

# THE CANADIAN ARCHITECT AND BUILDER

Vol. XVII.—No. 7.

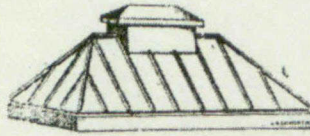
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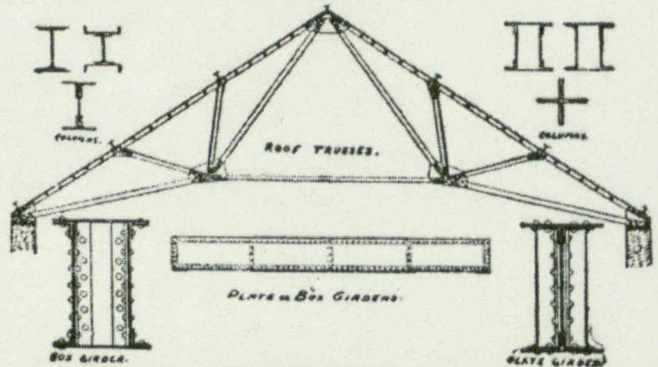
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# The Canadian Architect and Builder

JULY, 1904.

VOL. XVII.—No. 199.

## ILLUSTRATIONS ON SHEETS.

Residence of W. D. Lummis, Bedford Road, Toronto.—J. W. Siddall, Architect.  
Interior New Bank of Montréal Building, Montreal.—McKim, Meade & White and Taylor, Hogle & Davis, Architects.

## ADDITIONAL ILLUSTRATIONS IN ARCHITECTS' EDITION.

Tower Room, Colchester Town Hall, Colchester, England.  
Proposed New Building for the Central Canada Loan & Savings Company, Toronto.—Sproatt & Rolph, Architects.

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## SPECIAL CONTRIBUTORS.

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### A Hint About Planning.

A weak point in the planning of perhaps the majority of modern houses will be found to be the arrangement of the top or "attic" storey. These upper storey rooms might be made both comfortable and attractive, if they were given due consideration by the architect. As a rule they either do not seem to receive the attention to which they are entitled, or are sacrificed for the sake of exterior effect.

### Compulsory Ventilation.

The Legislature of the state of New York at its last session passed a bill providing for the ventilation of public buildings and having particular application to school buildings. This is the first comprehensive measure for the purpose yet adopted in the United States. In seventeen States, however, laws have been passed which require expert examinations of plans for projected school buildings and provide for fire scapes and other means of protection from fire.

### The Architect and the Contractor.

The production of a satisfactory building requires the best efforts of both architect and contractor. The architect needs the sympathetic co-operation of the contractor, and to this end should seek to maintain harmonious relations. The honest, intelligent contractor—and there are thousands such—is, in his

field of effort, as important a man as is the architect in his. He is therefore entitled to be treated by the architect with courtesy and respect. Unfortunately some architects, possessed of an undue sense of their own importance, are in the habit of treating contractors in a most arbitrary and discourteous manner. In the west, where the democratic feeling is strong, an eastern architect who assumed this offensive manner was promptly taken to task by a prominent contractor and in unmistakeable language told that such treatment would not be tolerated. Where contractors show a disposition to evade the strict terms of their agreements, the architect is justified in being severe, and indeed will show wisdom by refusing to have any further dealings with a contractor who has forfeited his confidence. But with the honest contractor the "high and mighty" air is unjustifiable, besides being calculated to bring the architect and his authority into disrespect and stand in the way of the successful working out of his designs.

### The Union Label on Buildings.

In proposing that all buildings erected by union labor should be labelled, the National Building Trades Council submit as a reason the following:—"The union label on a building will be a testimonial that the men who erected the building are thorough mechanics earning fair wages, and thus enabled to benefit the community as consumers. It will be the

best guarantee that the building is safe, substantial and in a sanitary condition." The contention here made is not capable of proof, and is advanced in the hope that it may serve to obscure the real object in view. While it is doubtless true that a majority of the most skilled workmen may be found in the union ranks, it is by no means the fact that none but good workmen are admitted. There are thousands of incompetent workmen belonging to the unions, and conversely there are many first-class mechanics who are non-unionists. Hence it follows that the employment of only union labor is not in itself a guarantee of good workmanship. One of the most serious and well-founded complaints preferred against unionism is that it has done nothing to raise the standard of workmanship, but on the contrary seeks to place all mechanics on one level, disregarding the widely differing abilities with which the Creator has endowed them.

#### Uniform Cement Specifications.

Official or quasi-official specifications governing the character of cement for construction work have been adopted in Germany, France, Sweden, Switzerland and Russia. An attempt to standardize specifications is now being made in England, where, at present, as in Canada, specifications vary widely even where the nature of the work and the conditions are identical. According to a recent writer on this subject some English cement specifications call for 300 lbs. per square inch on the neat briquette after 28 days; others demand 550 lbs. after 7 days. Not only are different specifications inconsistent with one another (assuming that the architects and engineers who drew them were anxious to obtain good cement) but they often themselves contain paragraphs mutually inconsistent. Such for instance, as finely ground cement with an extreme weight per bushel. Some time ago, says the writer, an engineer drew up an elaborate document giving, amongst other things, the size of the sieve wires. Upon investigation it was found that had the sizes he specified been adopted the cement would have had to find its way through a solid brass plate. As we have previously pointed out the extensive use which is already being made of cement in construction and the certainty of its employment on a still more extended scale in the future demands not only properly drawn specifications, but also a system of testing all cement, in order that the safety and durability of structures built largely or entirely of this material may be assured.

