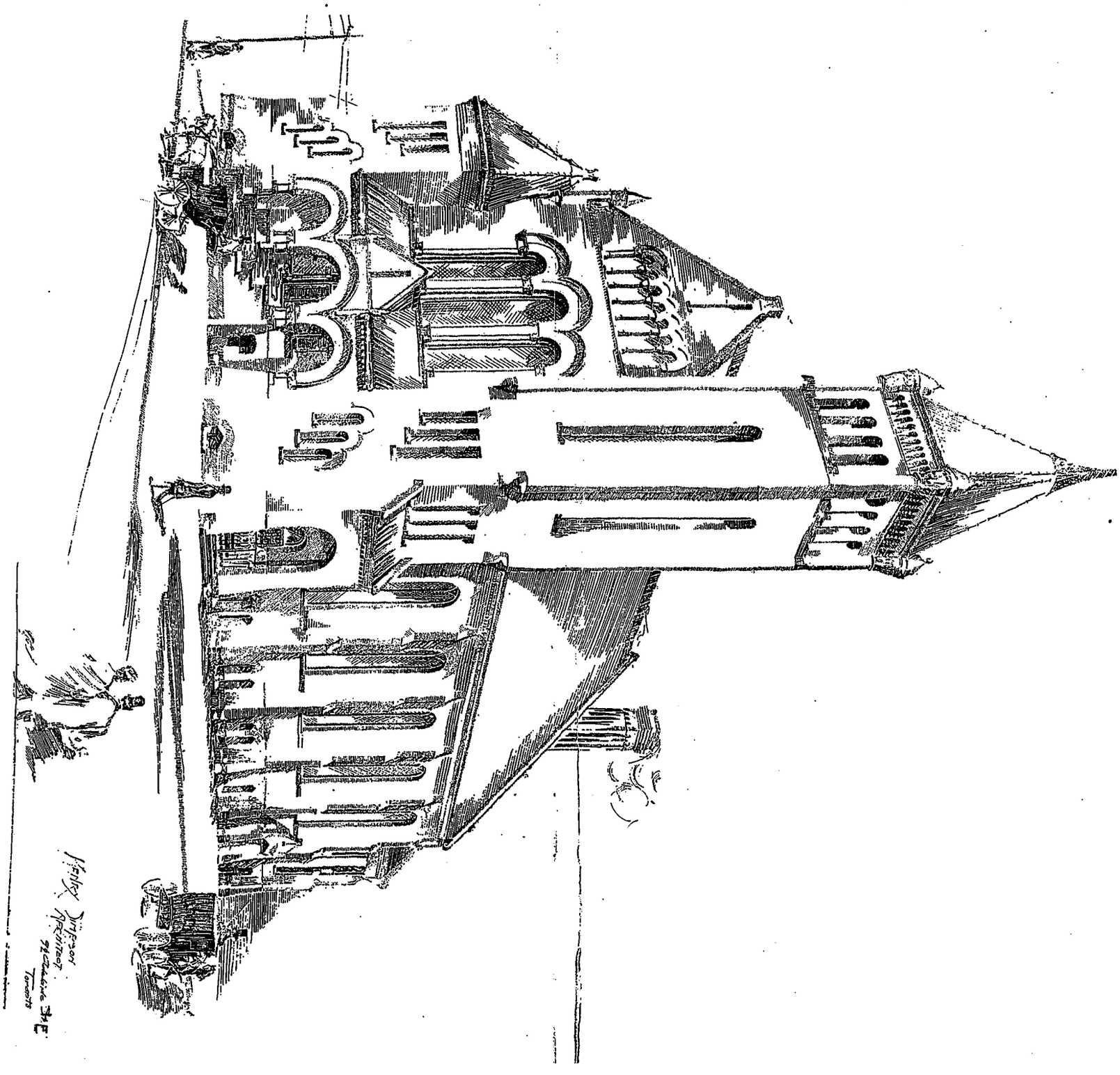
Section

Jones.

