

THE CANADIAN ARCHITECT AND BUILDER

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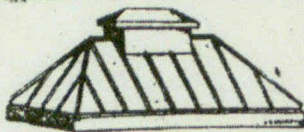
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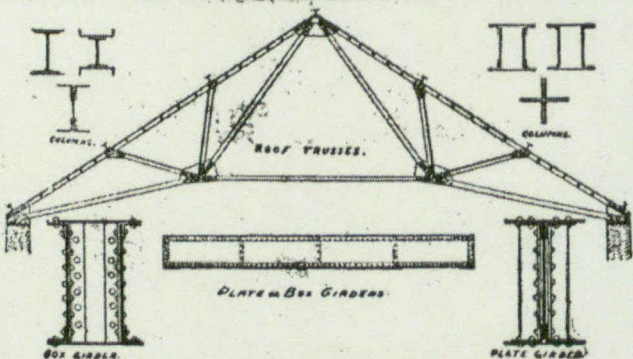
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The Canadian Architect and Builder

VOL. XVII.—No. 200.

AUGUST, 1904.

ILLUSTRATIONS ON SHEETS.

Montreal City and District Savings Bank, Branch Office, St. Catharine Street, Montreal.—A. H. Lapierre, Architect.
 Examples of Colonial Domestic Architecture and Elms at Fredericton, N. B.
 Methodist Church, Port Arthur, Ont.—Langley & Langley, Architects.

ADDITIONAL ILLUSTRATIONS IN ARCHITECTS' EDITION.

Branch of Bank of Toronto, King Street West, Toronto.—Chadwick & Beckett, Architects.

ILLUSTRATIONS IN TEXT.

Plans Accompanying Article II on Wren's Churches.

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Timber Specifications

Great changes have taken place during the last decade in quality and varieties of timber for construction purposes. White pine, which was the standard material twenty years ago, is year by year becoming scarcer and higher in price. This has caused the introduction and compelled the use of other kinds of timber, such as British Columbia fir and cedar, hemlock, southern pine, etc. For many purposes these substitutes are quite as good as the high grade white pine so largely used in the past. The Engineering Record states that architects and engineers have neglected to keep themselves fully informed regarding the changed conditions, and are still using forms of specifications employed when white pine was the universal material. If this be the fact, our contemporary is quite right in its contention that timber specifications should be revised and adapted to the conditions now existing.

Toronto Building By-Law.

The Toronto City Council have adopted the new building by-law drafted by the City Architect, Mr. McCallum. Objection was taken by the local architects to a number of provisions in the by-law, and the Council appointed a committee on which the architects were represented to consider it in detail. The City Architect was unfortunately taken ill before the

committee had got far advanced with its work, and the Council not deeming it wise to delay action, adopted the by-law. It is understood, however, that the Council have requested the architects to formulate their objections and have promised to give due consideration to any suggested amendments to the law. Action in this direction will be taken by the architects as soon as the rush consequent upon an unusually busy building season shall have subsided. While the by-law appears to require amendment in some particulars, it places the regulation of buildings on a basis altogether more satisfactory than formerly, and praise is due both the City Architect and the Council for prompt action.

Vaults.

The recent great fires in Toronto, Baltimore and elsewhere have called attention to methods of vault construction in buildings, and the extent to which vaults may be depended on to fulfil their purpose of protecting valuable documents deposited in them. Investigation of this question following the Baltimore fire showed the contents of twenty two bank and trust company vaults to be uninjured. The walls of these vaults were built up solidly of hard brick laid in cement 16 inches thick without iron supports, and were supported on brick foundations extending to the foundations of the buildings. Mercantile vaults, which owing to their greater number, are quite as important

as those already mentioned, were in many cases found to be faulty, and the users suffered heavy loss. The principal causes of failure were found to lie in cheaply constructed doors, lack of proper connection between doors and masonry, and vault doors and walls having been so tied to the walls of the building that when the latter fell the vaults went with them. This is a subject of such importance that it should receive the most careful attention at the hands of architects and building owners.

City Schools.

Fortunately the price of land in Canadian cities has not yet reached the point where serious restriction is placed on the size of school sites and playgrounds. In New York no space is provided for playgrounds outside the area of the school buildings. Whatever provision is made for recreation is as a rule contained in the basement of the building. An exception to this rule has been made in one or two instances where a room for play has been provided on the roof, by carrying up the exterior walls, stretching wire netting over the entire top and making the flat surface of the roof waterproof, or converting the entire top storey into a playroom opening on to the roof. In the former case, receptacles containing steam pipes are placed below the roof level for melting the snow which might lodge upon the roof. Under such conditions as these school children cannot be expected to attain their highest physical or mental development. We in Canada should assure the welfare of future generations of children by making ample provision now in our cities for school and public playgrounds.

Decrease of Trade Disputes in England.

It is gratifying to learn from a recently published Government report that for some years past in England disputes between employers and employees have been steadily decreasing. The average number of such disputes during the five years 1893 to 1897, was 816, and for the five years 1898-1902, 632. The number last year was only 387, affecting about one per cent. of the industrial population, loss of time amounting to less than one-fourth of a day per head. The majority of disputes arose over the question of wages. About one fifth were due to demands for the recognition of the unions. A large number of the disputes of last year were settled by the parties interested and through the agency of the Boards of Conciliation and Arbitration. This is a hopeful sign of the times, indicating the use in the future of more reasonable methods of adjusting differences of this character and consequently more harmonious and satisfactory relationships between employers and employees, such as formerly existed. It is to be hoped that Canada will not be found to be behind the motherland in this important reform.

Canadian Building

We regret to note that the Canadian Building at the St. Louis Exhibition is as conspicuously uninteresting as were those at previous exhibitions of the kind. It belongs to the jig saw class of architecture and as such is perhaps representative of country architecture in Canada twenty years ago, but certainly does not in any degree whatever represent either Canada or Canadian archi-

ture of the present day. The occasion warranted the erection of a creditable building, the design for which the government might have secured by competition among Canadian architects. It is both humiliating and annoying that the development of our country and architecture should be so misrepresented before the world. Surely the Dominion Government, which boasts of having a surplus this year of more than \$16,000,000 could afford to expend a few thousand dollars on the construction of a well designed building which would compare favorably with those of other countries, and of which Canadians would have no cause to feel ashamed. If as a people we are too poor to do this, let us not advertise our poverty by putting up any more poverty-stricken buildings at International Exhibitions.

New Union Depot for Toronto

With commendable promptness the railway authorities and representatives of the City of Toronto presented to the Railway Commission at Ottawa their arguments as to the terms which should govern the transfer to the railways of a site for a new union station on the south side of Front street. With equal promptness the Railway Commission fixed the terms which have been declared to be satisfactory to all parties concerned. There remains therefore no obstacle in the way of the immediate carrying out of the enterprise, the early completion of which will materially advantage both the railway and the city. The present terminal facilities are not sufficiently modern or convenient in arrangement and are entirely inadequate even for the rapidly growing passenger and freight traffic of the G.T.R. and C.P.R. The desired entrance into the city of the Canadian Northern Railway brought the project for improved accommodation to the point where action upon it could no longer be deferred. The decision arrived at should ensure the construction of an imposing building in the heart of the burned district and the immediate removal of the unsightly debris now covering the site, which might otherwise have remained for months or years. It will no doubt also tend to encourage the early construction of a good class of buildings on the surrounding property and greatly improve the approach to the city whether by rail or water. The importance of securing the best possible plan for so important a structure is obvious. The best result would probably be attained by a limited competition among a number of leading Canadian architects. This would bring to bear upon the problem the best thought of a number of trained and experienced men, from whose combined efforts a thoroughly satisfactory solution might be expected. For the success of this plan two things are necessary (1) the appointment of competent arbitrators in whom the competitors would place confidence to draw up equitable conditions to govern the competition and judge the plans; and (2) a sufficient sum in premiums to compensate for the time and expense involved in the elaboration of so important a scheme, together with the assurance that the author of the design awarded first place would be given charge of the work. While the majority of Canadian architects are unusually busy at the present time, the season is now well advanced, and no doubt many would be found willing to enter a competition which would offer them opportunity to distinguish themselves, provided the conditions were fair and the prizes attractive.

WREN'S CHURCHES.

(SECOND ARTICLE)

In a previous article an example was given of one of Wren's plainest plans, which is nevertheless a pleasing and interesting church. It would be going too far to say that the plainest plans are the most impressive, but the greatness of the impression compared with the simplicity of the means is striking—and instructive.

There are only three further developments in the members of Wren's church plans, apart, that is to say, from the shape of the plan which was varied in several ways. He added a sacrarium or sanctuary, a single aisle, and a double aisle. It might be added, as additional variations, that the aisles were sometimes galleried and sometimes not.

Of the sacrarium plan, All Hallows, Lombard street, is a good example (Fig. 1). Wren went no further

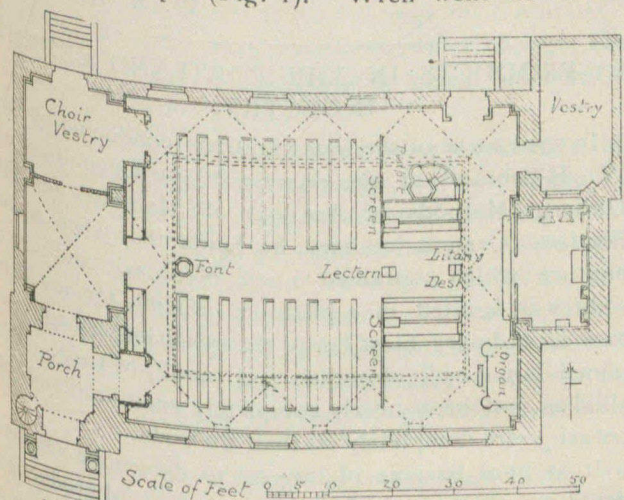


FIG. 1.—PLAN OF ALL HALLOWS, LOMBARD STREET.

than this in the development of the East end. There was no thought, in his day, of placing the choir at the east; the communion table alone had to be provided for, and this recess, which is 20 feet wide (or 18 feet between the pilasters at the angles), is handsome without being unmanageably large. The great difficulty connected with its insertion lies in the junction of ceilings; for the sanctuary should not be a hole in the east wall, but should rise to the full height of the church and its ceiling should run with the main ceiling.

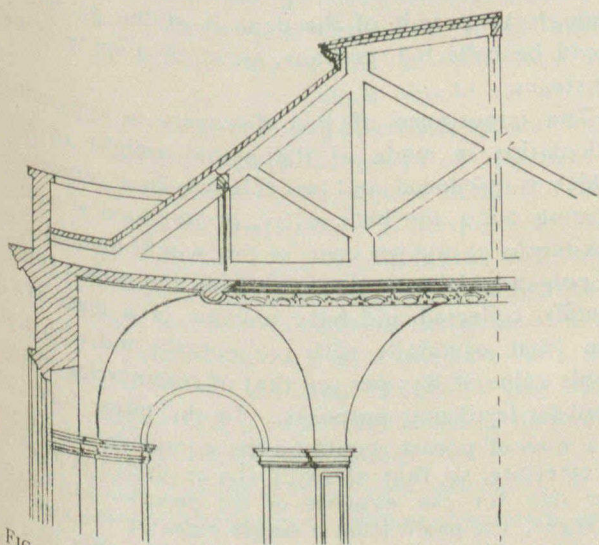


FIG. 2.—SECTION OF CEILING OF ALL HALLOWS, LOMBARD STREET.

Wren's way of managing this was to have a main ceiling with a large cove and to penetrate the cove for the sacrarium. The ceiling, which is shown by dotted lines

on the plan, has a cove 9' 6" deep and 8' 0" in projection, terminating in a large roll and cornice (Fig. 2) which runs round and makes a central panel 32' 0" x 44' 0"—a field for decoration in secular work of this period, but never so treated in these churches. The windows in the north and south walls of the church have round heads, springing like the cove from the top line of the cornice; so the cove is penetrated for the windows, which are so spaced as to break up the cove into continuous penetrations, and these are continued over the blank spaces on the east and west ends, which have round-headed recesses to supply the motive. The central penetration of the east end forms the inlet of the sacrarium ceiling. This penetration is about 5 feet wider than the others. The 5 feet of increase is accomplished by an adjustment of the angle of penetration, which must produce a flatter curve, but the eye cannot discover its difference from those on each side of it.

The extent of opening that can be spanned in this way is limited by the size within which a ceiling cove must be kept; so that the expedient does not solve the difficulty of reducing the width of a single span body for a choir (which would be wide as compared with a sanctuary) while keeping continuity of roof. It is, however, a question whether this difficulty is not better accepted than solved, for the choir is better of the same width as the body than narrowed to make a sort of cave in the east wall of the body.

It is hard to say, in view of the 156 feet width of the single span of the new Roman Catholic Cathedral of Westminster, that the width of the body of a church can ever be too wide for the choir, if there is length in proportion; but, though the choir needed for a church 350 feet long will be no more than suitably housed in a choir 156 feet wide, should the church be 156 feet wide and compelled to be about the same in length, it is time, on account of both practical and proportional suitability, to take to columns.

Wren, as a churchbuilder, is usually thought of in connection with his largest churches, with their double colonnade and galleries; but he used columns in many different ways, to reduce his churches to a convenient form that could be economically roofed. There is not much evidence of any gradual development of his types one from another, but the dates of completion of the churches show that he favoured certain types more at one time than at another; and in the last ten years of his practice there are four little churches of one kind which, though their idea appeared earlier, may be taken, by their frequent appearance at that time, to represent ripe judgment. This type is the one-aisled plan. The difference between one aisle and two aisles is greater than the difference of an aisle. In a one-aisled church the appearance may be said to be that of a body with an aisle appended. When there are two aisles the composition is made by the aisles; it is an aisled church; the distinction between body and aisles becomes a mere matter of nomenclature for convenience of reference to locality; there is no separation in the mind. What makes this difference between one aisle and two aisles is of course the solid wall on one side of the one-aisled church. This limitation is associated in the mind with the other side also, so that the body is felt to be the church and the aisle an appendage.

When first seen in plan, such a church may appear to have an uncomfortable lack of symmetry, and perhaps it is not for nothing that this type is confined to

churches of small size. On a large scale, the more dignified symmetrical plan with double aisles is necessary, no doubt, if there are aisles at all; but for a church of this size and even larger—St. Lawrence Jewry is nearly 50 feet wide and over 80 feet long—a one-aisled plan is much to be preferred to a duo decimo copy of a grand church with double aisles. The variety given in a one-aisled church by the two sides, with responding composition but different appearance, is a source of more actual interest than is given by double aisles.