#### Only the Best is Wanted

Manufacturing methods have greatly improved in recent years. The production by enterprising firms of goods possessing not only high quality but artistic design and pleasing appearance, has created a demand on the part of purchasers which cannot be met by the manufacturer who seeks to stand by old methods and styles. The manufacturer who is not prepared to bring his goods up to the highest standard in every particular had better retire from the field, and not wait to be forced out by his more enterprising competitors. Some manufacturers enter upon the manufacture of a certain line of goods as a side line to what they regard as their principal business. This side line fails to receive the careful attention and push that

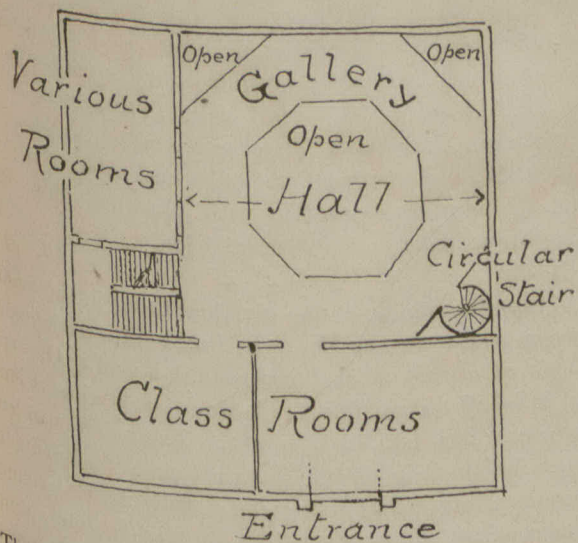
is given to the other departments of the business and in consequence drags along in a lifeless sort of way, the goods produced being regarded with disfavor, and failing to hold their own in the market. In perhaps no other direction has there been greater progress than in the production of materials adapted for use in the construction and furnishing of modern buildings. A remarkable improvement is manifest in our modern Canadian architecture, more particularly our houses. The new requirements make constant calls upon the manufacturer for new and improved materials. Whether his business be to make bricks, radiators, plumbing goods, or the thousand and one other materials used in modern buildings, he can only hope to succeed by keeping his goods in point of quality and appearance thoroughly abreast of modern requirements.

#### The Relation of Science to Architecture.

In a recent paper before the Architectural Association of London, Mr. A. E. Munby urges the necessity of giving the study of science a larger place in the education of architectural students. He reminds us that the modern building and its equipment involves many scientific features and problems with which architects in the past had not deal but with which the modern architect must be familiar. There are also constantly being brought forward scientific inventions for use in buildings upon the merits of which the architect should be competent to decide. Mr. Munby points out that if the architect has not the scientific knowledge to enable him to do this, or having the knowledge, shows indifference to such attempts in the direction of progress, it ought not to cause wonder or complaint that the tide, stemmed by his apathy, finds new outlets, and that the public place in other hands matters which should pass through his hands alone. The author quotes the saying of Ruskin that "Every work of art either states a true thing or adorns a serviceable one," as proof that there is no conflict between art and science. After showing some of the most important applications to architecture, he concludes by suggesting that a passage through the following courses should form part of the requirements of an architectural student at the outset of his career: (1) A general experimental course on physics, including laboratory work and dealing with the dynamics of solids and fluids, with heat, magnetism and electricity, and very briefly with acoustics and optics; (2) A similar course dealing with the elements of inorganic chemistry, touching upon principles, but chiefly of a descriptive character. Mere analysis to be subordinated to simple quantitative work and the preparation of important compounds. The illustrations of chemical laws being based, as far as possible, upon those substances which would afterwards figure in a course of applied chemistry; (3) A short course outlining the principles of geology, and dealing with the stratigraphical arrangement of rocks and with petrology rather than with palaeontology, and aided by the examination of museum specimens, and by occasional visits to quarries. The paper contains a table showing the hours per week devoted to science in the Architectural Courses in a number of Universities in Europe and America. At the head of the list stands McGill University of Montreal, with a total average of 79 or 30½ per cent. of the student's academic career devoted to science and its applications.

THE ARCHITECTURAL ASSOCIATION AND ITS WORK.

A visit to the new building of the Architectural Association showed that they are doing real work, worth studying. Their new quarters are in the building of the Royal Architectural Museum at Westminster which, with the architectural casts it contained, was handed over to the Association about a year ago; and the Association have, in the meantime, spent over \$40,000 in altering and adding to the building, to fit it for their use. The result is a building composed of three divisions, each containing one set of the Association requirements, and a staircase in an angle between them.



There is first, for the disposition of the casts of the architectural museum, a hall about 50 feet square and three stories high, open to a skylight but with a ten-foot gallery running round it at the floor levels. On a third side are the staircase and a small block of rooms for general purposes—a dining or common room with serving room attached, the master's room, a coat room, lavatories, etc., and the front, which is four storeys high, is taken up with the library rooms and the secretary's room on the ground floor at the entrance and three floors of class or lecture rooms above. The two top floors are each divided into two class rooms; one floor for the day school, the other for the evening school, each of which consist of two classes. The first floor is divisible into three rooms by means of folding partitions or can be opened up into one large hall about 70 feet long and 24 feet wide.

So much for the habitation. The works are numerous. What concerns us most is the school work. There are three divisions: the Day School, the Evening School and the School of Design.

**THE DAY SCHOOL.** This school which begins its year on September 28th and ends it on July 16th, has three terms of twelve weeks each with hour from 9.45 a.m. to 5 p.m. The fee is 15 guineas a term (\$228.70 a year) for the first year and 10 guineas a term (\$152.50 a year) for the second year. There is a master, who directs and attends to give lectures, and two assistants who are always in attendance. The subject matter of the teaching is the elements of construction and design. There are two years. The first year is preliminary to articles, intended to give the student a standing of some usefulness when he first enters an office, and to fit him to understand better and learn more rapidly from the work he will see going on about him. The second year is taken in connection with office work; a

certain portion of his time during his first year in articles being allowed the student for school work.

In the first year all the ground is covered, in both history and construction. The master gives a lecture a week in each subject and the rest of the time is occupied by drawing under the direction of the demonstrator. The following is an outline of the work:—

Construction is taught by means of visits to buildings in course of erection. It does not require many visits in a term, for the subdivisions of elementary construction when spread over three terms, do not give too much to think of at one time. The subject is divided as follows: First term, Foundations, Brickwork and Masonry; second term, Timber and Metal Construction; third term, Roof Coverings, Plumbing (which is English for flashing and flat work, as the work is usually done in lead), Plastering, Joinery and Finishing. The method of teaching is to first explain construction on a building, with examples before the students of the points under consideration, and then to set papers to find out how much they have learned as a guide to further lectures. Drawing goes on concurrently with lectures, and there is a blackboard upon which the students are encouraged to study details full size. A case of models comes into use in the last term when joinery and other finish is under consideration. By that time the drawing has reached the stage of application, still however only by means of copying drawings. Drawings of a cottage are supplied for study and imitation; large and small scale drawings and full sizes are drawn, traced, printed and colored, and specifications are written, exactly as would be required in an office. The year's work in the study of Construction thus brings the students into touch with actual draughtsman's work.