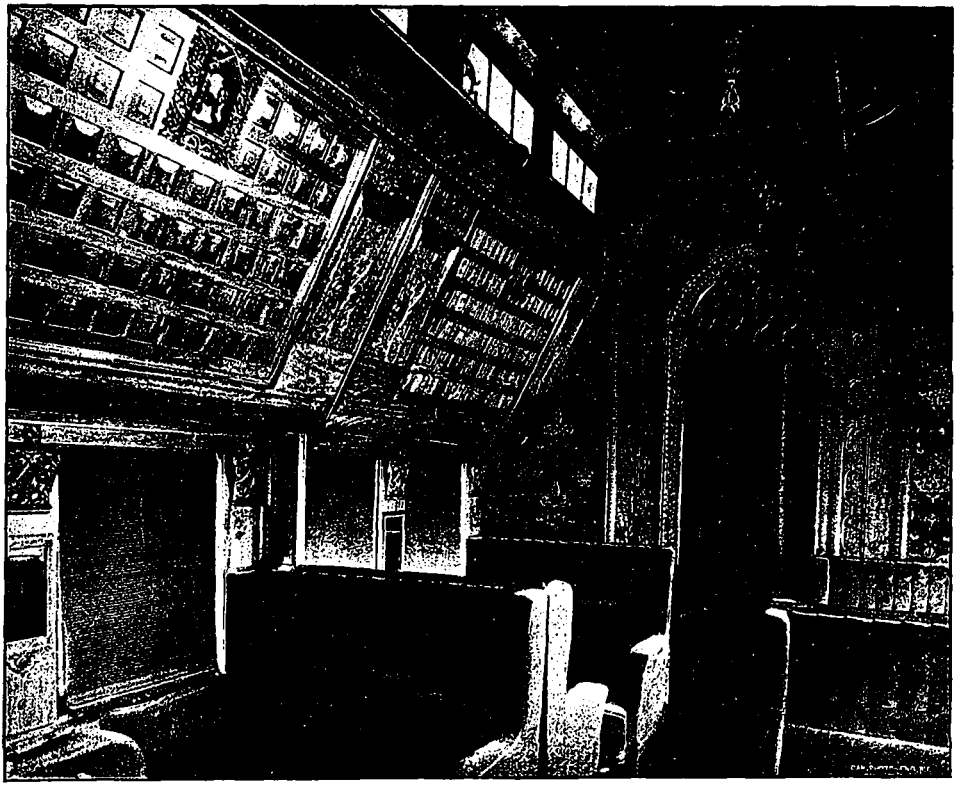


BETHEL CHAPEL, UNIVERSITY ST., TORONTO.
HENRY SIMPSON, ARCHITECT.





COOKE'S CHURCH, TORONTO.



Interior of Sleeping Coach to be Exhibited by the Canadian Pacific Railway Co. at the World's Fair.

E. Colonna, Architect, Montreal.

THE NEW PARLIAMENT BUILDINGS OF ONTARIO.

On the 4th of this month the new Parliament Buildings at Toronto were formally opened. It naturally occurs to us in chronicling the event, to consider what sort of bargain the people of Ontario got for their $1,200,000 odd.

The general scheme seems proper. The Legislative Chamber is in the centre, over the main entrance and approached by the grand staircase. This gives the central motive which, from its singleness of purpose, lends itself to effective composition on the exterior. The offices of the Legislature and of the departments extend on each side of the centre and along wings which return northward, finishing with a stack of lavatories at the end of each. That is the plan in simple, and it seems a straightforward plan in the usual manner of public buildings where a general scheme rules, and rooms are apt to be proportioned by position rather than use. But in the main feature of the interior arrangement there has been a judicious expenditure of space which makes the inside of the building fine, and is worthy of all praise. The grand corridor which runs the entire length of the building from east to west, is made of sufficient width to have on each side of the central portion (where the grand staircase landing intervenes) a space open from the ground floor to a skylight in the roof. The passages of the upper floors thus take the form of galleries at these points, and on the ground floor the corridor has on each side a colonnade which supports these galleries and their arcades. The colonnades, the open space, the light from above, all combine to redeem the corridor from the dark and dreary monotony that is so often all the architectural effect presented by the passages of a great public building.

Thus far we may perhaps assume the architect, but we are afraid it is too obvious that the person with whom we have had to deal for the carrying out of the plan is not so much the architect as the architect's draughtsman. We have no doubt the draughtsman did his best, we would impute to him nothing but righteousness, but surely the architect's commission was sufficient to afford a draughtsman who could design. In this same corridor which we have described, there is but one set of columns to be repeated along the whole colonnade. The detailing was limited, and with a little careful study in the hands of one who knew something might have been carried to perfection and made the whole corridor beautiful where now the details are poor on the ground floor and offensive in the upper storeys. On paper this essay of an apprentice in columnar details would be something to smile at, but that they should be actually erected in an important public building is a matter rather for indignation. The same may be said of the grand staircase. It starts fairly well in iron and slate, but above, where we get to the region of arcades, and what we may suppose to be intended for an ornamental ceiling, the draughtsman's efforts should not have been allowed.

The Assembly Chamber, the grand piece of the design, shows more skill in the designer, but we are afraid cannot be said to satisfy good taste. There is some well executed wood carving on the floor of the House which really gives pleasure and is of the more value as being different in type from the style we have become accustomed to of late years.

Of the exterior we are afraid there is little good to be said beyond praise of the material. It is a fine mass of Credit Valley brown stone and as such cannot but look important.

It is not, however, of meanness we have to complain. The central pavilion with the main entrance, the 16 feet unmullioned windows of the Legislative Chamber above, and the enormous roof which crowns it, is certainly striking. But its proportions are swaggering rather than dignified. Perhaps its self-assertion may be intended to represent the idea of provincial antonomy, but we must confess we should have preferred to have complimented the idea by representing it with a little more of the dignity of beauty.

The roof of this central pavilion is a fine and bold erection, but it seems to us a pity that it was not constructed of iron, so as to save at least the danger of fire originating within its own limits. As it is, being a forest of timber above the highest cast of the hose, its existence is a menace to the public documents below, and the public may perhaps some day wish it were away. As for the other roofs, we must candidly say we wish they were away now, especially the eccentric hipped roofs with glass tops over the main building on each side of the centre. They must form capacious snow traps at the junction with the other roofs. But our discontent is chiefly with the question of beauty of form, and with the draughtsman's apparent indecision as to what pitch to adopt. If the buildings had been planned for a long ridge instead of these pyramidal forms with glass apexes, the front would have been much helped, and the glass might have shown only on the rear—the long suffering but picturesque rear.

But the glass is a friend giving the top lighted corridors within, and we should have been glad to see more of it if the architect had availed himself of it to a greater extent so as to reduce the size of the windows on the facades.

It is these which really spoil the building. They have not even practical advantage to recommend them. The corridors are lighted chiefly from the top, and could be given more light from that quarter and from the rear. For the offices themselves, windows of such a size are a great discomfort. The mere operation of lifting a sheet of glass 9 feet wide is found to be troublesome. In winter the rooms must be pervaded by the sun to a painful extent, and in summer also it will probably be necessary to keep the blinds down and exclude air as well as sun. With windows on a more reasonable scale there is more chance of compact and well arranged planning of the offices, as there is greater freedom offered for the disposition of partitions. The draughtsman too, with more reasonable windows, might have suffered less defeat on the exterior. As it is he has been unable to make anything of it. The conditions were hard, and he does not seem to have been skillful. Where he erred he erred no doubt from ignorance; but this same ignorance, how much has it cost us? Draughtsman is writ large all over our greatest and most costly public building.