If the seating space of two aisles is desired a gallery may be inserted. The philosophy of the gallery, apart from considerations of expense, is that when the congregation is small it need not be used; and thus scattering, which has a bad moral effect, may (in these days of free seats) be prevented. When the congregation increases, or if there is a special occasion, the gallery comes in as additional seating space. In this way St. Margaret Pattens—which appeared to be comfortably populated by a week-day congregation which counted as 62—is said to be seated for 500—has held 600 sitting persons, counted by the verger; and is thought to be capable of giving standing room to 100

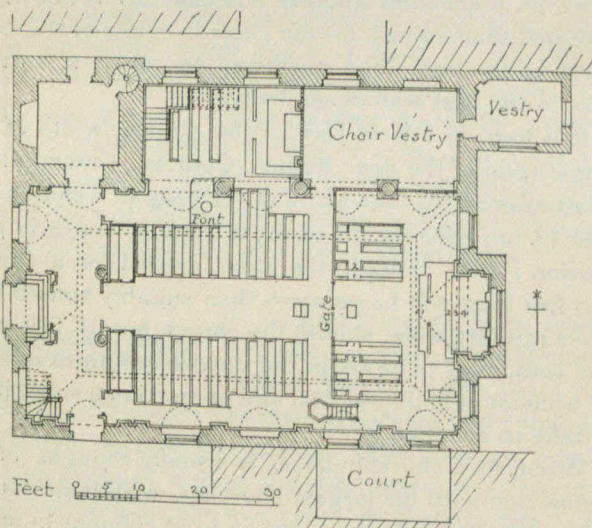


FIG. 3.—PLAN OF ST. MARGARET PATTENS.

more. This elasticity is due in great measure to the handsome allowance of space for passages, which is common to all the city churches and contributes so much to their dignity. At first this feature seems anything but encouraging, but as a means to effect it is on the whole cheap. It is the additional space, over what is necessary, that makes the difference; and, if the additional space only is taken into account, its cost will not amount to much to set against the cost of columns and arcading. Moreover, whereas dignity is to be got by superfluous space without arcading, it is not to be got by arcading without superfluous space. The lesson of what can be got by superfluous space only is a lesson of the necessity of superfluous space under all circumstances. Superfluous space is an aesthetic necessity, but it has this advantage over other aesthetic necessities that it adds at a pinch to the seating accommodation.

In the case of St. Margaret Pattens, the gallery front is an additional interest and the portion which is enclosed for a choir vestry also encloses satisfactorily the choir within solid walls.

There is a low screen or fence, of panelled and carved oak, enclosing the front of the choir, with an openwork wrought iron gate across the passage.

The ceiling is similar to that of All Hallows, Lombard street, in plan, but smaller in scale. There is a cove, penetrated for a portion of its height for a circular clearstory window over each intercolumn, and penetrated its whole height for the sanctuary opening; which latter is then finished by an arch and a barrel vault.

The organ is at the west, in a gallery over the vestibule. In so small a church this works perfectly and is in fact an improvement, for the organist at work is no gain to the east end. In a large church the evidence of experience is, on the whole, against separating in this manner the organ and the choir; but the evidence is not so strong as might be expected. It is only in the seats towards the east of the church that there is any doubt about the blending of sound. At the western end of the church it is perfect.

W. A. LANGTON.

BY-PRODUCTS IN THE PORTLAND CEMENT INDUSTRY.*

In the course of the investigations conducted by Dr. W. Hillebrand at the request of the Committee on Uniform Methods of Analysis of Materials for the Portland Cement industry, he found that when a raw mixture which contained 0.69% of potash and 0.22% soda was ignited in a platinum crucible for one hour over an ordinary blast lamp, the resulting cement contained but 0.07% of potash and 0.09% of soda. The alkalis had been nearly completely volatilized and the potash more completely so than the soda.

It at once became of interest to determine whether the same thing took place in the industrial production of Portland cement clinker. It was found that from a raw mixture made from marl and clay which contained the percentages of alkalis mentioned above and which should in consequence contain 1.26% of potash when burned (if none of it was volatilized) since the loss on burning was 37.50%, 0.65% potash was carried off in the flue gases at the temperature of the rotary kiln. An investigation of the flue dust proved that the alkalis were carried further than the point where this material is deposited and it is apparent that by conducting the gases through a horizontal chamber where the temperature could be reduced to a point low enough to permit of the deposit of the potash, this could be collected, perhaps, aided by a spray of water or steam.

The importance of this discovery is apparent if a calculation is made of the actual weight of potash which is produced and lost this way in a cement plant turning out 4,000 bbls. a day, or 700 tons of material. Six-tenths of one per cent. of this would mean 4.2 tons of potash which now goes to waste, but which could be readily collected and have a value of a least \$12 per ton (that of kainite with 12% potash) and with a probable value of \$45 per ton that of commercial emeriate used for fertilizing purposes. In the latter form over 4.2 tons of potash would be the equivalent of 6.6 tons of emeriate, so that allowing the excessive sum of \$50 per day for the expense of the process and interest charges, the profit from a single plant of the size mentioned would be between \$100 and \$200 per day. It would seem that the development of the process would be of commercial interest. In conclusion it may be said that Dr. Hillebrand has an application pending for a patent covering it.

*Paper read at the 7th Annual Meeting American Society for Testing Materials, BY CLIFFORD RICHARDSON, Long Island City, N.Y.

SOME REMARKS ON ORNAMENT.

BY FRED. T. HODGSON.

There has perhaps been no other art which has made such radical improvements within so short a period as that of ornamentation, and this has been accomplished in the face of great difficulties, and by very peculiar methods.

The artistic and studious decorative architect is forced to combat that constant and ever-present belief entertained by women, that in the decoration of their homes their own individual taste should prevail, notwithstanding the fact that their ideas of color and harmony are necessarily crude and undeveloped. So also there are numerous charlatans in all the building trades, who persuade their customers that a decorative architect is unnecessary and a mere fanatical encumbrance. Still, ornamentation has steadily improved, until it can now be said that there is a decided change for the better in the various methods of treatment, which change, however, has not to any appreciable extent affected the ideas of the public generally.

Many sensible men who have some instinctive idea of the "eternal fitness" of things, not only employ an architect to design and superintend the building of their homes; but they engage them to design the furniture and general decoration. This is as it should be, for an architect—if worthy of the name—is better fitted to design or choose fitting furniture and proper colors for decoration, after designing the main structure, than any other person or number of persons possibly can be.

It is within the memory of many now living that after the teaching of the late unfortunate Oscar Wilde, a change seemed to take place from the old established forms of ornament to new and improved methods of treatment; and a study of the ideas of Mr. Wilde will disclose the fact that there was "a method in his madness", since, by his many peculiarities, the minds of people were attracted to that which otherwise would have passed unnoticed.

There is, however, a sad lack of originality in ornament, since its choice is of far more importance than designers as a rule are able to discover. For example, a stencil or wall-paper, is to be designed. The natural impulse of the average designer is to rush to "Owen Jones's Grammar of Ornament" for an instance of the school decided upon; but, in accordance with all reason, this is just that which should be avoided, since the text books will soon be exhausted, and finally, when the designer has run the gamut of ornament by copy, he will discover how, for lack of thoughtful study, his work is without originality. If our designer be a man like Mr. Louis F. Day, he will invent an ornament of no particular period or school, but a combination of the motives of as many as afford material for a design complete in itself, uniform, and of one part—not, as is too often the case, consisting of details and actual parts of a number of schools assembled or thrown together and called an original design.

It is the study of the motives and principles of the various schools of ornament, and not their mere imitation which is required to produce original designs.

It may not seem amiss or pretentious to suggest a few rules, giving illustrations showing their applicability, for observance in ornamentation.

First—Ornament is not necessarily a decoration applied to an object independent of its construction, but

should be a part or whole of its construction. This rule is aimed at the prevalent ideas which at this time are nearly obsolete. Formerly it seemed to be the intent of the cabinet maker, for instance, to hide obvious necessities and in order so to do, ill adapted relief carvings were glued on to the surface, and useless knobs and handles were attached, all natural openings being hidden by mouldings and fillets.

It is now the rule to avoid attaching to the object unnecessarily ornament, and to embody in the article itself the ornamentation.

Second—The ornamentation should not in any way interfere with the utility or object of the article. For instance, it is almost impossible to find two paper knives exactly alike, and yet it is equally impossible to find more than one in a dozen which has not been over ornamented. The ordinary paper knife is very likely to have a handle covered with spurs, or rough portions, making it painful to grasp, as in many cases turned, or carved, to such an unreasonable extent as that it is too frail for use, the original object of the knife being sacrificed for ornament. As example of graceful ornament, and well worth consideration as an illustration of its utility, are some of the iron registers in churches or other public buildings, however, admirably adapted for the purpose; perfectly flat and even on the surface, the open space so arranged as to allow the air to rise evenly, and the ornament so disposed as to sustain great weight.

Third—The material should be treated naturally. That is, if wood, it should be treated as wood, and not twisted and painted as only iron should be, and, if metal, it should not be moulded to represent a log of wood, or wood carving, as it often is.

Fourth—The ornament chosen should be suitable and appropriate.

A bunch of wild flowers painted on a miniature shovel is not appropriate; decorated clothes pins to fasten napkins are hardly beautiful; an old shoe, dried and gilded, used as a receptacle for flowers is not suitable, and in all these cases it is thrusting into view objects which are not pleasantly associated with the drawing room or table.

Fifth—The object should never be made to represent that which it is not.

A door or wainscoting may appear to be walnut, mahogany or oak, but a chip at a corner or a joint, or even a casual inspection, discloses the truth that that which was originally a cheap wood has been covered with a coat of staining and the skulking grainer has traced the markings of a more pretentious wood thereon.

Few arts have been more radically modified by the introduction of machinery than the art of building. The stone mason holds his own against the innovator more stubbornly than the carpenter; but almost entire dwellings, above the foundations, are now manufactured in factories and then delivered on the ground ready to be placed in position. The men who set them up are still called carpenters, the wrong word of the old title "carpenter and joiner" having been retained. They would be better classified were they called joiner, or they might be called finishers in carpentry; but they are certainly not in any true sense carpenters. The real carpenter has become a machine and though this machine may be able to prepare only the manufactured material for frame buildings, it is equally true that all the interior fittings, whatever the material, of brick stone, or

marble buildings, are now in a great measure factory made, and delivered ready to be placed upon the walls or wherever they may be needed.

Machine and stuff, so far as architecture is concerned, cannot be said to be a gain in the direction of art, though, from an economic point of view it has its advantages. It has enabled us to build well with a greatly less expenditure of money than building operations, would cost were we dependent upon hand labor alone, and it is also the cause of a great deal of building that would never take place but for its co operation. It is quite certain that much of the building to be witnessed in our great cities is due to the existence of wood manufacturing firms, and were it not for their transactions building operations would have to be greatly curtailed. These advantages, however, are gained at the expense of true art.

MONTREAL LETTER.

No. V.

Some fairly extensive additions are now being made to the Law Courts and this leads the Gargoyle to make certain reflections with regard to this building as a whole. The characters of individuals are expressed in their dress and conversation and may be readily discerned in the things they make, or do or get made and done for them or even in the objects they select and purchase to surround them in their daily life. Just so the character of the citizens must be discernible in their public buildings. Architects or builders of whatever degree of skill or accomplishment are simply taking the ideas of their clients in verbal instructions and rendering them back to them in stone, lime, wood, or whatever material may be ordained by those who order. It will be just therefore to examine the courts which a city has built in which to have justice administered and to judge of the city itself thereby. Let Montreal then in this matter pass under the architect's cross examination.

This building is of no mean dimensions showing that the citizens had a sense of the importance to them of Justice, who, in a city which invites traders and workers from all ends of the earth to the continual friction incident to busy commerce and great material enterprises, must not be huddled in a corner to do as well as straightened circumstances will allow her, but must have ample space to exercise her rule. Rightly also the Law Courts stand quite in the busy haunts of men, and yet free from actual contact; for the hands of Justice must be clear of the strife she is to judge. Though in the lower part of the city the Courts with their neighbour the City Hall crown a small ridge sufficient to make them conspicuous in the city itself and also from all more distant points of vantage.

Approaching from Craig Street, it is with pleasure that one comes into the spaciousness of the Champ de Mars and raises the eye towards the two large buildings which dominate the open space from its farther side. The Parade Ground itself has a painfully arid look, but the young trees which demurely dot its borders give promise of a pleasanter future. The manner in which this ground is terraced high above Craig street affords a noble base for the two chief buildings of the city.

All this is very satisfactory and makes one eager to make acquaintance with the features of this home of Justice so wisely and advantageously placed. The best view is obtainable from Craig street, and the expectant glance meets with a rebuff that sends it staggering in the direction of the City Hall to catch if possible some gleam of hope, but only to recoil once more to find perhaps a little rest and comfort in the simple honest faces of those buildings which from St. Gabriel street have reviewed the manoeuvring troops for a hundred years.

These buildings actually have their backs turned towards this fine space! Why, yes, they must have backs somewhere you know; and Notre Dame street and a superior class of business have their claims on the other side. But why such aggressive backs anywhere? What has Craig Street done? Is it Justice that should wear good cloth in front and shoddy on her back and turn it uncomproisingly upon the poor? If through lack of gold her dress cannot all be of finest stuff at least why not of one good web throughout? Last week we spoke of the Bank of Montreal, and taking a cast back along Craig street one may there see a

stately, stalwart, honest back enough, not overlaid with elaborate drapings but having only the simple necessities of the case wrought into an organic expression it rises straight and simple from footpath to cornice a 'living' wall of stone.

This matter of the back of a building is one in which the Monteregians have a particularly rooted misconception. There is little doubt that this arises from the fact that in Montreal excellent stone is obtainable at no very great cost but brick is more readily obtainable at a less cost. Hence it has become a habit, and a very irritating one it is, to make buildings with a stone front and brick sides and back. I suppose people who like houses of this sort must be the class which wears one character on Sunday and another the rest of the week. The only presentable one is for Sunday wear and meets with much acceptance from those like minded. The stone front to the brick villa is of a similar value. It is not a virtue but it is a homage paid to a virtue too expensive or too troublesome to be actually maintained. There are certainly better ways of meeting the case. Some models of a very sensible and legitimate method exist among the works of Mr. Norman Shaw, as for example the buildings of Scotland Yard in London and the offices of the White Star Line in Liverpool. Both these grand buildings stand on bases of hewn stone or granite and the upper stories are constructed of brick with the occasional introduction of bands or members of stone in such a manner as to make of this interchange of materials a decorative motif of distinct architectural value. The nobler material thus keeps helping out its humbler fellow all along, and together they form a unity and not a motley assemblage of elevations.

But we have wandered from the Law Courts. Let us return and try to feel thankful that the back was not built of brick. Let us suppose that the apparent one sidedness of Justice is not occasioned so much by the poverty of Craig street as by the well known distaste of Lower Canada for an aggressive militarism here only to plainly represented by a drilling ground and a drill hall. Likely enough Justice is only very properly refusing to countenance dragooning operations.