On the side of History there is outside work to be done both on buildings and, for the earlier stages especially, in museums; but drawings play the principal part. Beginning with the Orders, the students proceed, during the first term, to the study of a large Roman plan, exemplified by the Baths of Caracalla, photographs of which in its existing state and a drawing of its conjectural restoration hang on the walls to help them to realize the building. Roman basilicas wooden roofed and vaulted conclude the the first term's work and prepare for the second which is occupied with vaulted buildings—a plan section and elevation of a Byzantine and a Romanesque church and a couple of bays of an early-French vaulted refectory. In the third term the students work through the more elaborate Gothic vaulting to the Renaissance, which they study in English examples. Lectures in the meantime go on, keeping pace in subject with the period of the drawing in hand, and the object of the lectures as is given by drawings as to give an account of the history of the period and cast light on the manners and conditions of life which gave rise to the style of building under consideration at the moment on the drawing boards.

During the first year there is also given some instruction in measuring old work, and the Easter vacation of a month is supposed to produce a study of this kind; for which opportunities of such work with prizes and rewards, offered later in the students' career as members of the Association, give sufficient inducement. At the end of this year's work a student should be fairly qualified, in point of both construction and de-

sign, to be useful in an office and to learn from office work. There is also a chance that, without spending more than a year over it, he will discover that he is not fitted for such work at all. Unless this discovery is made, he is supposed, on the conclusion of the first year of the Day School, to enter into articles with an architect for an apprenticeship of five years. This is usually done at once; and in the autumn he resumes work in the Day School, which in this year is limited to two days a week.

The work of the second year consists entirely of working out problems in design from specified conditions. There are no lectures; instruction is given by criticism. The distinction between the work done by this class and that of the studios and Sketch Clubs for more advanced students, with which we have some acquaintance in Canada, lies in the motive. It is a first principle of the training for an art that the mind should not be led beyond the hand, and there is no attempt made in this class to develop individual invention; the intention is rather to make the design merely a vehicle for working into form what the students have learned in their previous year's study of the History of Architecture. It is one thing to be familiar with detached features of historical design, or even to draw them in place, and another to understand or remember their characteristics well enough to apply them in work of one's own composition; and the problems worked out in this class serve to clinch the student's knowledge of style by giving them experience of its practical application. The library of the Association furnishes them with the means of accurate study so that there is no reason why they should not, between study and criticism, build up a design which is scholarly and yet original in the sense that they have made the knowledge which it represents their own. The great divisions of style receive equal attention so that no bias is acquired in the school towards one more than another. Construction is represented by a domestic problem or two of a simple nature for which drawings and specifications sufficient for contract are made.

This ends the work of the Day School. To carry his learning farther the student must attend the Evening School intended for pupils who have passed their first year and have to spend all their time during the day in an office.

It will be necessary to take the space of a second article to give an account of this and the other proceedings of the Association.

W. A. LANGTON.

THE SELECTION OF COLORS.

The following table will be found useful in choosing the various tints, inasmuch as by examining them in the order here given the eye will at once detect the slightest difference of shade. To refresh the eye

Look at	Greens	before choosing	Reds.
"	Blues	"	"
"	Violets	"	Oranges.
"	Reds	"	Yellows.
"	Oranges	"	Greens.
"	Yellows	"	Blues.
"	Tints	"	Violets.
"	Browns	"	Browns.
			Tints.

Steel tapes are graduated in feet and tenths, and pocket tapes to hundredths of a foot.

BY THE WAY.

In the tower of the Central Methodist church on Bloor street east, Toronto, now in process of demolition, hung for half a century or more the town bell of Yorkville, now included in that part of Toronto lying north of Bloor street. The bell has been temporarily taken down but will again be mounted in the new tower of the reconstructed church.

x x x

It is reported that the Treasury Department at Washington is about to issue an order prohibiting draughtsmen in the employ of the Government from making drawings for outside firms. It is estimated that fully one-half of the 150 draughtsmen employed in the office of the supervising architect of the Treasury give their services after hours to outside employment, and this it is held interferes with their efficiency in the Government service. This practice has also prevailed in Canada, and has been the cause of protest from architects in private practice who felt that they were being subjected to unfair competition.

x x x

A Japanese house is the simplest thing in the world, says a writer in the Western Architect, consisting as it does of a post at each corner and a roof. One may say it is all on one floor. And in the daytime it is all one room, if it is a small house. The number of bedrooms in it depends on the number of bedrooms the owner requires. They are divided by night by paper shutters fixed in grooves like the divisions of an old-fashioned workbox. There are no doors or passages. Your bedroom acts as a passage, and when you want a door you slide back the nearest panel. Two sets of shutters go around the outside. These outside shutters cannot be slid in the same promiscuous fashion as the other. Each is held in its place by the next and the last one is secured with a bolt of wood. There are plenty of Japanese houses which when secured for the night would hardly stand a drunken man leaning against them. An Englishman's house may be his castle—a Japanese house is his bedroom, and his bedroom a passage.

x x x

There died at Philadelphia recently a wealthy stone merchant, William Gray, who was at one time well known in Bruce and Huron. In 1871 he came to Canada and settled near Iverhuron, in Bruce Township. There he was known as Boss Gray, and there he carried on extensive operations. On the second concession of this township he bought a farm of two hundred acres, and built a great stone castle. A fine avenue, bordered by spreading trees upon either side, led up to the magnificent residence. The house was richly and elaborately furnished. In each room mirrors ran from floor to ceiling. There were grand stairways. There were broad and spacious halls. There were wide, open fireplaces. In every room the generosity and the luxury of wealth was artistically exhibited. But it was occupied for only two years, and ever since the rats have run riot through its splendid chambers. When the family left the house the rich furnishings were left behind. Nothing was disturbed, nothing removed. The house has seemed to stand through all these years waiting for the family to come home. But lately the bedding and the curtains dropped to pieces and decay was upon all within the mansion. Grass and weeds possessed the wide avenue, the trees were ragged with neglect, and the gate sagged upon its hinges.