ILLUSTRATIONS.

ONTARIO ASSOCIATION OF ARCHITECTS.

As the meeting of the Council at which the report of the Board of Examiners is presented will not be held until after we go to press, the results of the Association examinations held this month cannot be published in this number.

PERSONAL.

Messrs. Dick & Wickson, architects, Toronto, have removed their offices to No. 34 Canada Life Building.

The widow of the late W. G. Storm, R. C. A., died in the Presbyterian Hospital, New York, on the 28th of March.

Mr. W. E. Doran, architect, of Montreal, is a candidate for the Presidency of the St. Patrick's Society of that city.

We are pleased to record the marriage of Mr. H. J. Powell, architect, of Stratford, to Miss Minnie Venton, of the same city.

Mr. Robert Weddell, contractor, of Trenton, is to contest West Hastings in the interests of the Conservative party at the next provincial election.

Mr. S. G. Curry has returned from British Columbia, having fulfilled his duties as expert in the competition for the Government Buildings at Victoria.

Mr. James Battle, cement manufacturer, of Thorold, is mentioned as a probable candidate for Parliamentary honors, in the Conservative interest.

Mr. D. T. McIntosh, on severing his connection with the firm of Elliott & Son, Toronto, was presented with a handsome piece of bronze statuary by the firm, and a gold-headed cane by his fellow-employees.

Mr. Montague Castle, of Montreal, is a winner of a first and second prize in a competition for the best life drawing open to all American Students in Paris. The prizes were given by the President of the American Artists' Association of Paris.

Messrs. Cassels, Percy Over, and C. H. Acton Bond, well known Toronto draughtsmen, are at present in St. Johns, Nfld., assisting Mr. J. A. Pearson, of the firm of Darling, Sproatt & Pearson, who has a large amount of work under way in that city.

Mr. Coste, Chief Engineer of Public Works, advocates the use of creosote for timber used in crib work and piling. It no doubt is a great preventive of the sea worm eating away the timber. As all the specifications for Government works of this class provide for all piling and crib work to be creosoted, there should be an opening for an enterprise along this line in Canada.

COMPETITION FOR GOVERNMENT BUILDINGS AT VICTORIA, B. C.

The experts in the above competition have given their decision in favor of the design submitted by Mr. F. M. Rattenbury, of Vancouver. The five sets of plans submitted in the final competition were thoroughly analyzed by the experts under the several heads of "Entrances," "Staircases and Passages" "Design and Composition," "Light, Air, Lavatories," "Construction," Detail," "Heating, Ventilation and Drainage"— the principal heads on which the award was based. As the result of this analysis, the designs were placed in the following order of merit:

1—"For our Queen and Province," (F. M. Rattenbury, Vancouver, B.C.)

2—"Spes Labor Levis," (T. C. Sorby, Victoria, B.C).

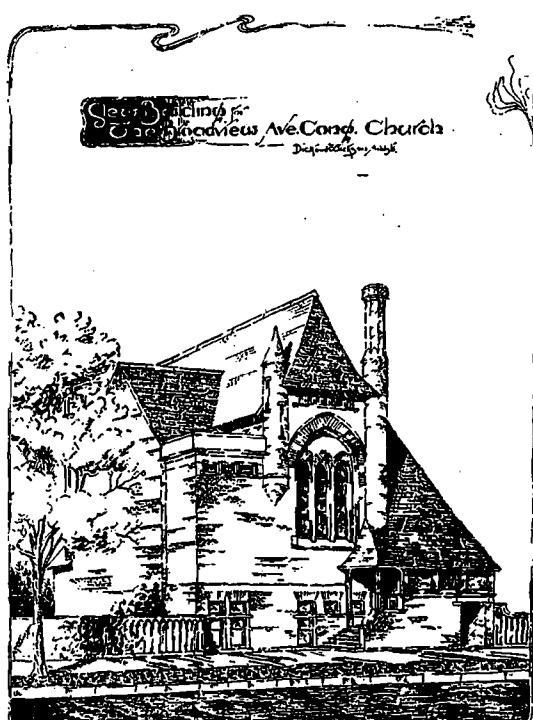
3—"Caractacus," (F. M. Garden, Chicago).

4—"A Red Seal," (J. M. Corner, Boston, and W. P. Skilling, Seattle).

5—"Dieu et Mon Droit," (J. Francis Brown, Toronto.)

The following particulars regarding Mr. Rattenbury's design, which is in the Classic style, are given in the Victoria *Colonist*:

The buildings are arranged in three groups—the centre or principal building comprising six departments so arranged that, whilst each of the three wings will be a perfect and complete building that can be erected independently of the others, they will when completed form a monumental and impressive pile. The grand entrance in the centre of the facade leads into a central octagon hall, terminating in a nobly proportioned dome. From this octogan hall on the ground floor the Minister of Education's department is approached on the left; the Treasury on the right, and the Lands and Works department in front. On the first floor the same arrangement is repeated with the Provincial Secretary's department on the left, the Attorney-General's department on the right, and the legislative hall and offices in the centre. Thus from this one hall is every department immediately approached, all confusion or perplexity being entirely obviated. And while each department thus forms part of one central scheme, it has nevertheless its own independent entrance, staircases, strong rooms and lavatories, rendering it a perfectly contained and independent block.