The original law court building has been one of quite considerable quiet dignity and force of character, its front in quiet retirement behind a little grove of trees has still a pleasant expression of dignified calm. This structure has consisted essentially of a basement or ground storey of chamfer jointed masonry surmounted by two stories unified in point of design by large Ionic columns extending through both. The main entablature has then formed a crowning member to the whole building, which, though broad and simple, is not without an agreeable variety of features. Unfortunately this has not been considered sufficient for the needs of an increasing city. On the top has therefore been added another storey in the form of a classical "attic," built indeed of stone but crowned with a cornice and balustrade, both apparently of sheet iron. In the centre of all rises a kind of saloon deck in a number of stages surmounted by a dome. All this portion is executed in . . . ; well, some Toronto man might read this, so I don't like to mention what the top of our Law Courts is made of, but the owners are doing their best for it and have just given it a nice new coat of paint which makes it look as like stone as can be expected—that is to say, very unlike it indeed.

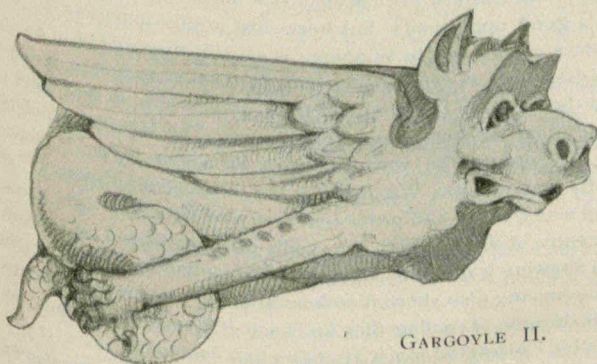
Now Montreal who is to blame for this? Will you put the blame on your architect? The most inferior architect I ever knew would have preferred to use stone, and the more inferior he might be the more reasons would he have had for using stone—the superior man could only have one. Moreover the hand that is displayed in this additional work shows a greater sense of refinement than that which controlled the original building, which though honest simple, and robust, inclines to harshness. Surely the citizens that have had the seat of Justice in their midst thus stuck with cheap trappings were wanting in respect to Justice and to themselves.

Let us next have a look at the works at present in progress. It would be expecting too much that these should entirely redeem the situation, tacked on as they are in an odd corner facing a narrow street on the opposite side of which are some old buildings between St. James street and Notre Dame street. For the sake of the Law Courts it would be well if this block of buildings could be removed. The new buildings though standing well in view along the eastern and finer part of St. James street, do not occupy any definite relation to that thoroughfare. We have sufficient faith in the architectural soundness of the original building to wish that an effort had been made to bear it out in

the new. Yet in spite of all these disadvantages it must be admitted that the treatment of the new building has a boldness and vigour of its own. The work being still incomplete, it is too early to criticise it as a whole, but the strong handling of the ground storey with bellied courses of approximately semi-circular section and the strong simplicity of the two upper stories make one anticipate some excellent work.

It is surely to be regretted that looking at this building from Craig street it appears to attach the block of buildings which form the Law Courts to the general mass of the city on this side thus destroying the appearance of isolation which is so valuable to an important building. In addition to this, this side has again been treated in a most summary way as a thing of no account. If the tenants on Craig street are at all sensitive they must feel more than ever like pariahs from whom respectable citizens turn their faces. The moldings of the front are taken round for a few feet and then returned on themselves and everything is bare to baldness. Again if it be asked—Is not the architect to blame? One must reply: Is an architect likely to want to do things so, or is it not more likely that they should be forced upon him? This sort of thing is the evidence of want of self respect on the part of the citizens.

The moral of all this is that an architect has got to educate his clients so that they may give him proper instructions, and if he be an architect of civic buildings he has to educate the officials with whom he deals so that they may train the general public to give him proper instructions. To prepare themselves for such tasks as these architects must get up very early in the morning. So the Gargoyle turned in for the night.



GARGOYLE II.

PORT ARTHUR AND FORT WILLIAM.

(Notes by a Travelling Correspondent.)

The past year has been marked by the rapid progress made by the twin cities of Port Arthur and Fort William, both of which have developed into great shipping ports for the vast crops of wheat produced in our great west. Every citizen of both cities has a right to feel justly proud of the steady advancement made and which is still continuing. Fort William alone has expended no less a sum than \$248,000 in business blocks and residences, an increase over that of the preceding year of \$100,000, while the population and assessment have increased over 25 per cent. The Canadian Pacific Railway Company has completed at this point one of the best coal handling plants on the continent of America, and has also erected and is now operating elevators "D" and "E," and a modern machine shop capable of overhauling four large locomotives per month, besides other works of slightly less importance. The Imperial Oil Company's works here for supplying the Canadian market west of this point still continue to grow, and during the year they have handled 2,000,000 gallons of refined oil, besides 5,000 barrels of lubricating oils and 4,000 cases of other products. The John McKellar Memorial Hospital which was opened June, 1903, has supplied a long felt need, while so great have been the demands made upon it that it is almost safe-evident that an addition will soon be necessary.

In Port Arthur over two hundred and fifty dwelling houses have been erected at a cost of \$250,000, and some \$175,000 has been spent in the erection of stores, offices, warehouses, etc. The Canadian Northern Elevator Company has expended over one million dollars for increased elevator capacity and docks and the King Elevator Company some \$250,000 in connection with its storage annex.

In lumber circles the Northern Land and Lumber Company, a party of Wisconsin capitalists, have erected a very fine

planing mill and are handling large stocks of white and yellow pine.

At present building operations are not nearly so brisk in either cities as they have been during the past two years as the construction of the projected large elevators has not yet begun and also a large amount of money has become tied up in speculative real estate. Mr. M. B. Aylesworth, one of the leading architects of Port Arthur, is now busily engaged on several important buildings in both cities, including the city hall of Fort William, a stone and brick office building in Port Arthur for Councillor T. N. Andrews, a large residence for Mr. James Meek, the Provincial Court Clerk, a store and dwelling for D. M. Davidson, residences for H. G. Greenland, of the Bazaar, and John Ritchie school inspector for the district, and a new stone Methodist church, while he is now busily engaged drawing out plans for a giant skating, curling and hockey rink. The city hall at Fort William has been in progress for nearly one year, but it is not expected it will be ready for occupation before June of 1905. However, work has been pushed rapidly along on the Auditorium wing, which will be ready for the opening entertainments in the course of a month or so. The proceeds of these opening entertainments are to be devoted to the John McKellar Hospital fund. The estimated cost at completion of the City Hall will be \$70,000.

Besides the work undertaken by Mr. Aylesworth in Fort William there are three good sized business blocks, a four roomed school house and a large number of good residences in course of construction. The Canadian Pacific Railway Company, in place of the burnt elevator are erecting a large working house for the series of elevators. They have recently completed a large power house for supplying electric light to their yards and power for pumping, etc. A large brickyard has also been added to the industries of the town, this making the fourth; all are operating to their fullest capacity.

At Port Arthur there is a possibility of a smelter being erected to handle the rich iron ore deposits of Loon Lake, which lie twenty miles to the north of the city. A charter has already been applied for by the company to enable them to build a short line railway to Thunder Bay.

Architects of Ontario and the States will be much interested to learn that the long disused stone quarries of Vert Island in Nepigon Bay are about to be worked again. They have been idle for the past twenty years having been in the first place opened up to supply the stone for the erection of the famous wholesale house of Marshall Field & Co. on 5th ave., Chicago. The Sawyers Bay grey stone quarries have lately been operated to supply the recent demands of the twin cities.

CANADIAN MASTER PAINTERS' AND DECORATORS' ASSOCIATION.

The first annual convention of this new organization was held at the Windsor Hotel, Montreal, during the last week in July, the president, Mr. L. Z. Mathieu, presiding.

Papers were read and discussed as follows: "Advantages of Membership in the Master Painters' Association," by Stewart N. Hughes, Toronto; "Our City Fathers, Their Relation to, or With Labor Organizations," by A. M. McKenzie, Hamilton; "Varnish, its Uses, Methods of Manufacture and Adulteration," by A. T. Blackwell, Toronto; "Necessity for Trade or Technical Schools," by W. E. Wall, Cambridge, Mass.; "The Purifying of our Establishments from the Evils of Unionism," by J. N. Arcand, Montreal; "Competition in the Painting Business," by W. Pinnemore, Toronto; "The Apprenticeship Question," by W. T. Castle, Montreal; and "Reminiscences and Comparisons in the Painting Business During the Last Half Century," by John Murphy, Montreal.

The officers elect for the ensuing year are: President, J. N. Arcand; Vice-president, A. M. McKenzie; secretary, Stewart N. Hughes; committee, Messrs. O'Hearn, Brooke, Johnston, Morley and Stamp. Messrs. L. Z. Mathieu, S. N. Hughes and G. S. Faircloth were appointed delegates to the international convention at Milwaukee.

The social features included visits to local manufactories and an evening reception in the hotel parlors.

Exhibits of painters and decorators materials were made by Messrs. Berry Bros., the Canada Paint Co., Ramsay & Co., Sherwin-Williams Co., Watson, Foster & Co., Colin McArthur & Co., and Stauntons, Limited.

The next convention will be held at Hamilton.

NORTHWEST NOTES

Branch Office of THE CANADIAN ARCHITECT AND BUILDER,
310 McIntyre Block, WINNIPEG, August 12, 1904.

Building operations have been somewhat hindered during the past month, the holding of the Dominion Exhibition in Winnipeg since last issue having naturally turned all thoughts in that direction, and for the last few weeks the usual amount of work has not been done. There are still a great number of building permits being granted, but chiefly for small houses, the demand for which is still very active. The Winnipeg Street Railway Company are on the eve of starting the erection of some additional sheds and works in the Southern suburb of the City, the result being that property in the vicinity has been materially advanced in price. Work is just about to begin on the new Opera House, a project which has been in contemplation for some time. Excavators, too, have just commenced work on the property of the T. Eaton Company of Toronto, preparatory to the erection of the large departmental store they are proposing to open in this city. The Bell Telephone Company are also contemplating the erection of a new factory alongside of their present one, which will about double their present warehouse space.

CEMENT BLOCKS FOR BUILDING.

An exceedingly interesting feature of the exhibits in the Dominion Exhibition, and one which came at a particularly opportune moment, was that of the various appliances for making cement blocks. In our last issue we pointed out the great difficulty which has been experienced in Winnipeg in obtaining materials for building. Brickmaking has been pushed forward with great energy, but with little apparent effect in satisfying the demand. The stone industries are unable to keep work under way and many buildings which would have otherwise been completed are now not likely to be finished before next season opens. To the interested observer, therefore, these exhibits must have been instructive. In the States it seems that cement is fast gaining in favour as material for building. The evolution of machinery in its application to the cement industry, places on the market a "block" which appears to be commending itself wherever the subject has been given due consideration. As a fire and weather resister cement stands well to the front, and as regards appearance and durability, it is quite capable of holding its own. The subject is one, therefore, to which architects and builders are giving a good deal of attention. Its cost is materially less than stone and its appearance almost equal. As compared with brick, the labour in laying cement blocks is less costly and can be executed by less experienced workmen, which gives it a set-off against the apparently larger original cost, many claiming that in result it works out less costly than a brick building.

Foremost of these exhibits was that of the North-west Pressed Stone Company, who were shewing a "block" for which they hold a special patent not only as regards the block itself, but also the machinery for its manufacture. A great feature of this block is that it has a double air space and it is impossible to pierce a wall built with these blocks without encountering an air space. The company also carries a complete outfit of machinery to work in conjunction with the block-making machine, so that an outfit can be installed to work with the minimum amount of labour and equal to 400 to 500 blocks per day.

Another power cement block making machine was that shewn by Messrs. Gutteridge & McConnell, of Hamiota, Man. This machine was capable of 90 strokes per minute and the actual time taken to produce a perfect block was three quarters of a minute. With this machine it is possible to produce 600 blocks per day. A special feature of this machine is a device by means of which a block can be made with a colored face of cement some two inches thick, with the remainder of the block in natural colour.

The National Cement Block Machine Co., of Toronto, were shewing a machine with a special non-corrosive metal plate, which certainly made a block scarcely discernible from a block of stone. This machine, however, was not adapted for power; by hand labour the output would be some 150 blocks per day.

The Cement Building Block Co., Ltd., of Winnipeg, had also on exhibition a sample of their work in the form of a wall with details, such as corners, doorways and windows. It was stated that the machine exhibited, worked by hand, produced some 120 blocks per day.

The Canada Petrified Brick & Stone Co., Ltd., had on show a sample of their products, erected to show the usual mode of construction both for their special make of brick and also for their hollow cement block. Their chimney blocks attracted special notice as making an exceptionally neat finish. This company have a secret in the manufacture of their goods whereby the cement and sand are joined together, and get extremely hard by age.

These exhibits are of special interest at the present time when the building question is one of great importance and the hindrance to progress is mainly that of not getting sufficient material.

DECORATION AT THE EXHIBITION.

There was nothing large or particularly new in this feature of the Exhibition. To those who are aware of the immense strides made in the Eastern Provinces in this direction, it would appear that a good opportunity has been lost in this omission. The ordinary class house in Winnipeg is usually disposed of in an unfurnished state as regards internal decoration and often remains so in the hands of the occupant for a great while so that there is ample room for stimulating these lines. The Metallic Roofing Co., of Toronto, the western agent for whom is Mr. T. Black, 130 Bannatyne ave., Winnipeg, made an excellent display. Their stand was a large and prominent one, and extended right across the centre of the building, the walls being arranged in sections, each shewing a different decorative treatment in artistic colors. This company also showed embossed metal shingles and sidings. Their designs of roofing tiles known as "Spanish Diamond" and "Gothic" attracted much attention and comment.

The Winnipeg Ceiling and Roofing Co., of Winnipeg, also exhibited a fine ceiling arrangement of Imperial design, mounted on a massive gilt frame, which shewed to advantage. This company, we understand, are the only actual producers of this line of goods in Winnipeg.

Mr. E. S. Holston, of 937 Logan ave., Winnipeg, had on show a selection of high grade front doors made in special patterns, and of fine quality and finish. This firm aim to keep on the market goods of the highest grade and to supply only wholesalers.

The Winnipeg Paint and Glass Co., Limited, had an attractive exhibit, prominent in which were three samples of cut and ornamental glass. They also exhibited an attractive array of glass doors, built and turned newels and internal fittings generally. An attraction at this stand was their exhibit of model cottages shown in the interests of Ramsey's paints, and which presented a very gay appearance.

The Winnipeg Mantel Company had on show a fine range of mantels, grates and tilings.

The Canada Plate & Window Glass Company, of Toronto, were exhibitors of fireplaces and fireplace fittings. They showed an unique range of these goods, arranged with good effect and also had on show samples of their ornamental and plate glass.

STOVES AND FURNACE EXHIBITS.

The industry more largely represented than any other, and which commended almost universal interest, was that of the stoves and furnaces. Probably the largest and finest exhibit in this department was that of the Gurney Foundry Company, who besides having an exceptionally fine position, had also laid it out in a most attractive manner, with a full line of their cooking and heating stoves, furnaces and radiators, decorated in pleasing colors.