## NORTHWEST NOTES

Branch Office of THE CANADIAN ARCHITECT AND BUILDER,  
310 McIntyre Block, WINNIPEG, July 14, 1904.

The progress of the many building propositions continues excellent. Contractors on every hand are making the most of the excellent run of fine weather we have recently had, and had it been possible to have obtained a full supply of materials, greater headway would have been made and much more satisfaction to all sections of the community have resulted. As it is, however, building operations are sadly in arrears of the positive necessities of the immediate demands. Offices, warehouses and dwellings are alike pressing their needs to the front and vying with one another for first attention.

Office space in any desirable location is almost impossible to obtain, and in the event of any office being vacated plenty of occupants are readily forthcoming, and rents are consequently going up with leaps and bounds. The conveniences, too, of many of these buildings are sadly deficient, and no attempt is being made to give attention to the many modern and necessary improvements which in most other cities are considered part and parcel of an office equipment.

The new Union Bank Building, which is now well on in its construction, is looked to as providing a decided relief in both these respects. Besides placing at disposal a large number of additional offices, it will also have the advantage of being thoroughly up-to-date, and on this account many firms have secured space and are leaving offices which they have occupied for a great while, and the inconveniences of which have had to be endured.

We should judge there never was a better opportunity than the present for experienced and enterprising men to make capital for themselves and at the same time confer a distinct benefit on the hundreds of business firms which are looking to the West for development of their commerce, by the erection of buildings of the most modern type and adapted to the conditions prevalent in the district. And this would apply not only to the class of buildings just mentioned, but to all buildings for which there is a demand. There is clearly manifest on every hand a great tendency to erect buildings sadly deficient in their details of construction and finish. The mad rush of buyers has brought on the market a number of men whose sole endeavor is to get a building together at as little cost as possible, even though it be at the sacrifice of, what should be, necessary details, the number of people seeking dwellings making it an easy matter to secure purchasers. It is true many of these men are "small" men, and act as their own architects, but the real injury is certainly not minimized on that account, but rather increased, as they have neither the reputation of the architect at stake, nor the stability of a sound builder to fall back upon.

"A straw will show which way the wind blows," and there are already whispers that the capitalists are beginning to limit their advances on certain classes of properties and in order to complete sales builders have had to take certain risks on the mortgage—a clear indication that present values are questionable.

The foregoing remarks will, of course, apply more particularly to houses built expressly for sale, but inasmuch as the prosperity of Winnipeg has come to stay, it is of the first importance to see that its buildings are such as will become a sound investment and not a source of trouble.

There is really no reason why there should be any difficulty in this respect. Winnipeg possesses at the present time as competent a staff of architects and contractors as could be desired; it would therefore be an easy matter for a prospective buyer to obtain a concise and accurate report of any building, from a man of professional repute, for a charge that would be infinitesimal compared to the immense advantage of such a certificate. At the present time, however, it would appear that all these necessary precautions are at a discount—so great has been the boom, and so eager the purchaser, that their best interests have been neglected.

The need of a precaution of this nature becomes the more apparent when the fact is taken into consideration that the "by-law" which governs the erection of buildings is considered to be of a most unsatisfactory nature, leaving as it does the interpretation of what a "foundation" really is according to the by-law as uncertain and vague as it could well be, so that the unscrupulous builder can steer well within the letter and still miss the real benefits which it is meant to confer, and the evils it was intended to remove. As long as he lays a simple stone or cement footing upon which to erect his structure, he is well within the "by-law," the question of going deep enough to strike the solid blue clay being left entirely to the discretion or whim of the builder himself. And this too within the protected limits of the city.

In our last issue we pointed out one of the peculiarities of the soil here in this city, and with this before the mind it can easily be seen the great danger that exists where a proper solid foundation is not reached.

A man building for his own holding will, of course, be amply protected by his architect, and there is little danger in that case; but for the buyer from a speculative builder a certificate from a professional man becomes an absolute necessary precaution.

We understand that a revised by-law is under consideration which will fully meet this unsatisfactory condition, but in the meantime property is being rushed forward, and too great care cannot be exercised in a thorough examination before purchasing.

We note with satisfaction that the authorities are doing all in their power under the present by-law to secure the stability of all new buildings, within the First and Second limits, and are also extending such limits from time to time as occasion requires, thus giving the greatest protection possible to the city proper.

The "First" limit practically includes the whole of the business centre, whilst the "Second" limit comprises the residential section immediately adjoining.

Buildings within the "first" limit are required to be either stone, solid brick, or iron throughout. Buildings within the "second" limit must be either brick-veneer, metal-clad, or rough-cast.

All roofs in both limits to be of "incombustible" materials or shingles laid in "half inch" of lime mortar.

As an indication of the proportions reached by the enormous influx of population, it might be instructive to note the prices recently reached in real estate values, as compared to those prevailing within a reasonable time.

In the west part of the city, a district which is fast gaining in popularity as a residential section, small plots which last autumn could have been readily bought for \$350 have recently changed hands at \$550. This is in part owing to the belief that it is at this point that the G.T.R. is likely to locate itself.

In the south advances have been even more marked, the city having pushed out in that direction in a decided manner, and also on account of the close proximity of two public parks. Here the values have risen from \$50 per foot to \$100 within the twelve months.

In the city proper the advances have been beyond all expectations; property which could not move an offer at \$380 per foot last year, has recently been sold at \$1,000 per foot. This in itself may be a special instance, but at the same time it is quite reasonable to fix the average advance at an easy 75 per cent. over last year.