The grand entrance is a handsome enriched portal, approached by a grand flight of steps. Through this the visitor enters the dome, which ultimately may be enriched by sculpture, mosaics and decoration. A flood of light is shed down from the cupola at the apex. On special occasions the entrance can be reserved solely for the legislative hall, the departments on either side having their own special entrance as before described. The legislative hall is situated in the centre of the block and has a corridor round it with a belt of rooms for the use of the ministers and members, committee rooms, library, etc.

The hall itself is a spacious and beautiful room. On three sides an arcade is carried round, with galleries for the public, ladies and reporters obtained over the corridor.

On the third floor the Lieutenant-Governor has a suite of rooms in front, facing James Bay and approached by the elevators next the principal entrance.

An unique and ingenious method of protecting the building from fire is adopted. At the approach to the three departments on each floor from the central hall, a system of iron doors or bulkheads is arranged, so that in case a fire might occur it can be isolated to one wing and controlled, without there being any possibility of its spreading. The heating and ventilation are also carefully considered. This is the principal block. Two others, perfectly fireproof, one on each side, are arranged for the Land Registry office, on the right, and the Government Printing office, on the left. The two detached buildings at either side stand somewhat in advance of the principal building—looking on the plan somewhat like the three sides of a square. These are connected to the main structure by a colonnade of columns, forming a covered approach from one to the other.

The winner of this competition is a young man under 30 years of age, who arrived in British Columbia from England about a year ago.

We hope to be able to publish at an early date a reproduction of the accepted design, and also of some of the other designs which were submitted.

TREATING STONES FOR CONSTRUCTION.

ARCHITECTS have lately called attention to the desirability, in the case of stone that is to be used for important purposes, that it be quarried, stored and seasoned for some time before being hewn and placed in the walls, the natural sap being by this means allowed to evaporate and the stone tested as to its quality; it is admitted that this method would add to the cost, but that the money would be well spent, if this precaution prevented the wasting of such stones by rains, frost or atmospheric influences, which, especially in cities, soon act on the surface of a newly quarried stone. On the other hand, stone that is quarried one day and built in the next is in a green state, and must be considered unfit for use; that it, it is not in condition—it is at its weakest—its pores are open and ready to absorb not only moisture but the gaseous and disfiguring influences which tend to its destruction. It is well known to every hewer that to get a polished surface on a stone that has lain for some time is very different from what is obtained on one fresh from the quarry—a fact which of itself is regarded as sufficient evidence to warrant the course recommended, namely, to thoroughly season the stone before using.—*Builder and Woodworker.*

The Ottawa Institute of Architects has elected the following officers for the ensuing year: President, D. Ewart, of the department of public works; vice-president, F. J. Alexander; sec.-treas., G. M. Bayly; council, Messrs. J. W. H. Watts, J. G. Grist, K. Arnoldi and M. C. Edey.

The Stonecutters' Section of the Toronto Builders' Exchange, have appointed their officers for the year as follows: President, J. Vick, of the firm of Carroll, Vick & Co.; vice president, Fred. Brown, of the firm of Brown & Love; treasurer, John Barnard, of the firm of Walker & Barnard; Secretary, G. L. Phillips; Auditors, G. Oakley and R. Smart.

QUESTIONS AND ANSWERS.

[Readers are invited to ask through this department for any information which they may require on lines consistent with the objects of the paper. Every effort will be made to furnish satisfactory answers to all such inquiries. Readers are requested to supply information which would assist us in our replies. The names and addresses of correspondents must accompany their communications, but not necessarily for publication.]

"Country Builder": Do you know where I can get patterns for scroll work?

Ans.—There are few firms who keep these goods. Messrs. Rice, Lewis & Son, King St. E., Toronto, can supply you.

T. W. B.:—Are there any other builders' exchanges in Canada except those at Toronto and Winnipeg?

Ans.—We understand there are exchanges at Ottawa, St. Catharines and St. Thomas. Mr. Phillips, Secretary of the Toronto Exchange, might be able to give you further information.

A. B.:—Can you tell me through your columns the best way to stain wood grey?

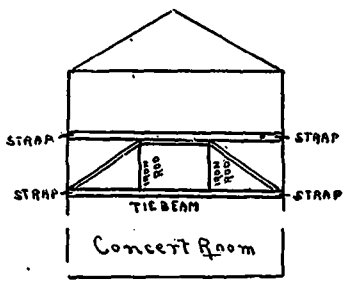
Ans.—Apply a solution of one part silver nitrate in 50 parts of distilled water. Follow this with a coat of solution of ferric acetate until the proper shade is obtained. Do not let this preparation touch the hand.

G. F. S.:—Will you kindly inform me where I may obtain printed instructions and information relating to the competition for designs for the improvement of St. Lawrence Market, Toronto, recently advertised in your weekly edition?

Ans.—We learn upon enquiry that there exists no printed information for the use of architects in relation to this competition. In fact, as we pointed out on a former occasion, the whole matter is in too hazy and indefinite form to warrant architects in having anything to do with it.

"H. E. Gates, Dartmouth, Nova Scotia":—I am planning a 3 storey wooden building, the first storey of which is to be used as a concert hall. Please inform me of the best means for supporting the other floors, as I do not wish to use iron columns? The building is 40 feet wide.

Ans.—You give no data from which we can gather what the upper floors have to carry. But in describing the building as being wooden, you suggest the advisability of spreading the weight of the upper storeys over many points, and that the best form of support would be girders twelve feet on centres or less, as necessary, so that they may be not too deep to form an agreeable beam finish for the ceiling of the concert hall. Another method would be that shown in the accompanying sketch if the partitions on the upper floor will permit.