The Record Foundry & Machine Co., of Montreal, Moncton, Toronto and Winnipeg, also showed a fine range of stoves and ranges, and although they have recently increased their capacity, are still finding it difficult to meet the demands of their trade. This company showed a specially constructed combined furnace adapted for either small houses or large buildings, and which commended itself as particularly adapted to this district.

The Lennox Manufacturing Company also showed a furnace, the main features of which were a steel dome, particularly sensitive as a heat holder, and an interchangeable fire pot; it was claimed that the consumption of fuel in these stoves was considerably minimized. The Western agents are Merrick Anderson & Co., Winnipeg.

The Christie Bros., Limited, 238 King street, Winnipeg, agents for the Canada Heating & Ventilating Co., Owen Sound, had on view a range of cooking stoves of unique construction. These stoves are so arranged that the heat circulates the oven twice, making it a perfect baker and cooker. They also showed the Empire King heating furnace, for either coal or wood, and with some special features covered by patent rights for the whole Dominion.

The Moffatt Stove Co., of Weston Ontario, who have offices and warehouse at 214 Princess street, exhibited a complete range of stoves and heaters.

The Doherty Mfg. Co., of Ontario, also showed their well known Decarbon steel stoves and heaters.

The Western Foundry Co., of Wingham, Ont., the western agent for whom is Mr. W. S. Black, 404 McIntyre Block, Winnipeg, had on exhibition samples of their furnaces and stoves especially adapted for the use of hotels and restaurants.

The Pease-Waldon Co., of 111 Lombard street, Winnipeg, had on view a good range of their goods, with a special display of heating furnaces. This company has just opened up in Winnipeg, and is carrying a full stock for the western trade.

The Enterprise Foundry Co., of Sackville, N.B., W. J. Copp, Son & Co., of Fort William, Ont., the James Smart Co., of Winnipeg, were also showing full lines of cooking and heating stoves.

The Amherst Foundry Co., Amherst, N.S., in addition to showing a range of furnaces adapted to all classes of buildings from the smaller house to the larger institution, had also on exhibition a fine selection of enameled ware for bath room and lavatory use, for which they have just completed a large and perfectly equipped factory.

The Canada Radiator Co., Limited, of Port Hope, Ont., showed a range of their positive circulating radiators, of which they claim they are the only makers, stating that no other maker has the positive circulation and the consequent absence of air accumulation which is the main feature in this make. It is also claimed to save at least 15 per cent. in consumption of fuel.

The Dominion Radiator Co., Limited, of Toronto, had a very fine and attractive exhibit of highly finished radiators, which drew a good deal of comment from the visitors.

An interesting exhibit was that of the Fairbanks Co., who in addition to the large display of their scales and other fittings showed bath room and lavatory fittings.

The Siche Gas Co., who have an office at 483 Main street, had on view a range of generators in the centre of which was displayed a large generator with a capacity of some 250 lights.

NOTES.

The city of Winnipeg owns a valuable quarry of mottled limestone situated at Little Stony Mountain about five miles from the city. A deposit of clay suitable for the manufacture of fine pottery has been discovered on the Winnipeg river about 60 miles from Winnipeg. Clay suitable for the manufacture of a good quality of brick is abundant in the neighborhood of the city. Unfortunately this clay is not adapted to the manufacture of red brick.

The Board of Works of Winnipeg have recommended that the city enter into contract with an insurance company to insure its employees against accident. About \$700 a year has been the average expenditure for wages to employees incapacitated through accident, and it is felt that this sum is likely to be increased by the fact that the city is constantly enlarging the scope of its operations. The cost of insurance would be about 90 cents per \$100, or about \$4,500 on an annual pay roll of half a million dollars. About half of this amount is proposed to be deducted from the workmen's wages.

The surtax levied by Canada on importations from Germany has cut seriously into that country's Canadian trade, but has considerably helped that of the British West Indies. For the nine months ending March 31st, 1903, Canadian importations from Germany amounted to one hundred and fifty million pounds, while during the nine months ending March 31st, 1904, they amounted to but five hundred and thirty thousand pounds. In direct contrast to this reduction we find that the quantity of raw sugar imported from Guiana and the British West Indies increased from forty million pounds to one hundred and sixty-two million pounds in the same periods as mentioned above. A big decline has been noticeable in all other lines, the dutiable goods entering for the nine months ending March 31st, 1904, being \$7,776,205, while at the termination of the similar period on March 31st, 1904, they have fallen to \$5,076,383 a decrease of \$2,699,822.

MONTREAL CITY AND DISTRICT SAVINGS BANK.

The building illustrated is the branch bank for which the foundations are now being excavated at the south-west corner of St. Catherine Street East and St. Timothy Street, Montreal.

The material of the facades is Deschambeau limestone upon a plinth of granite from the Stanstead Quarries. The building is fireproof the floors being of steel cased with terra cotta. The bank will occupy the ground floor and basement and will be entered by the doorway in the centre of the St. Catherine street front. The banking room occupies nearly the whole extent of the ground floor being 72 feet long and 43 feet wide. The space for public is in the middle with the counter in horseshoe form around it. A portion of the upper floors is occupied by the manager's house, the rest will be let as offices. The cost when completed will be about \$70,000. The architect is Mr. A. H. Lapierre, Montreal. The builder is Mr. M. Huberdean of Montreal, the carpenter work being in the hands of Messrs. Labrecque & Mercure.

PARTICULARS OF THE SCHOLARSHIP ESTABLISHED BY THE PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.

The Province of Quebec Association of Architects have had under consideration for the past two years, the establishment of a scholarship in the Architectural department of McGill University. At the last annual meeting, held in Quebec, the scheme for same was submitted, and by resolution of the general meeting, was adopted. By this resolution, the Province of Quebec Association of Architects, undertakes to pay the University expenses of a student, the beneficiary being selected after a thorough course of examination. The examination or competition will take place in the rooms of the Association (5 Beaver Hall on the 14th and 15th day of September next.)

The conditions laid down by the Province of Quebec Association of Architects, are to the effect that (a) Competitors must be bona fide members in the office of an Architect, a qualified member of the Province of Quebec Association of Architects and who is also a resident in the Province of Quebec, (b) He is also required to pass the preliminary examination of the Province of Quebec Association of Architects. (c) He is also required to have passed the matriculation examination of McGill University in the Arts course.

The successful competitor shall receive tuition free of charge, in the complete course for the Bachelor of Architecture degree at McGill University, this course lasting four years.

All particulars regarding the competition can be obtained from members of the profession, the Authorities of McGill, or the Secretary of the Province of Quebec Association of Architects, R. Lacroix, No. 5 Beaver Hall Square.

A NEW METHOD OF EXCAVATING.

A Chicago contractor has hit upon a method of saving the employment of several teams of horses to haul earth out of a deep excavation. The empty wagon is driven onto a platform at the street level, the horses unhitched and the wagon lowered into the excavation by a jib crane. When loaded it is again hoisted to the platform, the horses hitched to it, and it is drawn away. The loops of the chains by which the wagon is lowered and raised are passed through the spokes and over the hubs of the wheels to prevent slipping. By this method an excavation from 15 to 23 feet deep and 110 by 200 feet in extent, was completed in sixty days.

NOTES ON THE SUPERVISION OF BUILDINGS.*

BY C. F. INNOCENT.

In this paper I have tried to express my views as to the general conduct of a young architect on a building, embodying such information as would have been useful to me a dozen years ago.

First, let me urge upon pupils the importance of getting on to work in progress as much as possible, as this is the way to obtain a practical knowledge of construction. If your principals would allow you to visit a building from commencement to completion, say, every day or every alternate day—to act, that is, somewhat as clerk of the works—you would be greatly benefited.

The person with whom you will have most to do is the foreman, and it is well for you to remember that he is placed in his position by the builder to look after his (the builder's) interests. Much useful information can be learned in conversation with an experienced foreman, and also with the better class of workmen, such as the joiners who are "staircase hands" and the masons who set the ashlar. If you should be appointed, as I have advised, to look after work, the foreman will soon take your measure; and if he thinks you are a likely fellow for it, will try to persuade you to alter all sorts of things—of course to improve the work; such, for instance, as the benefit to be derived from the substitution of lia-lime for cement in concrete; and if you are green enough he may make such substitutions without saying to you about them. Things will go more smoothly if you always stick pleasantly and firmly to your first decision; if you know that you are right, take no notice of the builders' objections that such-and-such ways are unnecessary fads and that Mr. So-and-so always has it done in some other way; you will find it best to show at the beginning that you mean to have everything done well. And whilst on the subject of foreman I would remark that some builders have an inconvenient habit of moving their foreman about from job to job; this will cause you a great deal of trouble and should be objected to.

In condemning materials you will of course order them to be removed from the site, and if you are wise you will see them go; unless this is done it is very easy for an unheeding workman to use up the stuff—of course quite by accident. If you do not see the goods removed you should at any rate remember their appearance thoroughly, and if possible plainly mark them as disapproved.

I believe that some undesirable builders consider that disapproved material is removed if placed on another part of the site: beware of this. Then again, when the builder assures you that the materials are the best, he may be correct in the letter but wrong in the spirit, as "best" used as a trade term does not always bear its recognized dictionary meaning. The "best" in some materials may be of quite medium quality.

In work out of town, where the builder's unable to drop into the architect's office whenever he wants to ask a question, it is almost a necessity to adopt a regular day for inspection or to inform the builder before-hand of your visit; and I believe that some architects adopt this practice with their work in town: but in such cases it is of questionable utility, as it always enables the builder to have everything on the work ready for your inspection as he wishes you to see it, and there is the disadvantage of allowing the large force of men whom he has put on the work to gladden your heart on your visit of inspection to be transferred to another job when you are safely out of the way for a few days or so. Visits at all times and any time are the best to keep everyone on the qui vive. You know that as soon as the laborer who is mixing mortar or loading up bricks in the road sees you bearing down on the job he goes inside and shouts up to the scaffold that So-and-so, whatever your name or nickname may be, is coming; then the word is passed round, and by the time you have climbed upon the scaffold the bricklayers, who have been laying the bricks nearly dry

except on the face joints, are laying them as carefully as eggs, and the masons who have been packing their walls with little stones without a scrap of mortar to cover them, have flushed them all up in what seems a most satisfactory manner—until you poke into it. I suppose it is natural for everyone to go the easiest way, and you will have an early example of this when the stripped soil on the site has to be tipped; you will find most excellent reasons produced for wheeling it down hill.

When you pay a visit to a building for the purposes of supervision it is as well to go around by yourself and not be led round by a talkative foreman; in such a case I sometimes feel that work is being smothered up on another part of the building while he is engaging me in conversation; of course, it is a different matter if you go to learn what you can from him, as suggested before, and I may say here that it will be as well to ascertain from your principal what is your standing on the work. No doubt you will realize that the condemnation of work or materials by an inexperienced pupil sometimes places the architect in such a position that it is necessary to let the pupil down.

It is obviously impossible for me to describe here the numerous probable defects in the various works and materials. This has already been done in such standard works as Seddon's "Builder's Work and the Building Trades" and "Notes on Building Construction"; and various excellent articles have been published in the architectural papers. There is one point, however, which I consider does not receive adequate consideration in the text-books, that is, the correct order in which the different trades and operations follow each other. These are well known by the builder, but he does not always act up to his knowledge, considering his own convenience; sometimes, if permitted to do so, for instance, he may build the walls in one part of a building before those in another part, with unequal settlement as a possible result, or he may rush the concrete floors on while a shower of sawdust is descending from the joiners working at the roof, thus weakening the concrete; or the joiner may bridge or strut the joists as soon as they are fixed, so that the fastenings are strained with each swelling and shrinking of the timber; or a laborer with nothing to do may be set to sweep up the rubbish while the painters are varnishing, thus producing a fine frosted effect without extra charge; or various works may be delayed perhaps in the hope of slipping them all together. On contract work each tradesman usually wishes to change his men around as little as possible, to keep them at regular work, and to go straight forward and get as much work finished as is possible at one time.

I will now run through such other matters in the work requiring your attention as occur to me.

As to the commencement, some architects set out the work themselves, and others refuse to do so, but check the dimensions after the builder has set out; this is necessary because you will understand what a saving an unscrupulous builder would effect if he were to pinch $2\frac{1}{2}$ in. or 2 in. from each dimension of each room. The rooms should also be tested to see whether they are square. Whether the walls are at right angles may be easily tested with the measuring tape if you remember that the sides of a right-angled triangle are in the proportion of 3, 4 and 5, and their multiples of course. The heights of the rooms should also be tested.

You are not likely to be troubled much in Sheffield with bad foundations, though here and there are quicksands, in which cases the pump and concrete are a necessity. As clay is liable to swell when wet and contract when dry, with unpleasant effects to the building, you should have the footing ready before rain gets to the work. If the footings are of rubble it is necessary to see that they are well bedded on the foundations and well compacted together. Poor footings lead to subsequent cracks in the superstructure. While speaking of the foundations I would remind you that they are occasionally omitted in places where

* Extracts from a paper read before the Sheffield Society of Architects and Surveyors.

the building inspector can be squared or where he has not yet put in an appearance.

When the drains are laid the laborers very often start to ram the filling as soon as the first portion is thrown in, with cracked pipes as a possible result; this should not be allowed. It should also be seen that pipes are clear inside especially from cement filling. In places where there is much filling, water from a hose may be used with advantage to supplement the rammer.

The mortar is a most important ingredient in a building, and as the builder naturally dislikes to waste any, the spare mortar a day or two old is very often reworked up and used in the work; as, however, its setting powers are then impaired this is not satisfactory, and you should watch and prevent it. Good mortar ought to feel greasy between the fingers and dry limey on them. A builder's rough test for mortar is to take some up on a shovel and turn the shovel over; if it runs off easily he considers that it is of good quality and vice versa. In practice, poor mortar which works off stiff (by reason of the too great proportion of sand) is wetted to make it work more easily, and it is then deceptive; the waller finds mortar with poor sand (that is, lomey and clayey) most easy to work with. The lime used for mortar should be in lumps which ring when struck together. If it is sort or fallen to powder it has probably been rained upon or slaked by the moisture in the atmosphere, and should not be used for mortar.

In mixtures where lime or cement are ingredients there is a tendency, owing to the greater proportionate cost of these materials, to put in a less quantity than specified, and whether you have doubts or not it is advisable to personally watch over the mixing—especially of concrete, where the strength may be of importance; the proportion of cement may be reduced under your very eyes by the labourers putting the box for measuring the cement unto the heap of stones and sand and knocking it down, thus forcing some of the stones up into the measuring box and reducing the amount of cement. Mortar should not be allowed to set too fast (or rather too dry) and in hot weather the bricks should be well soaked in water; such wet bricks are heavier and handier to the bricklayer than dry bricks. Concrete is also not improved (but the reverse) by drying, as may take place with floors in windy weather, so that it should be kept damp until it has set. You will of course see that the bricks are properly bonded especially at angles, in reveals and jambs, and in piers. A well-bonded brick wall is much more satisfactory in appearance than one in which the joints are not perpendicular and the bricks cut about; in this respect the old eighteenth-century brickwork, where the piers and openings are all multiples of a brick, is superior to much modern work, where the piers and openings are set out on a drawing to a scale of feet and inches and the bricks have to be cut to fit.