A distinctive mark of Winnipeg and one which gives it its character is its essentially "commercial" aspect. The many buildings which are rising up on every hand carry with them the clear lines of warehouses or stores, and present somewhat of a contrast to the heavy factory buildings of many other cities. It is a "commercial" city more of necessity than of design, and there are few, if any, natural advantages which would warrant the supposition that it would ever become a manufacturing centre of any importance. It can easily be seen, therefore, that it is



peculiarly dependent upon outside resources for its supply, and should there arise any cause of interruption in the prompt delivery of those supplies the effect becomes immediately apparent, and the results more serious than otherwise would be the case. In this connection the "freight conditions" of Winnipeg are causing a good deal of dissatisfaction, trade being seriously checked by the uncertainty and delay in delivery of goods. This probably is nowhere more marked than in the building trades, where the scarcity of materials has been causing the greatest anxiety. Many buildings have had to be held in abeyance, and others seriously delayed in their progress entirely for lack of supplies; it is computed that, had there been sufficient materials ready to hand, there would have been an increase of quite 25 per cent. in the completed buildings during the present season; this, in a city where the dearth of available dwellings stands already at almost the famine point, is of most serious moment.

It is without doubt that the present year's progress came as a general surprise; all expected a measure of advancement, but no one looked for such strides as have actually come to pass. The financial section, at the commencement of the year, were inclined to move with caution in face of last year's anticipations not being fully realized, and probably this re-acted on the business men, causing them to hold back many orders which should have gone forward, thus causing a certain amount of delay in commencing operations. The difficulties at the present, however, are more distinctly those of "transit." From all accounts it would appear as though it was high time that a change was made in the handling of merchandise, so that there was some certainty of receiving a consignment of goods within a reasonable time, instead of having to wait and often suspend operations, the only news obtainable being that "the goods cannot be traced." If such a state of things continues, with the present extensive operations under way, it is impossible to tell where it will land us, and a serious check to business will result.

The extensive alterations and improvements to the Exhibition grounds are now rapidly nearing completion, but for some time it seemed as though the buildings could never be finished in time, mainly from the cause already referred to, but by dint of great exertion after much waiting, the work has gone ahead, and will be ready to keep the schedule time.

The tremendous storm which swept over the city some weeks since did a great deal of damage to buildings and property, more especially in the outlying suburbs, and to the smaller new dwellings under construction. In several instances houses were removed several feet from their positions, but without otherwise receiving damage; many simply collapsed with the severity of the wind and a long stretch of sheds on the railroad siding were razed to the ground. On the new Union Bank building work had to be at once suspended owing to the effect of the electricity on the steel work.

If one required additional proof of the real advancement of the city, it could well be found in the excitement prevailing in the community toward the improvement and enlargement of church buildings; there are quite a number in project, and many new ones under consideration. This probably is one of the best indexes to the substantial and financial success of the city; seeing that the churches are to a great extent not only the expression of the religious sentiments of the populace, but also the indication of their social life and progress. On River avenue, Augustine Presbyterian church is nearing completion and will be a fine stone structure in Gothic style, with a seating capacity of upwards of 1100. The Wesleyan church on Juno and William streets is to be improved and the capacity about doubled. The First Baptist church on Hargrave is to have an extensive addition and the seating capacity will be increased by about one-third.

The extension of the city and opening up of new streets and avenues have made it necessary to arrange for a better supply of fire stations. The authorities have therefore decided to erect five new buildings, one on each of the following streets, Sherbrooke, Gertrude, Burrows and McDermott. The plans have been prepared by Messrs. Melville Bros.

The Winnipeg Builders' Exchange held their monthly meeting on Tuesday, the 5th inst. The meeting was a most enthusiastic one and many interesting topics were discussed, a resolution being passed to the effect that each section was to be called together, a permanent chairman appointed, and the arrangements of the section kept in thorough order, preparatory to the adoption of important measures in the interest of the members.

#### THE BRICK OF WINNIPEG.

The brick supply of Winnipeg is fast becoming a serious proposition. For several months past the greatest difficulty has been experienced in obtaining sufficient to keep work in progress; in point of fact this has been the case since the opening of the season. Work commenced with a short supply and it has been impossible to catch up to the demand. The local brick fields in operation have proved quite inadequate to meet the constantly increasing demand.

There are some ten or twelve brick-yards in full work, carrying some twelve pug mills, and these working at their full capacity produce scarcely 800,000 bricks per day, a total which is greatly insufficient to meet the demand of the building enterprises now on hand, the daily consumption at the present time being probably four times that number.

We understand that several of the largest contracts were originally arranged for Manitoba brick, and it was not until it was found impossible to get a supply on this side that imported brick was resorted to.

In the north end of the city, where a number of small buildings are being erected, the difficulties of obtaining a supply of brick were met in a somewhat novel way. In this district are resident a number of Doukhobors and Italians, and in order to keep up the necessary supply, a gang of these men set to work to collect the clay and mud dug out of the excavations for cellars and foundations, from which they made brick in the crudest and simplest way possible, without recourse to machinery of any kind whatever. The mixing of the clay was accomplished with the naked feet, and the moulding done by hand, the bricks being spread out on the ground to dry, afterwards being stacked in rough kiln fashion in the cellars from which the mud was dug and there baked for use. In this way they have not merely succeeded in keeping enough for foundation work, but have made sufficient to complete a small hotel throughout, for their own local use. The bricks made were at first much larger than usual, and the novelty was by no means reduced in watching the bricks being laid, the workman having to lay down his trowel each time and take up the brick with both hands. It certainly speaks well for the adaptability of these settlers, who had probably never made a brick before in their lives.

The brick in favor in this district is the common white clay brick, and one for which the local clay is particularly suitable. It stands the severe climate remarkably well, and in time gets as hard as stone. However, the clay from which it is made seldom runs at a greater depth than a few feet, and thus makes it a necessity to frequently shift location, a circumstance which prevents the brick-yards from adopting many of the more modern systems, which would probably increase the output.

We understand, too, that at a much greater depth a good supply of fine blue clay can be struck in certain localities, but up to the present it does not appear to have attracted attention, the general disposition being to pass on and keep near the surface.

Last season closed leaving no stock on hand and it looks at present as though this season will close with work standing still for need of brick.

#### WINNIPEG STONE MASONS AND THEIR DIFFICULTIES.

The present condition of the stone industry cannot by any means be considered satisfactory in Winnipeg and the surrounding districts, not on account of lack in trade prospects, for as for these the possibilities are certainly without limit.