Unless very carefully done, with a surplus of strength, it is but an undesirable make shift.

"Young Plasterer": From what cause does Plaster of Paris set so firmly when water is applied to it?

Ans.—Plaster of Paris derives its name from the fact that it was first made for commercial uses from a natural deposit of gypsum found near Paris. This substance is a sulphate of calcium, containing two molecules of water in combination. When it is heated to between 300° and 400°, a considerable portion of this combined water is driven off and a friable mass results, which, when ground in suitable mills to a fine powder, forms the plaster of Paris of the trade. The "setting," or hardening, of burnt or calcined plaster of Paris is due to its disposition to reunite with the water of which it has been deprived. When mixed with water, the mass promptly combines with a sufficient portion thereof to make up for that which it has lost, and solidifies to a hard mass, having the composition of the original hydrated sulphate of calcium from which it was made. In undergoing this metamorphosis, the mass expands somewhat, and hence derives one of its most desirable properties for taking casts of objects, as it completely fills the mold and renders a very sharp impression. Care must be observed in burning the plaster not to over-heat it, as by this means a portion of the product becomes completely deprived of its combined water, and the resulting mass loses more or less completely its quality of setting with water.

CORRESPONDENCE.

[Letters are invited for this department on subjects related to the building interests. To secure insertion, all communications must be accompanied by the name and address of the author, not necessarily for publication. The publisher will not assume responsibility for the opinions of correspondents.]

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—I want to use metallic ceilings in two school buildings to be built in Deloraine and Melita, and would like to get the address of some Canadian dealer in this material, but see none in your paper. Can you give me the address of any one?

W. T. C. SHILLINGLAW,
Brandon, Man.

[The Metallic Roofing Co. and Messrs. Tucker & Dillon, Toronto, can supply you.—ED. C. A. & B.]

TORONTO ARCHITECTURAL CLUB.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—At the last meeting of the Toronto Architectural Club, a motion to adjourn *sine die* was passed. This brings to a close for the present, at least, the work of this organization. Most of its older members, who were active in the preceding seasons, now devote their energies to the Ontario Association of Architects, while many of its younger members find their evenings fully occupied with the classes held at the Technical School. Thus it is that the attendance at the Club's meetings during the past year has been reduced to a very insignificant number. To many it may seem a pity that circumstances thus force the old Club to retire, but with such a small membership list, and the consequent small financial support, it is impossible to retain proper rooms, etc.

It is a pleasure to note that the Club retires honorably, having paid all its debts, and having a few dollars over, which have been voted to the O.A.A.

As one who has taken a great deal of interest in this Club, and who believes that members of our profession should do what they can to make their work as much a pleasure as possible, may I ask that the architects of Toronto take into their serious consideration the problem of providing suitable club rooms next winter for all classes of the profession, where magazines and papers may be found, and lectures, etc., may be held.

Yours truly,

ALFRED H. GREGG,
President T.A.C.

TENDERING FOR WORK.

Editor CANADIAN ARCHITECT AND BUILDER:

SIR,—Seeing you have started a department for correspondence in your paper, could you find room for these few lines on the present system of tendering for works, which is a subject of vast importance to the contractors of Canada? It is almost an impossibility for contractors of reputation and ability to compete against the outsiders in the business, who give prices for work far below the actual cost, or the fair estimate of an architect. What is the result?—the work, if completed, is done in a very defective manner, the architect suffers, the trade is given a bad name, and no one is satisfied.

I believe in fair competition between reliable firms, and although the architect should have "the right not to accept the lowest or any tender," yet it would be better for all parties if he would advise his client to refuse prices that are too low, as well as suggest the non-acceptance of figures that are too high. This may in some cases be a difficult matter, but I think architects could use their influence more in this direction than they sometimes do.

EQUITY.

MANUFACTURES AND MATERIALS

TERRA COTTA: ITS USE AND ABUSE.

Of late there has been a desire to discuss the merits and application of sundry materials in which manufacturers and artists have an interest. Concrete, iron and steel, plaster, and, lately, terracotta, have formed the staple of these discussions, for each of these has its champions and defenders as well as its detractors. Controversial meetings of this kind may not be the most practical or convincing means of promoting the use of any raw material or system, for advocates and producers are naturally prejudiced, while those who come to find fault are generally blind to every merit, as they seek to magnify every defect. We remember the time, however, when the advocates of iron and concrete were in a small minority, and had to bear the brunt of much more powerful opposition than they have now. Red brickwork and terracotta have passed through a similar obloquy and ridicule; and the friend of both materials can now smile on the complete reversal of fortune that has taken place.

With regard to the last named material, we have heard a good deal of late, and the manufacture of terracotta has formed the subject of a series of articles in the *Building News*. Of course like iron, and concrete and brickwork, it has had its opponents, who are generally uncompromising antagonists, able and willing to see nothing in favour of a material which is of a modern introduction, or reintroduction, and which has taken the place of stone to a large extent. Opposition of this kind does good in the long run, because it stimulates manufacturers and architects to make more strenuous efforts to disarm opponents. For example, one of the obstacles to the employment of terracotta has been difficulty in preventing the warping of the clay in drying and the shrinkage in burning. Now this obstacle has been practically removed by the process of manufacture described by Mr. S. H. Leech, of Messrs. Doulton's firm, in a paper read by him at the Institute on "Recent Developments in the Manufacture," and briefly reported in our last issue. The repeated complaints made by architects of "line" and distorted appearance of blocks used in cornices and string-courses, and other horizontal and vertical features like window jambs and pilasters, have to a large degree ceased, for producers of the material have, by increased care in preparing the clay, and in the process of drying and burning, been enabled to turn out blocks and pieces of terracotta of wonderful truthfulness and homogeneity of texture and colour. Another objection to the use of this material made by some architects is that from the nature of the manufacture it encourages repetition of details. Both of these objections no longer hold good. By the system of "direct working" carried out in the new process of manufacture by Messrs. Doulton, the clay is compressed into a state that can be finished in one operation—in fact, manipulated by hand. The block of clay is so nearly solid that it can be treated and finished much in the same manner as a block of stone; the blocks of cellular terracotta do not require to be filled up with concrete, and can be cut to any dimension and shape for fitting round iron stanchions for shafts or other purposes. Being amenable to hand, the compressed clay is capable of being directly worked by the artist instead of being subjected to a process of moulding which destroys all traces of the artists' touch.