In the walling of flues, a matter which needs careful attention is not to "throttle" them, because this is one of the most usual causes of smoky chimneys; particular attention should be paid to the flues at the bends to see that they are kept large enough; as the necessary bends themselves impede the smoke, you should see that the men in walling do not make them smaller at the angles, as they have a habit of doing.

Inferior workmen are very careless about keeping woodwork or steel joists properly away from flues and fireplaces; many fires have been caused by this, and you must carefully guard against it. There are still builders in this district who lay the joists, then build the flues around them as they come, afterwards cutting off the pieces of joists which run across the flues, leaving the ends of the joists exposed.

You will have learnt that stone should be laid in the work upon its natural bedding plane or "quarry bed." A good way of ascertaining the bed of a stone is to douse it with water. The beds worked by the mason requires your attention to see that they are level and of full size, otherwise pieces may flush. It is rather expensive and troublesome sometimes for a builder to

replace a piece of ashlar which has got chipped or otherwise damaged, and it is possible for him to patch it up very neatly and inconspicuously with cement; and I understand that very up-to-date masons stick the chip on with shellac and sand the joint, all with unfortunate results later. Keep your eyes open for this.

Some inferior builders, in order to save scaffolding on the work, only put it up on one side of the wall; this necessitates what is known as walling "overhand" and should be objected to, as it is almost impossible to plumb up the work properly; of course in some cases this one-sided walling is necessary. You should regularly plumb the walls, as those out of plumb are unsightly and may be unsafe; besides the joiner and the plasterer cannot make a good job with them. Another point to attend to in walling is to see that the scaffolding is raised in easy stages for the wallers: some men neglect this, to the detriment of the walls. These are little ways in which the builder may effect savings that keep money in his pocket and add of course to his balance on the right side. Similar things occur in all trades—in the carpenter's, for instance, as giving all the bearing timbers an inch or so less of bearing at each end, or by making the roofs of a flatter pitch than shown on the drawings (which is easy in a hipped roof) or by setting the joists of wood or steel an inch wider apart than taken, or by systematically omitting one joist in each room; such omissions all add up.

The ordering of extras is important, and I must warn you to be careful of what you say, as builders sometimes put their own interpretations on your innocent expressions of opinions, and when the bills comes in and your principal asks the builder who ordered such-and-such an extra, the builder, looking in his pocket-book, says, "Oh, your Mr. So-and-so ordered it on such a date"; and the results may be unpleasant for everybody. It is best for the builder to understand that the architect alone can order extras.

I have previously pointed out the importance of seeing work carried out, and I would here emphasize the importance of getting round the builder's shops in addition to the building itself, as without a good acquaintance with workshop practice you will hardly be able to draw workable details. I have seen sections drawn for local sandstone which could only be worked in wood, or perhaps in marble, and every builder has tales of impossible details that come out of architect's offices. Not only are such visits to shops desirable for the acquisition of knowledge but they are necessary in the case of joinery, as the first coat of paint, known as the priming coat, is usually put on in the joiner's shop, and all kinds of defects may be covered up if not seen before being painted.

The principal points to notice in the joiner's work at the shop are the quality of the timber (especially as to sap and seasoning), bad joints, and the omission of labour, as in grooving and rebating, and to see that the framing is square and not winding on its faces; also, if detail drawings have been used, to see that the work as regards mouldings, framings, panels, etc., has been carried out in accordance with them. The quality of timber gets poorer as the years go by.

The places where things are most likely to be forgotten (as I will put it) are those which are dark and difficult of access, more especially the roof. I would urge you to climb up and see whether the spars and purlins and the other timbers are all properly spiked together. A client usually notices things which, though structurally unimportant, render, if not rightly built, the "very very pretty house" desired by some people unobtainable, and they should be carefully attended to—such as the quality of paint and varnish, the centering of fireplaces and windows in walls, the fitting of window sashes, and the squareness of joiner's work, irregularity in which interferes with the correct fitting of wallpaper patterns. In setting out, joiners work up to eighths of inches but consider 1/16 in. infinitesimal. Bricklayers and masons do not expect to take into consideration less fractions than half inches.

The roof coverings require careful watching. Slates from the better-class quarries have not been very easy

to get lately, and unless you early bestir yourself you may be driven to accept inferior slates. Of course you will understand that with materials which have to be obtained some time before they are used in the building there is sometimes a likelihood of the builder using them for other jobs before yours is ready for them, and this may prove awkward. If the slates are to be to sample, it is as well to make sure that they are so; this, of course, applies to all other materials to sample, especially the bricks and the joiner's ironmongery.

As the slating is only a small trade I propose to consider it more completely than the others, as a type of the supervision required for all trades. The first thing to look to is the quality of the slates; they should be both hard and tough, they should have a metallic ring when struck with the knuckles, and should not fracture easily when lightly struck against wood; if water poured on the slate is soon absorbed, the slate is of course porous; slates with friable and splintered edges are generally bad; slates with green blotches in them (though the blotches do not effect the weathering qualities) are about £1 per ton cheaper than plain slates; slates get shaken on their railway journey, and if not properly packed a jolt in shunting may sometimes crack them from end to end of the truck. The slater should test every slate for soundness before holeing it, which he does by striking it on a bar in front of him or by sharply tapping it with a hammer; cracked slates, however slight the cracks are, should not be put on, as frost is sure to crack them completely. The holeing of the slates determines the lap, and this is one of those matters where a squeeze of $\frac{1}{4}$ in. will put something in the contractor's pocket. The nail-holes should not be so large that the slate will draw over the nailhead. In holeing, the slate sometimes breaks around the holes, and if not stopped the slater may turn and hole again; no slates which are broken or much chipped should be allowed. The laborer may so hole the broken slates that the broken end is hidden, when laid, by the upper slate, and there is then only one thickness of slate covering the roof at that point. The laths should be free from sap and nailed to every spar. The roofs should be lined over before lathing, and any spars which are down, or appear likely to sag, should be attended to. The slates should of course be slightly tilted towards the roof at a gable unprotected by a coping and the spars firred out before laying; the slates if in the least uneven should be sorted into thicknesses so as not to be laid at random, and any which are twisted should be rejected, as they certainly ride, although the slater sometimes says, "Oh, they'll be all right, we put the flat side downwards." Of course the heavier slates should be laid at the bottom. The double eaves-course is sometimes slipped, and if it is not the two bottom courses are sometimes nailed to a single lath. Nails, if expensive, (such as copper nails), are another matter in regard to which the slater may try to save something. Sometimes you will find nails of two weights on a job, one as specified and the other lighter. I confess that I offer no explanation of this, and fear that you will not obtain a satisfactory answer from the slaters. The nails should bulge out somewhat in the middle to get a firm hold on the lath. The joints of the slates should be virtually over each other for the sake of appearance. Occasionally there is a tendency on the part of the slater to delay the pointing of the slates until after the ceilings are plastered, on the principle I suppose that what is of sight is out of mind.

The pointing mortar should be haired or it will not stick to the underside of the laths, and some slaters do not put the hair unless supervised; it is also a trouble to point the verges, and ordinary cement-mortar specially to point the the verges, and ordinary lime-mortar will be used if you are not careful. The ridge-niles should be set and pointed in cement-mortar, and, if flanged, the flanges should be away from the scuth and west in order to avoid giving a purchase to the gales from those quarters. The angle inside the ridge should

be less than the rake of the roof, so as to grip it more firmly.

I have already advised you to keep your eyes on the mixing of the plaster and need not say more on the subject, except that you should satisfy yourself that the lime is well slaked. Sometimes the plasterer finds it easier to fill up a space by laths in a different direction to the rest; the plaster at such points will possibly crack, so that you should not allow him to do this. Plaster on laths should be well "keyed"; that is, squeezed between and behind the laths. I have had it explained to me by a plasterer where the key on some stoothing was absent that a key on lathed upright partitions was as unnecessary as on walls, there being no pull from the plaster, as on ceilings; but that plasterer did not make a convert, and I name the incident as an example of the numerous good reasons for doing bad work which are constantly being brought forward. It is surprising how monotonously sap and other defects in laths are declared to be "only a little stain." Of course in some cases what at first looks like sap proves to be only surface dirt.

You will find a source of considerable trouble and annoyance in the independence of some trades and the ignorance of some workmen. I refer to such matter as the cutting of bearing timbers by plumbers and gas-fitters and their kind, who, unless you warn them beforehand, will chop right through your bearing timbers without compunction if it suits them to run their pipes in such ways.

The plumber is such a monster in the popular imagination that you will be pleased to find him, on the whole, neither better nor worse than his fellow-tradesmen. However, should he be so inclined his opportunities for taking advantage of you are many, especially in the lead in gutters, flashings, ect., which should of course always be tested for size, lap weight and fall, as all of these are liable to be skimped. Also, the plumber is able when cutting the lead to give a twist with his knife which thickens the edge, so that it is better not to rely on the lead gauge but to weigh a bit of the lead and to calculate the weight therefrom. The eaves-gutters and down-pipes should also be inspected for correct and even thickness.

The painter's trade is one of the most difficult for the architect to exercise supervision over the materials. I recommend you to make a study of these. It is well to have each coat of paint of a different shade; of course the variation need only be slight, but if you see each shade on everywhere you know that all the coats are on. This refers more especially to the constructional steel-work, where a coat is often slipped.

We have all heard of people who could not open a single window when they went into their new building and could not get the architect to attend to it for three days. Therefore, before the client occupies your building I advise you to go round and see that the sashes are not stuck with paint, that the window-fasteners work properly, that none of the keys are missing, that any damage slates are repaired, that the eaves-gutters are clear of rubbish, and (not least in importance) that the w.c. cisterns are in working order. These little things, if left imperfect, make a new building unpleasant for its occupiers and may lead to accusations of neglect on the part of the architect.

My notes must here end. But I must not conclude without saying that they do not apply to the better class of builders, with whom I hope that you will only have to deal. And as a final word of advise let me say, do not fall off the scaffold.

Colour is not merely necessary for our pleasure, but is an actual physical necessity. Absence of colour would mean the gradual deterioration of the eyes and eventual blindness.

One day the great architect Richardson was approached by a man who had only \$1,500 to spend on a house. The difficulties of the problem appealed to Richardson so strongly that he took hold with zest. It put him on his mettle to produce an artistic result from purely structural conditions. But when the client announced that he could afford \$3,000 he was dismissed with a wave of the hand. The great man's interest was gone.—Country Life in America.

STRENGTH OF WOODEN PILLARS.

The Building By-law for the regulation of the construction of buildings for Toronto, as prepared by the city architect, Mr. McCallum, contains a number of formulæ for the strength of pillars and beams, which we find have been worked out in tabulated form by Mr. John S. Fielding, C.E. M.E, of this city, who

pillar; column 3, the breaking load in tons of 2240 lbs. each, and the breaking load in pounds; column 4 gives safe load at the factor of safety of 4 recommended by Kidder for yellow pine or oak; column 5 gives safe load at factor of 6 recommended by Kidder for white pine; column 6 gives safe loads allowed by the city architect for yellow pine.

SIZE	LENGTH OF COLUMN	BREAKING LOADS			SAFE LOADS			SIZE	LENGTH OF COLUMN	BREAKING LOADS			SAFE LOADS		
		C = 5000			Y. PINE AND W. OAK C = 1250 KIDDER	WHITE PINE C = 833 KIDDER	LONG LEAF Y. PINE C = 1100 MCCALLUM			C = 5000			Y. PINE AND W. OAK C = 1250 KIDDER	WHITE PINE C = 833 KIDDER	LONG LEAF Y. PINE C = 1100 MCCALLUM
		C.S. SMITH								C.S. SMITH					
6x6	6'-0"	51.0	114,240	28,560	19,040	25,120	6x6	16'-0"	15.8	35,390	8,850	5,890	7,770		
8x8	"	108.	241,920	60,480	40,320	53,163	8x8	"	43.4	97,220	24,300	16,200	21,310		
10x10	"	184.4	413,060	103,260	68,840	91,120	10x10	"	90.4	202,500	50,620	33,750	44,460		
12x12	"	281	629,440	157,360	104,910	138,460	12x12	"	158.8	355,710	89,930	59,300	78,250		
14x14	"	394	882,560	220,640	147,090	194,960	14x14	"	250	562,000	140,000	93,330	123,020		
16x16	"	526	1,178,240	294,560	194,370	260,490	16x16	"	363	813,120	203,300	135,520	178,670		
6x6	8'-0"	39.7	88,930	22,230	14,820	19,565	6x6	18'-0"	13.0	29,120	7,300	4,850	6,400		
8x8	"	90.8	203,400	50,850	33,900	44,660	8x8	"	36.6	81,990	20,500	13,665	17,980		
10x10	"	163.2	365,570	91,390	60,930	80,410	10x10	"	78.	174,720	43,680	29,120	38,370		
12x12	"	255.1	571,420	142,860	95,240	126,115	12x12	"	140.	313,600	78,400	52,260	68,980		
14x14	"	367	822,100	205,520	137,000	181,500	14x14	"	224	501,760	125,440	83,620	110,440		
16x16	"	500	1,120,000	280,000	186,660	246,150	16x16	"	331	741,440	185,360	123,570	163,480		
6x6	10'-0"	30.9	69,216	17,300	11,530	15,230	6x6	20'-0"	10.9	24,420	6,100	4,070	5,350		
8x8	"	75.3	168,670	42,160	28,110	37,050	8x8	"	31.1	69,665	17,410	11,610	15,300		
10x10	"	141.8	317,630	79,410	52,940	69,795	10x10	"	67.6	151,425	37,850	25,240	33,300		
12x12	"	229.5	514,080	128,520	85,680	113,135	12x12	"	123.6	276,864	69,220	46,140	60,918		
14x14	"	339.	759,360	189,840	126,560	166,640	14x14	"	201	450,240	112,560	75,040	99,100		
16x16	"	466	1,043,840	260,960	174,000	229,900	16x16	"	301	674,240	168,560	112,370	148,200		
6x6	12'-0"	24.3	54,432	13,610	9,072	11,980	6x6	22'-0"	9.2	20,610	5,150	3,430	4,660		
8x8	"	62.5	140,000	35,000	23,330	30,660	8x8	"	26.8	60,030	15,010	10,000	13,140		
10x10	"	122.2	273,730	68,430	45,620	60,140	10x10	"	59.0	132,160	33,040	22,030	29,050		
12x12	"	204	456,960	114,240	76,160	100,500	12x12	"	109.5	245,280	61,320	40,880	53,944		
14x14	"	307	687,680	171,920	114,610	151,490	14x14	"	182	407,680	101,920	67,940	88,990		
16x16	"	432	967,680	241,920	161,280	212,630	16x16	"	274	613,760	153,440	102,300	134,800		
6x6	14'-0"	19.4	43,456	10,860	7,244	9,575	6x6	24'-0"	7.9	17,700	4,420	2,950	3,880		
8x8	"	51.9	116,260	29,065	19,370	25,465	8x8	"	23.2	51,970	12,990	8,660	11,385		
10x10	"	105	235,200	58,800	39,200	51,670	10x10	"	52.	116,480	29,120	19,410	25,480		
12x12	"	180.2	403,650	100,910	67,270	88,800	12x12	"	97.3	217,950	54,490	36,330	47,940		
14x14	"	277	620,480	155,120	103,410	136,800	14x14	"	163	365,120	91,300	60,850	80,880		
16x16	"	397	889,280	222,320	148,210	195,415	16x16	"	249	557,760	139,440	93,000	112,650		

Note - Trautwine quotes C. Shaler Smith's breaking loads for moderately seasoned white and common yellow pine, with flat ends, firmly fixed, and equally loaded, as per column *3. The formula being $B = 1 + \frac{L^2}{2500D^2}$ with $C = 5000$. Kidder also quotes from C.S.C. and gives same breaking loads, and recommends the use of a factor of safety of 4 for oak and yellow pine or $C = 1250$ - see col. 4 and of 6 for white pine or $C = 833$ " " 5. Column *6 gives Mc. Callum's requirements for Long Leaf Yellow Pine Square Columns.