The general rule favoured by Winnipeg architects is to make provision for "native" stone on all heavy buildings, and also on all dwellings of a substantial character, up to the first or second floor lines. This in itself means the absorption of a quantity of stone, mostly of a general and uniform character, so that there would appear to be no valid reason why the production of these blocks should not be continued without any interruption and at a rate which would keep pace with the advancing conditions of the city. Considering, too, that there appears to be ample supply to draw upon, and from all accounts plenty of men to considerably increase the output, it seems the more to be regretted that the present unsatisfactory conditions prevail.

The new Public Library which is well under construction and which should be finished by September next, is one of the greatest sufferers from deficient supply. It is to be almost a stone building throughout, and it is found impossible under present arrangements to obtain sufficient to keep the work going ahead; instead therefore of being "finished" within the specified time, it will be as much as the contractors can do to get the walls and roof up by the time now fixed for finishing.

Other buildings, too, are like sufferers, and perhaps of more importance because of their business character. In every case it means hindrance and check to trade.

It is of significance, as showing the natural result which follows the undue suppression of an industry, that many buildings are being erected in which "terra cotta" is being used in place of stone facings, and on enquiry it is found that this is mainly on account of the impossibility to get stone with any moral probability of having sufficient to complete the building within a reasonable time. The only thing to be done in order to be certain of securing progress is to use a substitute.

In discussing this subject we are approaching one which has underneath the surface a problem which is likely to affect, not merely Winnipeg, but any and every district within the limits of the confederation of the workmen's union. It is therefore well, and we think opportune, to present the dangers which face the forcing of issues on lines at present assumed by the men's union. The common experience of all trades, and we think it should be palpable to the simplest intellect, is that as surely as day follows night, so surely must machinery supplant the simple methods of hand labour. A very short review of any trade or factory which has made headway with any rapidity must convince the most sceptical that the introduction of machinery acts as an incentive and opens up possibilities of extension which would never have been dreamed of under the old conditions, and thus increases instead of decreases the employment of labour.

In opposing the introduction of additional machinery, we think it should be quite clear that the stone workers are really placing a serious obstacle to the advancement of their own industry, as well as hindering the employment of many more men, and probably limiting their own earnings. There could not be a better illustration of this than the present season in Winnipeg. The quantity of stone used could have easily been doubled had it been possible to have obtained it, whereas substitutes have been used from the other side, and money which could have been kept in Canada passed over the border.

Further, and perhaps what is more to the point from a workman's standpoint, is the serious effect on the wage earning capacity which inevitably follows the suppression of any industry, and this is what is really done by refusing machinery—the wage earner being the inevitable sufferer, the substitute which gains the field usually reducing the demand to the lowest possible point.

Right here on the spot one of our leading firms have new and improved machinery set down ready for use at great expense, and they are obliged to let it remain idle or face the question of a strike of men. From every point of view this is much to be deplored, as it really seems to the advantage of all parties interested to place the industry on a footing that will keep it on a par with the progress of kindred trades.

This question is, we understand, one of the principal ones for discussion at the forthcoming conference of the confederated unions at St. Louis, and we hope it will end in a manner to commend universal approval.

MONTREAL NOTES.

No. IV.

The gargoyle's ghost flapped his scaly wings disconsolately and scratched a pointed ear with a well armed left claw. They had set him high on a minster tower in Yorkshire four long centuries ago and more, and he had a taste for noble architecture hammered into him with the blows of the mall which had taught him how to grin and bear wind and weather and keep his tail neatly curled against the cornice on which he lived and to be a proper gargoyle.

When an easterly gale upset the old lead spire he had guarded so long he was involved in the ruin and so his spirit had left the broken fragments of his body in the market place far below and had been blown across the seas even to Montreal, where, finding a congenial atmosphere of thin smoke riven by many steeples he sought a spot on which to rest which might remind him of his former life.

But the sense of fitness and proportion in matters architectural which long connection with a stately pile had bred in his stony heart made it difficult for him to settle down. Zinc parapets gave even to this ghost of a gargoyle a violent sense of insecurity. Often he espied afar off what promised him some semblance of gothic comfort but on closer inspection these turned out to be but hollow shams and faked hypocrisies.

Once in his old life he had heard two students of architecture who had measured him up along with the tower where he dwelt, speak of the glories of the gargoyles of Notre Dame at Paris, and hearing that there was a church of that name he sought it out, hoping to find stony brethren to haunt. But from the bleak desolation of that building he fled dismayed.

Now the gargoyle knew that it was the end and object of his being to praise and magnify the Lord in his own little way, just as it was the purpose of the minster, from which he had fallen, to do so. Thus

finding a city with many denominations possessing many building none of which he could conceive of as contributing to the praise and magnification of anyone, he concluded that he had come to a land wherein the Lord is not praised; and as he was only a gargoyle he must make allowance for so grossly unreasonable a deduction. That was why he flapped his wings and scratched his ear in the Place d'Armes on the morning of July 12th, 1904, and here begins the adventure.

Opposite the church he had left was a great and spacious portico, and in the centre a door, and devoutly preoccupied men were ascending the steps and entering in. Quoth the Gargoyle's ghost, "Is this also a temple of the Most High?" Being inquisitive though sceptical on the matter he followed the crowd. Now inside the door there were building operations in progress and the Gargoyle's ghost thought "how assiduous are these worshippers entering with serious mein thus early in the morning a building not yet completed." By this time he knew that they were worshippers indeed.

As he passed the inner door a great glory struck his eyes. The floor was white and the ceiling was white and the walls were white, and before him was a row of great shining green granite columns with brazen caps and the bases were of jet black stone and beyond these were more columns yet taller and nobler and a wide space with great windows on the further side. And it took the breath of the Gargoyle's ghost away from him and he hid behind a pillar. But presently he had courage enough to examine the jointing of the stone and the hewer's work and such little matters as he had heard the masons who set him in his place talk of and he found all as it should be and cunningly wrought beyond belief.

Then noting that the worshippers stopped not, neither bowed down, he followed boldly on into the great hall. And had he come in by a window he had been annihilated on the spot, so goodly was the place and so full of great majesty, but coming as he did from the proper entrance he experienced only a sense of fine exhilaration which was as the master builders had intended it should be with one entering.