These advantages of the "direct method" of working deserve recognition. As Mr. Ingress Bell pointed out in his thoughtful paper on this subject, we must divest our minds of the habit of thinking in stone, in dealing with this material, and until this habit is acquired our terracotta architecture will be a failure. One of the distinctions between working in stone and terracotta is that in the former material the mouldings and ornaments are produced by sinking the field. By a succession of sunken planes the mason produces his cornices, abaci, architraves; every moulding and ornament is sunk in the stone, even the enrichments and foliage of cornices and capitals in Classic as well as in Gothic work were roughly blocked out in the form of a rectangular or splayed projection in the stone, and then the carving was sunk below it. But this principle is not necessary in terracotta; the modeller can superlay and add on to the planes of the block, the moulding can be overlaid with ornament separately modelled, and, in fact, the whole feature can be built up in the clay or manipulated in any imaginable way; so that instead of sinking below the surface of the block to produce the moulding or ornament, the modeller can stick on his foliage or tracery. The effect to the eye of both systems is the same, but the process of production—one by sinking the field, and the other by overlaying it—is different, and seems to suggest that in terracotta, the designer, being less restricted by margins and planes, should have a different motive; in fact, his relief and ornamentation might be more often the *impasto* method. Certainly, stone forms of architecture are not those that should be copied; nor should we like to see revived a meaningless "rococo" style in clay. Both extremes should be avoided. No doubt Mr. Leonard Stokes' attack on terracotta derives much of its sting from the utter disregard of these principles rather than from any deeper cause. He sees rightly enough its abuse in the hands of men who have taken to it because it is fashionable, and cheaper than stone. That it can be called a "miserable mockery composed of mimic masonry" only proves the proposition we have advanced, and does not in the least damage the material in the eyes of the real artist with independent motives for doing better. Many objections can be urged against the application of this material. The concrete filling to terracotta blocks is no doubt open to the objection of sometimes causing fracture of the block by the inequality of the strains induced in the mass; for this reason the "cellular" plan is an advantage, because a greater substance can be given to the blocks. As a casing material for iron columns, fronts of shops, and the like, terracotta offers advantages over stone and even brickwork. Of course such an example as the church piers and arcade mentioned by Mr. Stokes, embedded in which iron stanchions are used with a girder over the tops of the arches to carry the clerestory, is an abuse of the material altogether. If small piers are required, why should not small solid blocks of terracotta be used like moulded bricks? and why should not the arches be solidly constructed in the same manner? But all the objections urged against it constructively and artistically are avoidable. The arguments against its durability, its colour, and its dreariness apply with more force against many kinds of stone which become dull and monotonous in the extreme. Can we look with any satisfaction on the black and furred appearance of many of our London smoke-begrimmed facades? —*The Building News.*

Mr. W. B. Malcolm is enlarging his business premises on Church street, Toronto, and is fitting up new offices and show rooms.

The Standard Drain Pipe Co., of St. Johns, Que., are sending out an attractively printed illustrated price list of their products.

A company with a capital stock of $250,000 is being formed to take over the business of Messrs. C. B. Wright & Sons, cement manufacturers, at Hull, Que.

The Toronto Vitrified Paving Brick and Stone Company, is being organized at Toronto with a capital stock of $500,000. Mr. R. W. Prittie is provisional director.

Messrs. Lefebore & Nelson are exhibiting in the Imperial Building, St. James street, Montreal, a display of metallic ore blocks used for facing old or new buildings. It is proposed to establish large works for the manufacture of these goods.

The Toronto and Orillia Stone Co., Ltd., has lately been organized. The Company own a limestone quarry 45 acres in extent at Longford, Ont. The officers of the Company are: President, Andrew Tait, Orillia; vice-president, Jos. Tait, M.P.P., Toronto; secretary, E. C. Wainwright, Orillia.

The Dominion Sanitary Pottery Company, of St. Johns, P.Q., is forwarding to the Chicago Exposition, sixty handsome specimens of closets, their own manufacture. The Artistic Decorating Co., of St. Johns, executed the decorations, which are most elaborate. The make and finish of the goods will compare well with the products of the great potteries of other countries.

Major Trotter, of the Standard Drain Pipe Co., has invented an ingenious contrivance for saving coal in potteries. The heat of one kiln, after passing through the pipes, instead of going to waste, is made to go through a second and third kiln. By this means three kilns are fired at the cost of two, or a saving of one-third of the amount of fuel used in the present system. The invention is to be patented in Canada and the United States.

The Fuller & Warren Company's system of heating and ventilation, which is in extensive use in the United States, is now being introduced into Canada by the Robb Engineering Co., of Amherst, Nova Scotia, having been installed during the past few months in new school buildings in three towns in Nova Scotia: Amherst, Yarmouth and Wolfville. It speaks very highly for this system that it is in use in a large number of the best schools in Massachusetts, where legal enactments have made it imperative to comply with the highest attainable sanitation.