PREPARED BY JOHN S. FIELDING C.E. M.E. Aug 27/04

BREAKING LOADS AND SAFE LOADS ON SQ. WOODEN PILLARS
C. SHALER SMITH - TRAUTWINE - KIDDER - MCCALLUM

SHEET - B

has been consulted by some of the leading architects in regard to this matter.

The tables cover the formulæ on pages 43, 44 and 45 of the building by-law No. 4408, as passed July 6th, 1904, and on this page we present table B which gives the breaking loads and safe loads in square wooden pillars as allowed by Kidder, Trautwine and C. Shaler Smith, for white pine, long leaf yellow pine and oak, and compares same with the safe loads allowed by the city architect in pillars of long leaf yellow pine.

Column 1 gives the size of pillar; column 2 gives length of

These tables should prove very convenient for all architects and builders and should save a good deal of calculation.

The full set may be seen at this office, and Mr. Fielding is willing to supply them to any architect who may be interested.

According to the figures of the labor bureau at Washington, there have been in the last 20 years more than 22,000 strikes, involving a loss to employes and employers of over \$400,000,000. The loss to the workmen themselves has been more than twice that of their employers.

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NOTES.

The cost of stock bricks delivered on a London site averaged about 20s. per thousand in 1776, 42s. in 1811, and at the present time may be taken at 40s. per thousand. Bricklayers' wages have gradually increased from approximately 3d. per hour in 1776 to 10½d. per hour at the present time; whilst the cost of ordinary stock brickwork in mortar has varied from £8 per rod in 1776 to £17 per rod in 1904.

Experiments were recently made in England to determine the relative strength of hand-made brick and machine-made brick, with the following results: The machine brick were dried in a drier and kiln burned, and had an ultimate strength of 197.7 tons per square foot. The hand-made brick had an ultimate strength of 125.9 tons per square foot. At those weights they were crushed. The machine-made brick showed an absorption of 7.83 per cent.

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- Finning & Co., Slater Hall Court, London E.C., marble exporters.
 - Charles E. Gittins & Co., Birmingham, locks and builders' hardware.
 - Williams Bros. & Co., Chester, Eng., wrought iron sashes, metal casements, leaded and stained glass, general hardware merchants.
 - Patent Stone Dressing Tool Co., Ltd., Sheffield, Eng., mfrs. of tools for stone and marble dressing.
 - Lee Howl & Co., Ltd., 110 Cannon St., London, E.C., mfrs. pumps and pumping machinery.
 - Glenyards Fire-Clay Co., Ltd., Bonnybridge, Scotland, fire bricks for all purposes.
 - Thos. M. Camm, stained glass, plastic relief, ecclesiastical fittings, Smethwick, nr. Birmingham, Eng.
 - Major & Co., Ltd., Hull, Eng., preservative for wood, stone and brick.
 - The Newellite Glass Tile Co., Cannon St., London, E.C.
 - Silicate-of-Lime Stone, Ltd., Victoria St., Westminster, S.W., mfrs. of silicate-of-lime stone.
 - Sam Deard, Ltd., Old Broad St., London, E.C., patent glazing.
 - The Velvrl Co., Ltd., Bridge Street, London, E.C., mfrs. Velvrl paint.
 - London Tablet Co., Sydenham, London, S.E., Wall and ceiling covering.
 - Sissons Bros. & Co., Ltd., Hull, Eng., paints, colors and varnishes.
 - The Elky Patent Bath Syndicate, Ltd., London, E.C.
 - Mather & Platt, Ltd., Manchester, patent sewerage distributor and water softening apparatus.
 - Mellowes & Co., Ltd., Sheffield, Mellowes Eclipse Glazing System.
 - The Wouldham Cement Co., Ltd., 35 Gt. St. Helens, London, E.C.
 - E. Freeman, 20 Bucklersbury, London, E.C.
 - London Tablet Co., 5, The Parade, Sydenham, S.E., Eng., mfrs. of Wall and Ceiling Coverings, Enamelled Zinc.
- Canadian firms in a position to handle successfully the goods of any of the above British exporters, should communicate with them direct, mentioning the CANADIAN ARCHITECT AND BUILDER.

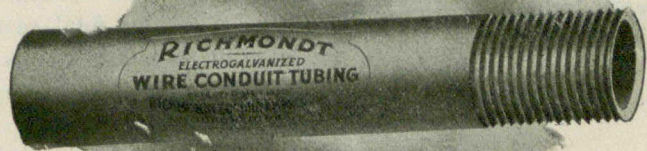
BEAUFORT'S SCALE OF WIND.

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Calm	above 8	" "
Light air	13	" "
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Moderate breeze	28	" "
Fresh breeze	34	" "
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Moderate gale	48	" "
Fresh gale	56	" "
Strong gale	66	" "
Whole gale	75	" "
S'orm	90	" "
Hurricane		" "

It has been calculated says a writer in The Builders' Journal, that the Colosseum at Rome accommodated 100,000 people. The height is given as from 160ft. to 180ft., but the tiers of seats inside did not rise to more than about half this height, the space above being necessary for ventilation. When such enormous crowds were packed closely together for several hours at a time on an Italian summer day, with an awning drawn over them, the atmosphere would have become pestilential if there had not been a considerable space overhead, and at least one range of open arcades for the free circulation of air.

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BY THE WAY.

There is some talk in Toronto of appointing a supervisor of elevators. With a view to furthering the security and safety of the thousands of people who daily patronize the elevators of New York, the Superintendent of Buildings of that city is now formulating a plan for inspecting, licensing and badging elevator men. In New York there are 6,000 elevators.

× × ×

It is said that some one expressed in the presence of Cobden "the hope that some day all people might become intelligent enough to read Bacon." To this Cobden replied: "I would be happy indeed if the time ever came when all the working people could eat bacon." This was said some sixty or seventy years ago. The time has surely come when the working people not only eat bacon but also read Bacon.

× × ×

Almost every day sees evidence of some new use for concrete. So vast are the uses that it has already been put to that to-day, as stated by the Canadian Manufacturer, we are walking on it, riding on it, eating our daily bread from grain stored in concrete elevators, taking our drinking water from concrete reservoirs and cisterns, living and doing business in houses constructed of concrete, sanitating our cities with sewers of concrete, and last, but not least, enterprising undertakers are offering us the opportunity of taking our final rest in concrete burial cases, deposited in concrete tombs, surmounted by concrete monuments, sacred to our evanescent memory.

The Foundation-stone of the new Liverpool Cathedral will be laid by King Edward on July 19th.

BUILDING STRIKE IN TORONTO.

The expectation that the present building season in Toronto would be entirely immune from strikes has met with disappointment. As this number goes to press building operations in that city are almost at a standstill consequent upon a strike of the union laborers for an increase of wages from 25 to 28 cents per hour, and the decision of the bricklayers' union to support the strikers by refusing to accept material from non-union laborers. The Builders' Exchange have positively declined to grant the laborers' demand, so there exists a deadlock, which unless broken, must seriously hamper business enterprise especially in the burned district, and spoil what would otherwise have been the most active building season in the history of the city.

LEGAL.

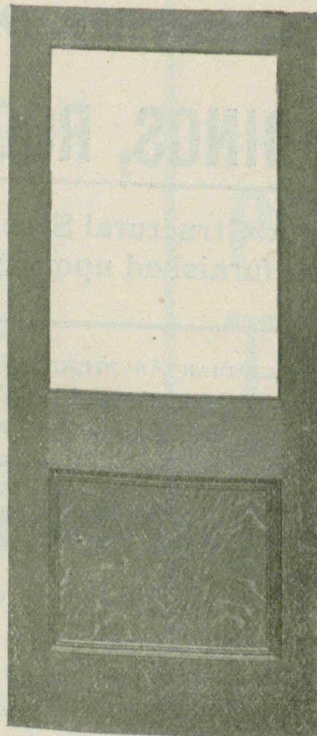
CHRISTIE v. COOLEY.—Judgment by Justices Meredith and Teetzel in the Divisional Court at Toronto, on appeal by defendant from judgment in County Court of Hastings in favor of plaintiff in action to recover possession of a strip of land 4 feet wide, situate in the town of Trenton, part of lot 5 on the east side of Water street. In 1883 there was erected on lot 5, which has a frontage of 66 feet on Water street, a three-storey brick building divided into three stores. The northerly part of the lot had been purchased by plaintiff from one Gordon, the remaining part being retained by Gordon, and the buildings on it, and so much of the part sold to plaintiff as was used or intended to be used as an hotel called the Hotel Aberdeen. In the conveyance from Gordon to plaintiff there was a clause by which plaintiff authorized and empowered Gordon to appropriate and use a longitudinal strip of land along the southerly side of the 25 feet conveyed of about 4 feet in width, for the purpose of erecting a suitable building, "this grant to remain in force only so long as the said building so to be erected shall remain standing on the said 4-foot strip, and no longer." The building was put up, and in 1899 was seriously damaged by fire. Held, that the building not having been entirely destroyed by fire, must be taken to have remained standing on the strip, and plaintiff was not entitled to recover.

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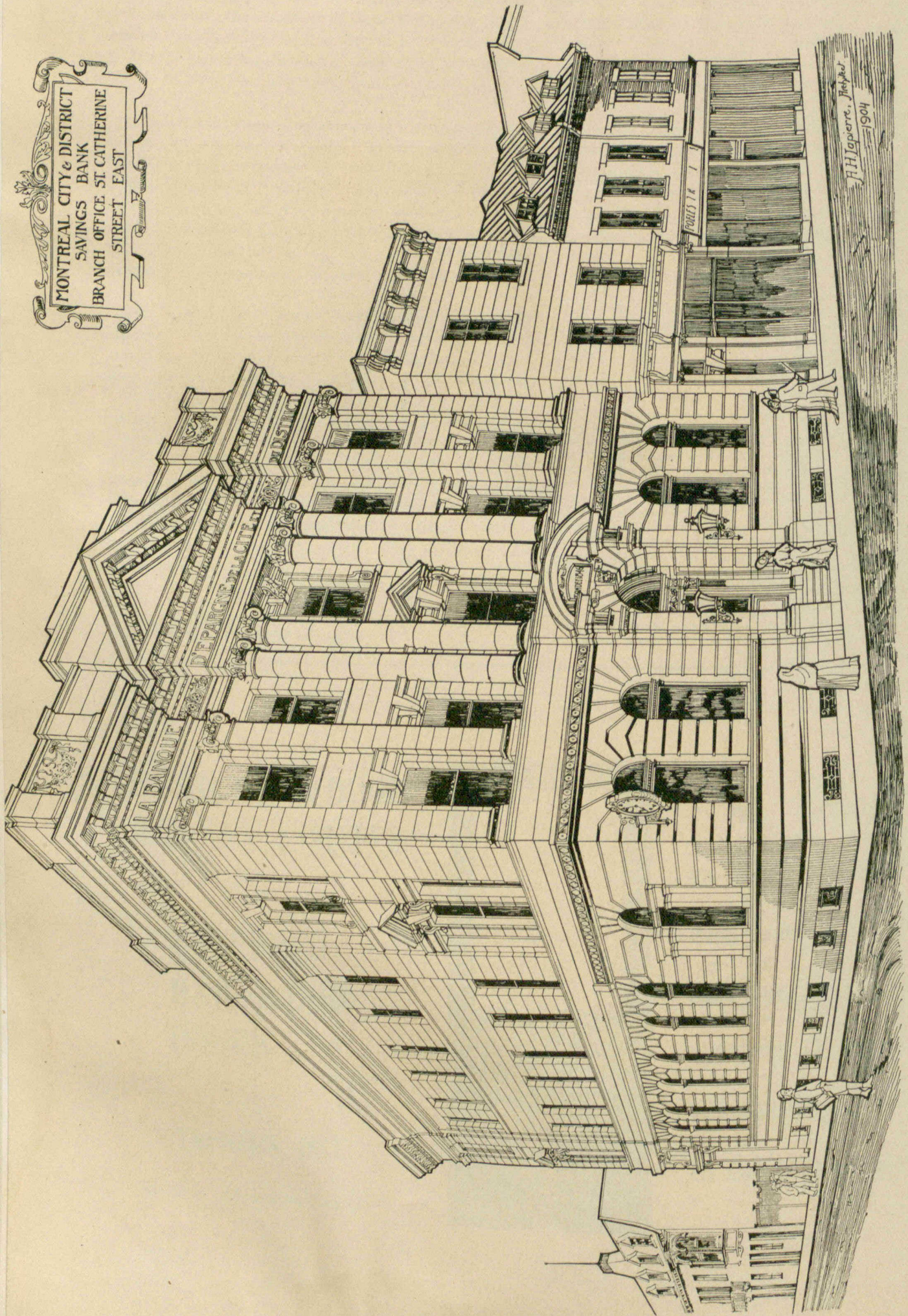
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TRENTON, ONT.