The columns were taller than those without and the caps more wonderfully wrought and the cool rich green of the Vermont granite contrasted nobly with the gilding on the caps. The roof they bore aloft was coffered and embellished with fine gold wrought with a beauty beyond belief, for had not those self same patterns been used by men for 3,000 years and more, and had not all the experience of that long time been brought to bear in proportioning them each to his use and place. And the ghost of the gargoyle knew that "scale is everything," for there had been a big discussion whether 10 or 4 feathers would look best on his wings, and the latter had been decided on. His wings were all right he knew.

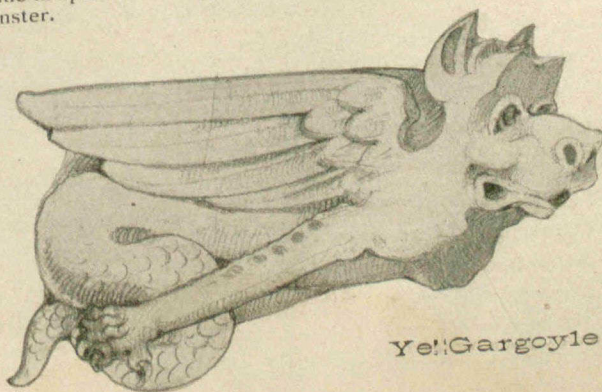
The piers of the walls were of Tennessee marble, tooled and not polished, and the color was very tender, and there were panels in the walls of red plaster, and the gargoyle's ghost did not like them at first but when he considered how finely they contrasted with all the other elements of that building he knew that they too were right.

And an altar of green Italian serpentine inlaid with red Belgian marble ran from one end of the Temple to the other and the length of the great hall of the temple was 172 feet and the width 84 feet and height was 56 feet. On the edge of the altar there was a screen of bronze cunningly cast and finished and there was no flaw anywhere and the ghost of the gargoyle wondered and said, "Although this temple is not dedicated to the praise of the Lord, he whom they worship here is a very great power and exactness and precision are of the quality of his perfection."

The priests of that temple sat behind the screen and busied themselves with the offices of the temple and ministered to the people, and he could make nothing of it, for the worship was a real one but unlike anything that had ever taken place at the minster and been discussed by the gargoyles there.

So the ghost of the gargoyle lingered till he was satisfied that it was here that the men of Montreal did their real worship and he concluded that the God must be very great to be worthy of so fine a temple and the devotion of the Montrealers in erecting so noble a pile to his honor touched the heart of the gargoyle.

So he went his way and lodged in a pine on the top of the mountain and considered what it all meant, but of two things only could he be at all certain: First, that the temple was very fair and enduring; and secondly, that what the men of Montreal worshipped in the great hall behind the portico that is opposite to the church of Notre Dame is the chief god of the land and that it is therefore right and proper that his temple should far outshine in splendor and glory any building to the Lord of the old minster.



Ye!! Gargoyle

## THE ARCHITECT AND THE GARDEN.\*

The intimate relationship between the house and the garden, and consequently between the house designer or architect and the garden, is almost entirely overlooked by or unknown to the general public. This ignorance may, perhaps, be due to the architect himself, who has in the past failed to make use of opportunities when called in to design a new home or to alter an old one. Architects, as a body, have failed to study garden craft and design, or to realize how great is the connection between house and garden from both the practical and æsthetic point of view. But interest is being aroused, both amongst the public and the profession, in this, to me, most fascinating branch of our art, and it behoves us to be fully prepared with reasons why the architect's jurisdiction should extend to the garden, and to see that our knowledge is founded upon sound principles.

I do not propose to go much into the question of the right or wrong in garden design. I would rather dare to paraphrase Kipling and say, "There are nine and sixty ways of constructing" garden lays, and every single one of them is "right"—so long as we keep before us the spirit of the old English garden, and understand the principles which underlay its formation and development. Perhaps, at the outset, I had better say what I personally conceive those underlying principles to be.

First of all, then, seclusion. For if this was not the great aim of the old gardeners, it is an end which has certainly been attained. The brick wall with its green crusted coping, the close-clipped hedge, defying the prying eyes of the curious, high trellis-work with its entwining creepers, all point to this end, and while serving the useful purpose of giving shelter to fruit and flower, wrap the whole garden with a tranquil air of seclusion, security, and mystery. This was well understood in the seventeenth century, and is, I think, clearly the reason why Georgian houses were so often placed close to the road in order to give more space and seclusion to the gardens lying behind them.

After seclusion comes usefulness. Gardens were not made merely for pleasure, but to provide the home with necessities and delicacies elsewhere unattainable. Fruit growing was a fine art. The bakehouse, brew-house, game larder, fishpond, dovecot, herb garden, walled fruit garden, orchard, quincuna, and stillroom were necessities, and not merely evolved out of playful fancy. Then there is, I think, no doubt that the fishpond or tank owed its origin in mediæval Catholic England to the demand for fish. The old-fashioned herb garden too must not be forgotten. The culture and curving of "simples" was formerly part of a lady's education, and gardens were oftentimes renowned for this feature alone. There was also the necessity for good, dry paths and terraces, for it was in the garden that exercise was largely taken, roads being few and bad. The garden was therefore an integral part of the home—indeed, an absolute necessity—for, if the household was not self-supporting, it could barely exist. Thus garden and house grew up and were designed together, for each was the complement of the other.

The next question is—Do these principles still hold good; are the same necessities still in existence; can we, after making all due allowance for the lapse of centuries and rapid growth of modern requirements, still say that the same factors should form the basis of good garden

design in this twentieth century, and, if so, how is the architect thereby affected? A little consideration will, I think, show that in reality almost all the old conditions should apply at the present time.

First, seclusion. The greater number of houses, and the greater chances of being overlooked by near neighbours, serve to make strongly defined boundaries, which will act as screens, even more imperative than ever, and thus we have ample excuse for "high-walled gardens green and old," hedges thick and trim, and well designed trellis as bounding lines.