We regret to have to announce that the manufacturing department of the St. Johns Stone Chinaware Company's works at St. Johns, Que., was destroyed by fire on the 4th of March. The proprietors had recently completed extensive improvements, including new machinery costing $25,000. Their loss is placed at $100,000, against which there is insurance to the amount of $54,000. The works gave employment to 225 persons. The company will at once put into operation the Dakin pottery recently acquired by them, and it is expected will proceed as soon as possible to rebuild and re-furnish the works which have been destroyed.

Messrs. Richardson, Walker & Co., of Portland, Maine, who are extensive wholesale and retail dealers in southern pitch pine and cypress timber and lumber, write us that they have lately shipped some large orders into Canada, and believe that there will soon be a large demand in this country for southern woods. Cypress approaches most nearly in quality to white pine, which is becoming increasingly scarce, and is claimed to be in some respects superior to the latter, as being firmer, less subject to contraction and expansion, capable of better finish, proof against insects, etc. Messrs. Richardson, Walker & Co. through our advertisement pages invite correspondence from Canadian architects, engineers, builders, etc.

Many architects and builders consider that Longleaf pine that has been bled and tapped for turpentine suffers in strength by virtue of same and they restrict the use of it in construction, but by recent tests made by the forestry department at Washington, it has been proved that the timber does not suffer from such tappings. On the contrary it exhibited if anything greater strength, which may be accounted for by the fact that turpentine orchards are located mostly on sites which produce better quality timber and larger yields of turpentine. The reasons of the wood not suffering from these operations is because the older resins of the heartwood being non-fluid, the turpentine flow is confined to the sap wood. No difference is discernible in the appearance of tapped and untapped trees, and in spite of specifications calling for unbled timber of this kind, such wood is often plarded without being discovered.

SHAVINGS.

The Dominion Government have granted the sum of $1,000 towards a national art gallery.

Mr. G. Wilson, builder of St. Catherines, is using electric power for operating the machinery of his works.

Good material for making sewer pipes can be found at Weston. There is also a material in the neighborhood suitable for painting purposes.

Mr. E. Colonna, of Montreal, has been awarded the prize of $100 offered by the Architectural League of New York for the best design of a loving cup.

Mr. R. Forsyth, of Montreal, has entered an action against the Canadian Granite Co. to recover royalty on granolithic pavement used by them, and asks for an injunction on the execution of more contracts.

Mr. Hunt, an American architect, has been awarded the gold medal given annually by the Queen through the Royal Institute of British Architects.

The first meeting of the Humilton Sanitary Association was held recently in the Board of Trade building of that city under the presidency of Mr. A. G. Ramsey. An account of the working of the Montreal Sanitary Association was given by Mr. W. Hopkins, and a committee composed of Messrs. A. G. Ramsey, Adam Brown, A. Turner, Major McLaren, G. Roach and D. Rennie was appointed to nominate a council. Evidence of the interest being taken in the Association was shown by the large number of citizens at the meeting.

An organization has been formed in Canada to regulate the trade and maintain a uniform scale of prices in the building paper line. At a recent meeting the following scale of prices was adopted: Tram straw board, 60 cents per roll; Tarred straw board, 70 cents per roll; Fibre paper not less than above prices; O. K. or I X L paper, 70 cents per roll; Tarred felt, $30 per ton. Terms —Four months, 3 per cent. off cash 30 days. Mr. E. G. Burke, of Campbellford, is president of the association, W. T. Miller, of Trenton, vice president, and C. T. Williams, of the firm of George W. Reid, secretary.

An asphaltic-concrete material for floors is described in "Indian Engineering," under the name of "bastard asphalt flooring." It consists of a 6-in. layer of 1-in. broken stone boiled in tar, with an upper ½-in. layer of coarse gravel or small stone chips, and slaked lime(2 parts of the former to 1 part of the latter), boiled in a mixture of coal tar and pitch. Both layers to be rolled, and the upper one finished with a top dressing of sand ¼ in. thick, and again rolled. This description of flooring has been used for freight shed platforms, etc., and found to be durable and satisfactory when not exposed to the sun. For the floors of ordinary buildings a thickness of 3 ins. is sufficient. The tar must be well boiled.

The loss of property from fire during 1892, in Toronto, amounted to $210,115, while in Montreal, which is not much larger than this city, the damage amounted to $775,000.

The Woodstock Court House Committee have settled the differences with their contractor, Mr. Brown. The account was reduced from $16,400 to $13,300, which amount was accepted in settlement.

A new coat of arms for the Berlin court house weighing over 300 pounds recently arrived from England, where it was made.

Mr. C. F. Mitchell, of 168 Borden street, Toronto, has entered an action against the trustees of the College street Presbyterian church to recover $683.71 a balance alleged to be due to him under his contract for the erection of a school room for the church.

USEFUL HINTS.

PITCH pine beams will shrink in thickness from 18⅜ inches to 18¼ ; spruce, from 8⅛ to 8¼ ; white pine, from 12 inches to 11⅞ ; yellow pine, a trifle less. Cedar beams will shrink from a width of 14 inches to 13¼ ; elm, from 11 to 10¾, and oak from 12 to 11¾ inches.