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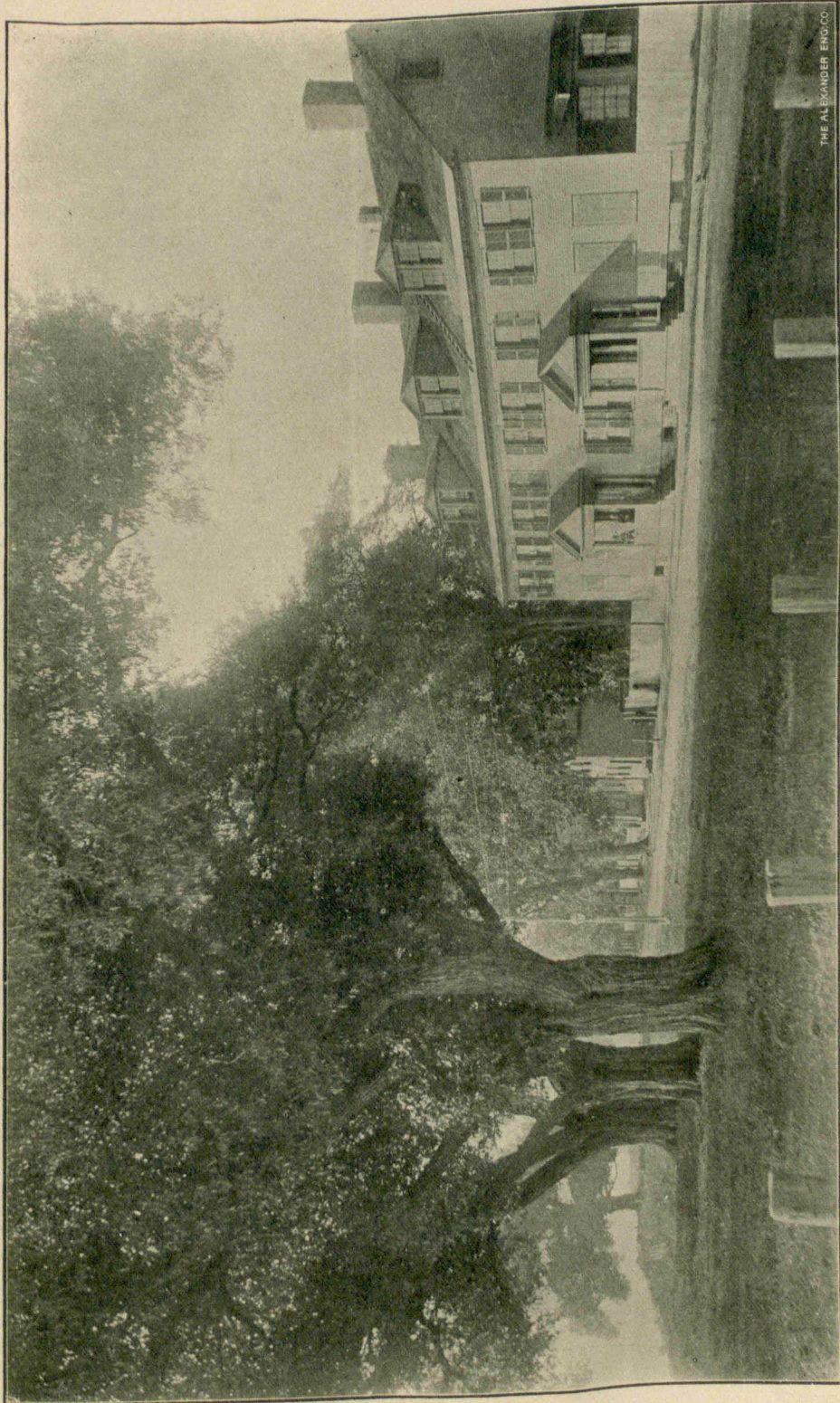


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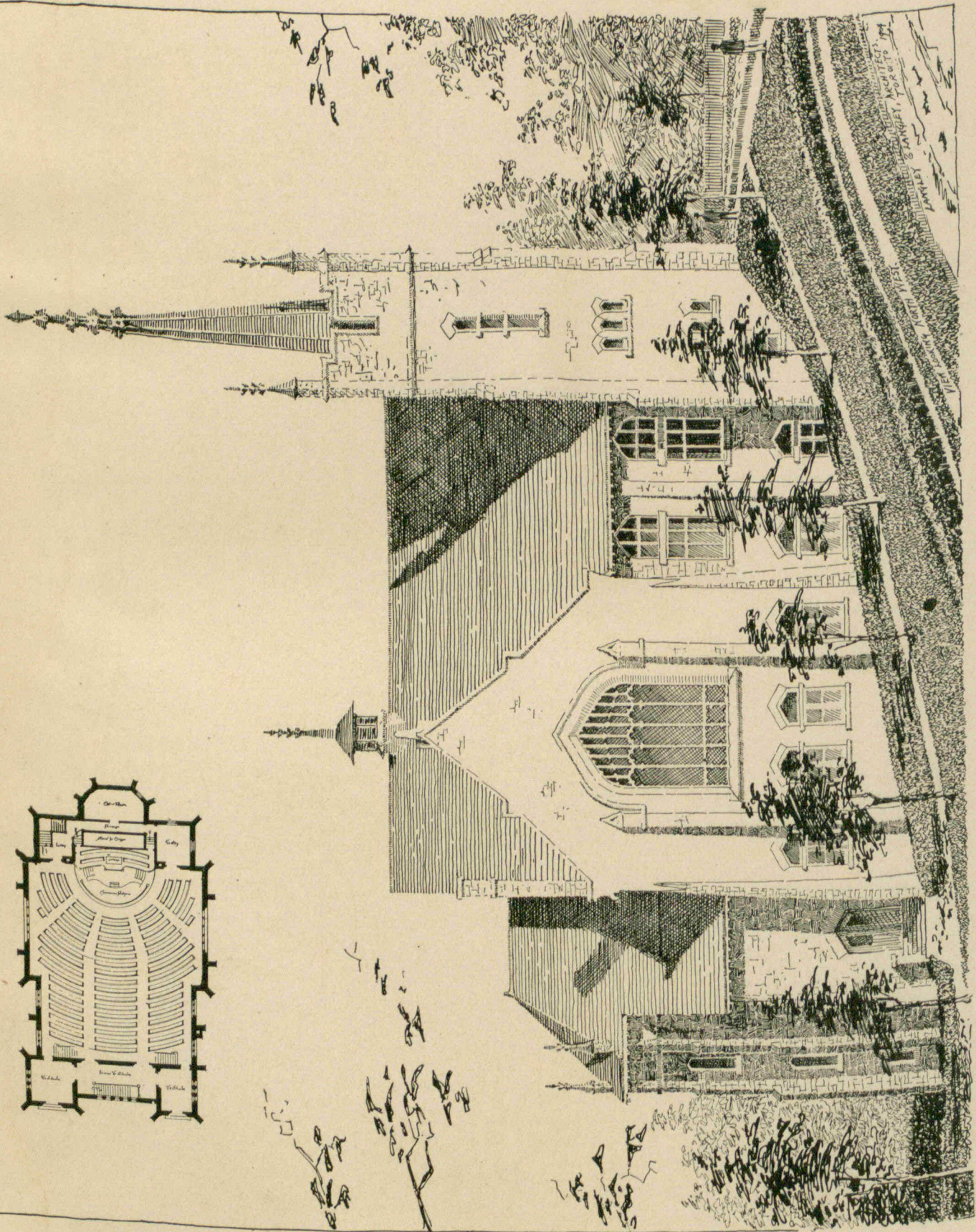


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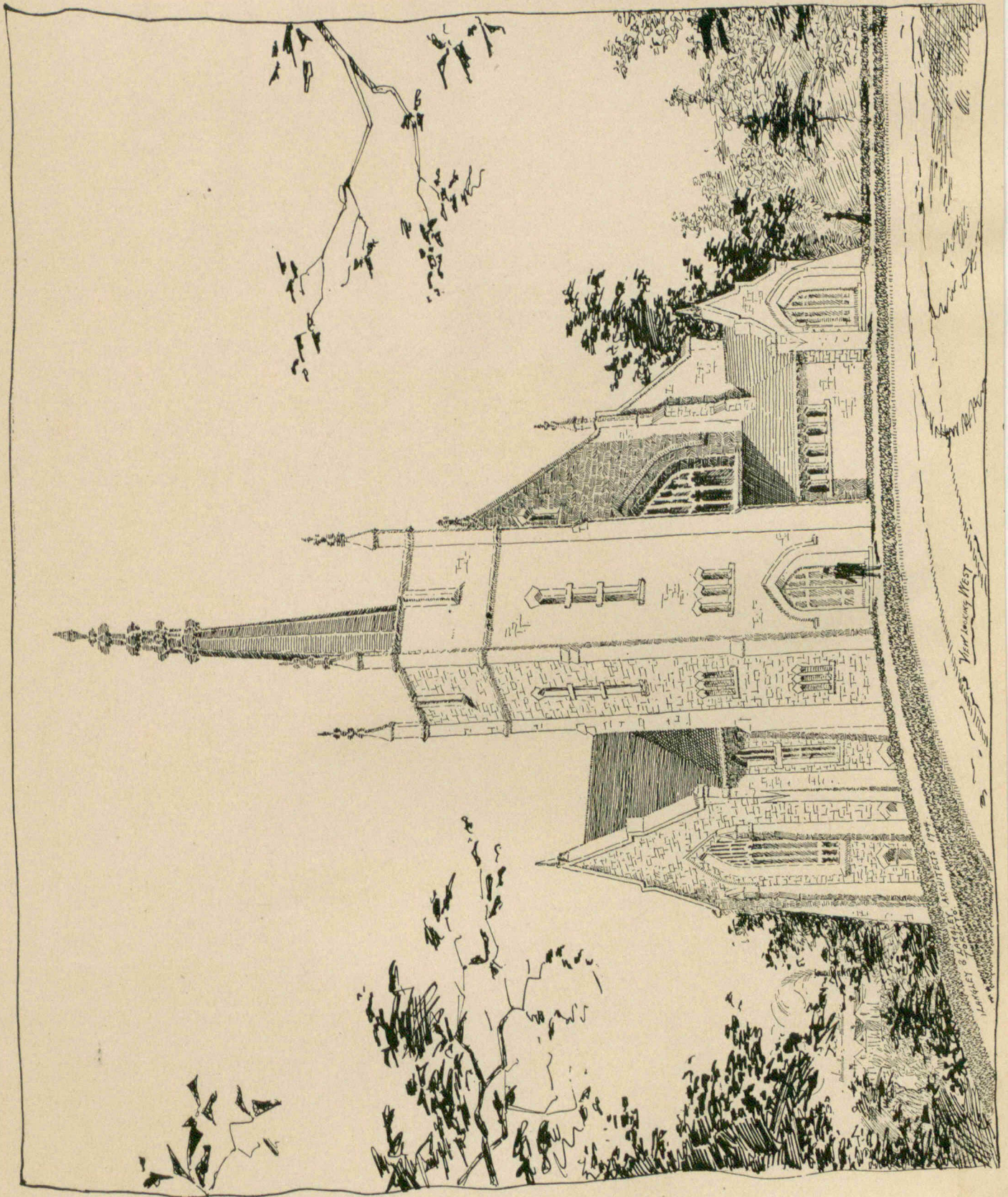


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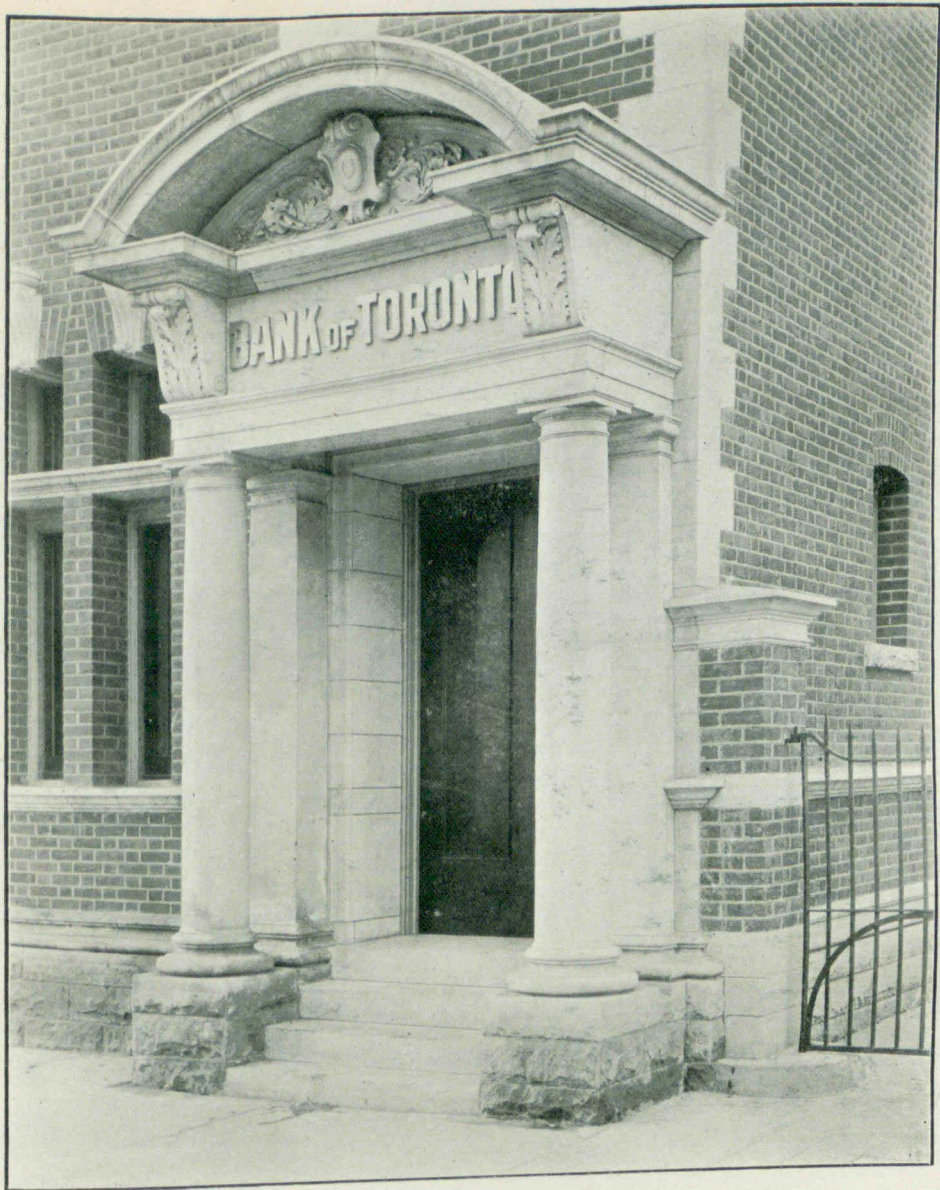


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BRANCH OF BANK OF TORONTO, KING STREET WEST, TORONTO.
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NOTES.

Padua lies twenty miles inland from Venice and is crowded with architectural monuments. Seen from the train it presents an extraordinary mass of towers and cupolas rising over the great alluvial plain of the Bacchiglione.

Sheet rubber has been laid over the stones beneath the principal archway leading to Buckingham Palace, in preparation for the coming season's Court functions. On past occasions the noise of many carriages has made it practically impossible to occupy the apartments overhead for the time being.