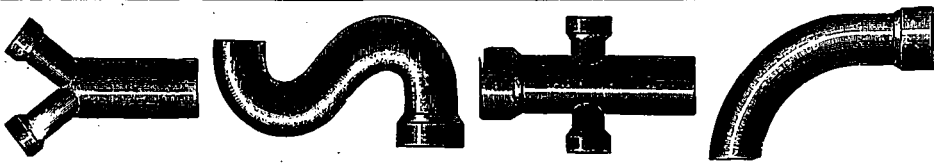
GLASS FROSTING.—Dissolve Rochelle salts in gum-arabic water ; let it stand over night, and after cleaning off the glass well, flow the solution on so that it will not run ; lay the glass flat, if convenient, and when it commences to set take a pointed stick and dot it in rows to suit the taste ; put the dots about 1½ inches apart. If you wish it colored use anilines—red, blue or green and gamboge for yellow or gold color, then flow on a thin coat of damar varnish, and it is finished.

NAMES OF NEW COLORS.—"Angelique" is a pale apple green. "Be ge," really a beige drab. "Caster," a dark beige. "Castile," a bright buff yellow. "Coquelicot," a bright brick red. "Diavolo," a bright cinnamon. "Emeralde," a brilliant emerald green. "Floxine," a brilliant light crimson. "Geranium," a pale geranium red. "Mascot," a medium moss green. "Murier," an indefinite moss green. "Paradise," a bird of paradise yellow. "Bivoine," a deep metallic scarlet. "Vareche," a dark moss green.

A GOOD CEMENT.—Dissolve 8 ounces of sugar in 24 ounces of water in a glass flask on a water bath, and to the thin syrup add 2 ounces of slacked lime, keep the mixture at a temperature of about 160° to 165° Fah. for three days, shaking frequently ; then cool, and decant the clear liquor. Dilute 6½ ounces of this liquor with as much water, and in the mixture steep 16 ounces of fine gelatine for three hours after heating to effect solution. Finally add to the mixture 1½ ounces of glacial acetic acid and 15 grains of pure carbolic acid.

ELECTRIC push buttons should be clearly visible on the front door, and the more conspicuous they can be made without offending good taste the better. The practice of placing such push buttons in some obscure place, hidden in the shadows of the moulding of the door jamb, where they can neither be seen nor found in the dark, is a poor one, causing much annoyance which might easily be avoided. The first purpose of a push button is to be useful and this purpose is best served when it is plainly visible and accessible to those desiring to enter the house.—*Southern Architect.*

A fire-proof roofing, and one unaffected by the heat of the sun's rays and will not melt or run, is made by adding burned lime (not slaked) to coal tar; Boil together in the proportion of fifteen pounds of lime to 100 pounds of tar. The lime must be pulverized, and to avoid the tar boiling over stir the lime slowly in the boiling tar. The mixture must be put on while hot.



W. C. TROTTER, President. *J. L. WHATLEY, Secretary.*

THE

STANDARD DRAIN PIPE COMPANY

OF ST. JOHNS, P. Q., LIMITED.

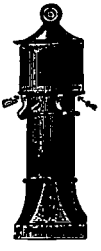
.... MANUFACTURERS OF ....

Salt Glazed Vitrified Drain Pipes and Connections

Double Strength Culvert Pipes, Inverts,

Flue and Stove Linings, Gulley Traps,

AND ALL KINDS OF FIRE CLAY GOODS.



TORONTO, Feb. 25th, 1892.

W. C. Trotter, Esq., President Standard Drain Pipe Co., St. Johns, Que.

Dear Sir: The City Council having awarded the contract for sewer pipes for 1892 to your company, I have much pleasure in writing you to say that, from inspection I have made of the pipes we have already used, and also of several hundred feet which you have delivered in our yards for future use, I am much pleased with their quality and finish, and am satisfied that they will be found to be a good serviceable pipe, and quite equal to Scotch and American manufacture.

Yours truly,
C. H. RUST,
Assi. City Engineer.

N. B.—The Standard Drain Pipe Company have also been awarded the contract for 1893.

MONTREAL, Feb. 23rd, 1891.

W. C. Trotter, Esq., President Standard Drain Pipe Co., St. Johns, Que.

Dear Sir: In reply to your letter of the 18th inst., asking me my opinion in reference to the strength and durability of the Vitrified Tile Pipes and Inverts furnished by your company to the Road Department of the City of Montreal, I beg to say that it has been very good. The test made as to crushing strength was most satisfactory, a proof of which is that we used in 1890:

Pipes of 4, 6, 9, 12 and 15 inch.....	12,175 yards.
Bends.....	3,568 "
Inverts.....	34,989 feet.

Yours truly,
P. W. ST. GEORGE, City Surveyor.

N. B.—The Standard Drain Pipe Co. have been awarded the Montreal contract for the last five years.

CITY HALL, QUEBEC,
Feb. 26th, 1892.

The Standard Drain Pipe Co. St. Johns, Que.

GENTLEMEN,—I have much pleasure in expressing our entire satisfaction with the excellent run of pipes—*over 200 carloads*—which you have supplied our city during the last two years.

I consider them, *in glaze and finish, equal to the best brand of Scotch pipes imported, and superior in point of finish.*

J. GALLAGHER,
Waterworks Engineer.

LONDON, ONT.,
Feb. 25th, 1892.

The Standard Drain Pipe Co.

DEAR SIRS,—I beg to state that last year I ordered the use of your sewer pipes in the construction of the new sewers being then laid, and I found them *most satisfactory in every respect*, and I had them subjected to the closest inspection.

Yours truly,
A. ORMSBY GRAYDON,
City Engineer.

PRICE LISTS AND ILLUSTRATED CATALOGUES FURNISHED ON APPLICATION.

GOOD LIVE AGENTS WANTED IN EVERY CITY AND TOWN IN CANADA.