The report for July of the Montreal building inspector is that 73 permits to erect buildings were given in that month, value \$392,800; and 58 permits for alterations, to cost \$87,598; total value \$480,398. The expenditure for proposed structures for the corresponding month of the previous year was \$553,000.

The following definition of Portland cement has been adopted by "The Association of German Portland Cement Manufacturers": A hydraulic cementing material with specific gravity of not less than 3.10 in the calcined condition, and containing not less than 1.7 parts by weight of lime to each separate part of silicate, alumina, and ferric oxide, the material being prepared by intimately grinding the raw ingredients; calcining them to not less than clinkering temperature and then reducing to proper fineness.

The Indian room at Osborne House, Isle of Wight, England, is considered the finest piece of Oriental work in the world. It was designed by Sam Singh, a famous carver and native of Punjab. Much of the woodwork is teak, carved and pierced in the Indian fashion; the colors in the room are scarlet, gold and indigo blue. The pomegranate and lotus are used largely in the decorative scheme, and a large white peacock is spread above the teak wood mantel. Electric lights, shining forth from quaintly shaped lamps of silver, beaten metal and vases of Oriental form, give just the subdued light which sets off the beauty of the room.

CONTRACTORS RULES.

The constitution of the Building Contractors' League of Milwaukee contains the following clauses:—

1. That there shall be no limitation as to the amount of work a man shall perform during his working day.
2. That there shall be no restriction of the use of machinery or tools.
3. That there shall be no restriction of the use of any manufactured material, except prison made.
4. That no person shall have the right to interfere with the workman during working hours.
5. That the use of apprentices shall not be prohibited.
6. That the forman shall be the agent of the employer.
7. That all workmen are at liberty to work for whosoever they see fit.
8. That all employers are at liberty to employ and discharge whosoever they see fit.

To make skill and efficiency a standard in the employment of workman rather than any affiliation with labor organizations, but there is no intention nor shall there be any action on the part of this association to control or in any way deal with prices or restrict competition.

The association is also to work to eliminate abuses which have crept into the wholesale trade.

Miss Utaplace—Allow me to introduce you to my perspective husband.

Miss Parcavenue—You mean your 'perspective husband,' dont you?

Miss Utaplace—I mean exactly what I say; he's a draftsman.

A stock company, financed chiefly in Great Britain, is to conduct a Cape Town Exhibition, to be held at Cape Town, South Africa, commencing November the 1st, 1904, and continuing for three months. The site chosen is about one mile from the centre of Cape Town, with which it is connected by tramway and a light railway and freight. Agents have been appointed in the United Kingdom, Australasia, Canada, India, etc., and exhibits are invited from all parts of the world, the countries so far giving promise of a collection of produce and manufactures the like of which is seldom seen gathered together in one place. Canadians, in view of the enactment of the late preferential tariff with South Africa, should seize this grand opportunity of laying the foundation of a large trade in this speedily developing market.

In view of the oft repeated statement by the trades unions of the United States that the cost of living has increased out of all proportion to the corresponding increase of wages, the researches of the United States Department of Labour on this subject, which comes to us in the form of a report, proves very interesting reading. The Department compiled its figures from 2,567 families with an average yearly income of \$827.19, and an average annual expenditure of \$768.54, with the result that they came to the conclusion that the cost of living had increased 16.1 per cent. from 1896, when it was at its lowest, to 1902. In the same period they concluded that the average wage had increased by just that 16 point one per cent., in some cases by more. It is to be noted, however, that the instances from which these figures were calculated, were all taken from the artisan classes and cannot be justly said to at all represent the situation of the great army of salaried men and women who work in counting houses as clerks, bookkeepers, etc. From information we have to hand, we are convinced that their average increase of income would figure out to be nearer 5 per cent. than 16, an increase which, in comparison with the increased expenditure in living, makes their present position an unenviable one.

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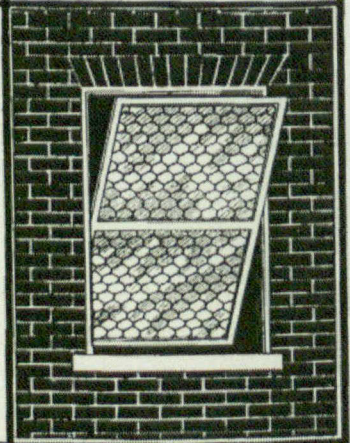
Many practical tests have proved it's efficiency.

Used in conjunction with our hollow sheet-metal frames and other fire-proof fittings, it gives the most perfect protection available

It's adoption lessens insurance rates.

If you want to know more about "fire-proof windows," write us, it's an interesting subject.

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Metallic Roofing Co.,
TORONTO. LIMITED.



NOTES.

There is a possibility of a new industry for the manufacture of cement stone being started in Victoria B. C.

A new company has been organized in Toronto under the title of the Woodruff-Robins Company, for the purpose of engaging in the work of constructing engineers and builders. The directors are Messrs. S. H. Woodruff, F. B. Robins, C. W. Winyard, John Payne, and William Gilchrist, of Toronto.

Referring to the fact that the Dominion Exposition is being held at Winnipeg this year, and that last year Toronto was the point chosen, the Maritime Merchant points out that next year's Exhibition should justly be held in the Maritime Provinces. It is absolutely essential that the people of the different provinces should become acquainted with the possibilities of each province and as a means to this end a Dominion Exhibition should be held in the Maritime Provinces.

A company has been organized in the city of Mexico under the title of the Mexican Permanent Exposition Company for the purpose of maintaining a permanent exhibit in that city of such products of other countries as are best adapted to Mexican cultivation and uses. They have already secured a Government concession, and are erecting extensive buildings which are to be opened in the latter part of October. J. Landero Y. Cos is president and E. Hegwisch secretary.

The contract price for the new buildings to be put up in St. Johns, Que., for the Singer Sewing Machine Company by James Stewart & Company is over \$1,000,000. The structural iron will cost \$250,000, the successful contractors for this portion of the work being the Dominion Bridge Company, of Lachine. There will be twenty-two buildings which will extend over an area of 37 acres, presented to the company by the town. Two of the shops are to be 76x60 4-stories.

The Building Trades Employers Association, of New York, as a result of an alleged violation of an agreement entered into by the unions and the association to submit all questions to arbitration ordered a general lock-out of all employees. The order went into effect on Monday, August the 8th, between 50,000 and 100,-

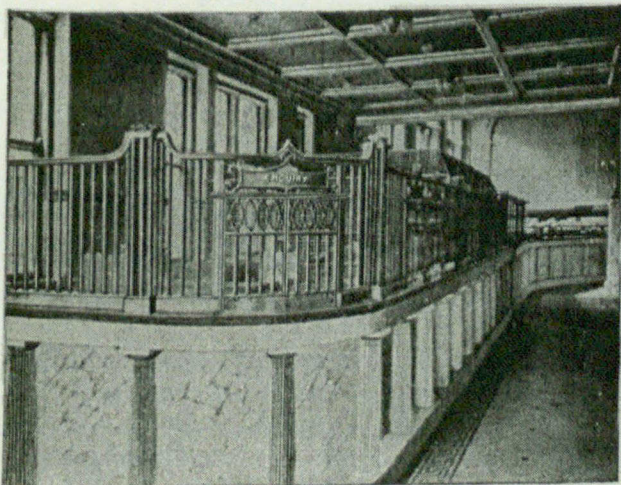
000 men being affected. The Building Trades Alliance, which comprises all the unions affected by the order, at a meeting held on Monday, the 8th, adopted a resolution providing for the repudiation of the general arbitration plan which was signed about twelve months ago.

Building operations in Toronto thus far this year, exceed in value and extent all previous records. It is true that the year 1891 showed a somewhat larger total, this, however, being due to the large sums spent on the city hall, and the land boom. Up to July 30th the value of buildings for which permits have been issued this year was \$3,470,483; for same period in 1903 it was \$2,488,330; and for same period in 1902 it was \$2,304,614.

The Committee of Belgian glass manufacturers appointed to investigate the question of forming a glass trust, has reported that such an organization is urgently required for the purpose of successfully opposing the demands of the labor unions and to secure more profitable prices in foreign markets. Steps are accordingly being taken to bring about an organization, and a Committee has been appointed to fix the value of the different factories. This Committee recommends the raising of the working capital by issuing 2,000,000 of new stock. It is proposed that the trust shall remain in force for thirty years.

Harry Hems, the noted carver and sculptor of Exeter, Eng., has just published a report on the impressions gained while on a recent visit to the United States. Speaking of the cabinet making industry he states "that if quality is to be considered as well as quantity Britain can undoubtedly still more than hold her own, but on the other hand he was convinced that the home plants were not nearly as well equipped as those of the States, he being specially egotistic in his remarks on the perfect plants to be found in Grand Rapids, Mich. He strongly criticized the American employers in the sub-division of the labor involved in the manufacturing of the different products, as he was convinced that the awful monotony of constantly performing some part in the making of a door or cabinet, not only destroyed the skill of the workman, but eventually led to lack of interest and a general mental and physical degeneration.

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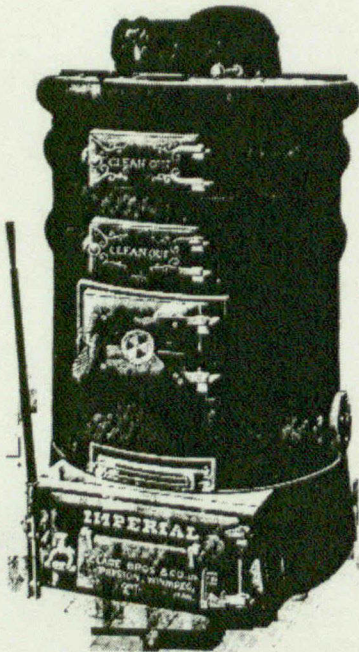
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<p>WHAT WE SAY</p> <h1 style="text-align: center;">VELURE</h1> <p>A new and perfected JAPAN PAINT, superseding varnish, with remarkable spreading, elastic and weather resisting properties. One coat equals two coats of ordinary paint and one of varnish. In 120 colours. Any shade matched. Sanitary—washable. Will not crack, chip, peel, blister, or fade. Twelve months' guarantee given by the manufacturer. Saves time, labour, varnish and money.</p> <p>C. CHANCELLOR & CO., 12, CLERKENWELL ROAD, LONDON, E.C.</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 33%; text-align: center;"> <p>WORTH</p> <p>One Gallon will Cover about 90 Square Yards.</p> </td> <td style="width: 33%; text-align: center;"> <p>TRYING.</p> <p>FINISHED LIKE A MIRROR.</p> <p>Your white Velure is the best we ever tried on the Yachts. Two coats really finished like a mirror. It far surpassed any enamel or ivory japan we ever used. I have done all the Windows in the house with it.</p> <p>HUGH DORRIAN, Yacht Builder. Nansquarter, Kircubbin, Co. Down, June 24, 1902.</p> </td> <td style="width: 33%; text-align: center;"> <p>BETTER FINISH. BETTER WEAR. FEWER COATS. LESS MATERIAL.</p> </td> </tr> </table>	<p>WORTH</p> <p>One Gallon will Cover about 90 Square Yards.</p>	<p>TRYING.</p> <p>FINISHED LIKE A MIRROR.</p> <p>Your white Velure is the best we ever tried on the Yachts. Two coats really finished like a mirror. It far surpassed any enamel or ivory japan we ever used. I have done all the Windows in the house with it.</p> <p>HUGH DORRIAN, Yacht Builder. Nansquarter, Kircubbin, Co. Down, June 24, 1902.</p>	<p>BETTER FINISH. BETTER WEAR. FEWER COATS. LESS MATERIAL.</p>	<h1 style="writing-mode: vertical-rl; text-orientation: mixed;">VELURE</h1>	<p>WHAT CUSTOMERS SAY</p> <p>H.M. THE KING.</p> <p>I have had it used at Sandringham for H.M. the King and found it most satisfactory. It was used on some large additions last year.</p> <p>C. SMEDLEY BECK, Architect. Hia, Prince of Wales Road, Norwich. Jan. 21, 1903.</p> <p>ARCHITECT.</p> <p>I am exceedingly pleased with the result of the Velure used last year. Our doors look and feel like ivory, and show every appearance of great durability. I find that they keep very clean, and do not take the dirt.</p> <p>A. E. PURDIE, F.R.I.B.A. Meadow Grange, Blon, near Canterbury, Jan. 3, 1902.</p> <p>IN A STEAM DISINFECTOR.</p> <p>I am pleased to state that the Velure has been a perfect success so far. It has been subjected to great heat, steam pressure, and withstood the expansion and contraction of the iron, and there are no cracks or flaws to be found, the surface being perfect. It was applied by unskilled labour, the hospital porter doing the work.</p> <p>J. BROOK, S.I.C. A.S.I., Surveyor, R.D.C., Stratford-on-Avon, 5th December, 1902.</p> <p>UNDER WATER.</p> <p>Velure gives a beautifully smooth surface, which remains hard under water, and does not foul easily.</p> <p>JOHN MACKENZIE, Sail Maker. Sandbank, Argyllshire, Sept. 26, 1901.</p> <p>STANDS ANY AMOUNT OF EXPOSURE TO SUN OR FROST, HEAT OR DAMP, WITHOUT CRACK OR BLISTER.</p>
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Agents : { The Canada Hardware Co., Ltd., 10 De Bresoles St., Montreal, Que.
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NOTES.

Canadian exports to South Africa last year amounted to \$1,931,541. For the calendar year of 1902 the imports of the South African colonies amounted to \$242,000,000, the United States sending goods in that year to the extent of \$221,000,000. With the aid of the preference and the direct line of steamers lately established between the Dominion and South Africa, Canada ought to successfully compete with the United States in such articles as bicycles, flour, chairs, agricultural implements, cotton, lumber, doors, sashes, blinds, household furniture, dairy products, musical instruments, carriages and harness, hay, condensed milk and provisions.

A recent writer makes the following comments on the subject of lead roofs:—In a steep pitch roof, and which shows conspicuously against the sky, lead is hardly suitable, unless the building is lofty and monumental. When the roof is flattish and not conspicuous, lead is undoubtedly the best material for the purpose. It is particularly suited for roofs of a highly decorated nature. Special devices are used to keep the lead from creeping. In order that the lead should resist the action of the atmosphere as much as possible it is best to make the sheet from scrap, which gives a metal better suited for this purpose. Pure lead soon becomes covered with a white coating, but lead which contains a small amount of tin or antimony does not corrode as readily. Scrap lead is sure to contain considerable of these metals and so gives a better material than the pure lead.

BUSINESS NOTES.

Under the enterprising management of their new president, Mr. Albert J. Pitkin, the Montreal Locomotive & Machine Company, Limited, are securing large orders for building locomotives for the Canadian Pacific, the Grand Trunk, the Quebec Central, and other Canadian railways. In view of the extensive demands made upon the company's plants the directors have authorized an increased expenditure of \$400,000 for the purchase of new tools and equipment, the enlargement of the buildings and the construction of a new hotel on the property.



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