Of the usefulness and necessity of a garden the need is still the same, though perhaps at first sight not so apparent because the reasons are more psychological than materialistic. Fruit and vegetables can probably be bought from the greengrocer as cheaply as they can be produced in most private gardens, but the demand for them is greater than ever. Jam and pickle factories have done away with the absolute necessity for home-growing, but I think everyone will agree that home-made jams are far superior. I am sure that few people realize how much can be done and how much pleasure obtained from even a limited number of well-cared-for fruit trees, and what is more beautiful than an apple or pear orchard either in early summer or autumn? Then, too, there are many trees such as mulberry, quince, medlar, cherry plum, filbert, which, while full of delight to the eye, are useful as well. These planted with discernment will give pleasure to generations. Without going quite as far as Voltaire's "Candide" and saying, "Let us cultivate our garden, for that comprises the whole duty of man," I am certain that if nowadays gardening, not merely flower gardening, but honest fruit and vegetable growing, with the accompanying culinary knowledge, was better understood and followed we should hear less of broken nerves and jaded energies. There is no recreation more healthful than gardening, and health is the ground plan of all that is worth having in life. Then, too, there is its educational influence, especially upon children; and there is no better way of teaching scientific truths and imparting a true system of observation of nature than by means of the well-ordered garden. Of the joy of the "pleasure garden" there can be no doubt, and, surely, we should be able to appreciate this part of the garden, and derive moral and physical good from it as much as our ancestors. . . . The house and garden still require each other to make the home one perfect whole. Each must fit in with the other, and each must be in most cases subject to some special circumstance of site and locality.

Who, then, is so fitted to bring this about as the man who designs the house? He must have a hand in the laying out of the garden, or full advantage of the site may be lost, and so the chance of welding together house and garden through some happy accident of nature may be missed for ever. How can we convince our clients that one mind should control the two? The end can only be achieved by taking our client (or more often his wife) with us. If he is a careful man, or anxious of expense, it may be well to approach the garden from the materialistic point of view. Point out the desirability of determining where surplus earth may be removed at one hauling, and thus save labour and form your broad lines all in once. The making of paths from old material may be suggested, or the position of the carriage drive if the house is to have one. If by some such means the ice can be broken then, perhaps the rest may be plain

\* Summary of a paper by H. P. G. Maule, read before the Discussion Section of the British Architectural Association.

sailing. If the man or woman has any real love of the garden, out it will come, and the resulting garden should express not so much your individuality, but the owner's directed by a trained mind, but still expressing, and that, too, decidedly, the owner's particular quips and cranks. . . . Before, however, the architect can scheme anything, there are certain facts he must know. First comes the question of garden labour. He must ascertain exactly what amount of labour will be kept, for upon this hangs in reality the whole scheme. It is suicidal to design a garden which requires the time of four men to keep it in proper order if only two are to be kept. It will always look untidy, and the owner will never feel satisfied, and will blame the designer, who assumed a responsibility without due knowledge.

The chief charm of a real garden is, I think, shown in the care which is taken of it. If the turf verges are shaggy and ill-kept the charm of line is gone, and the feeling of love and care which should be induced will be wanting. I know a garden, and I say garden advisedly, which is only some 16 ft. by 20 ft., and yet year in and year out it is the pride of a village, and that solely by reason of the love and care bestowed on it by its cottage owner. I know also gardens which are gardens in name only because they are too ambitious for the staff. . . . Some excellent practical advice on the subject of garden labour is given in Mr. Mawson's "Art and Craft of Garden Making," but the best way of arriving at a reasonable judgment is to carry in our minds some garden or gardens we know well and the number of men who are employed, comparing the results obtained with the size of the garden and using our knowledge with designing.

Having discussed preliminaries and discovered the trend of our client's garden mind—if, fortunately, he has one—the choice of the actual position and aspect of the house will largely depend upon the result arrived at. For instance, we might choose a level site for a lawn to avoid expense in moving earth, and the position thus chosen might affect the house considerably. It is often far better to take old meadow turf in hand rather than to sow afresh, especially where time is an object, for turfing and sowing can only be done at certain seasons, viz., spring and autumn, and then the result depends largely upon weather, which is chance. Nothing so makes or mars the appearance of a garden as good or bad turf. Generally some characteristic of the country side or natural feature on site, which may lend itself to our gain, can be seized upon, and may influence or modify both house and garden, proving how essential it is that the architect should have the necessary knowledge to turn the accidental peculiarities of the site to the best advantage.

It must not be forgotten that in almost all gardens there is a chance and opportunity—indeed, a necessity—for some architectural features which it is essential the architect should design or control. It is here that the modern garden designer and horticulturist necessarily fails. He has not had, in most cases, the requisite architectural training, and not having designed the house, he perforce loses that sympathetic link in detail which the architect would impart. The old gardens were full of architecture, and such buildings as tool-houses, potting-sheds, root-houses, stone steps and balustrades, summer-houses, dove-cots, seats, and thoughtful trellis work were features in them. Such are

required still, and, if used with restraint, will help to add human interest. But the necessity for them should be the keynote. Do not let us introduce them simply to make "features." If a seat is desired it will work its way into the design, and by its presence, add to the garden's beauty. The sun-dial, though apparently no longer a necessity (in these Grimthorpean days), is most fascinating, and, if used rightly, will set our thoughts working and lend just that touch of romance which is needful to both eye and memory. Above all, let us keep garden architecture simple both in form and feeling. It is not what we put in so much as what is left out that sets the seal on the perfect garden. The old formal garden had almost degenerated into grotesqueness by the eighteenth century from over-elaboration. To be a garden designer, the architect must have a knowledge of garden craft. He must know and love the materials, he has to deign with—namely, the flowers, grass, trees, and herbs, and must be fully alive to the fact that a garden is a living, growing thing.

So much has been said lately about gardens from the practical point of view that I will only refer briefly to this aspect of the subject.

First, then, soils and drainage. Obviously the latter depends upon the former, and until considerable practice has given us knowledge, I would suggest that we first of all ascertain what is the local custom as to treating the soil, and how much or how little drainage it requires. Mr. Mawson says that "unprepared soil is the cause of almost all garden failures." Secondly, we must discover what grows well in the neighbourhood, for it is no use designing and planting trees or boundaries which will only need replanting after some years.

Thirdly, botanical or horticultural knowledge. Without going very deeply into this question we must know something of the times and seasons at which the flowers we propose to use will make their richest appearance. We need not know the best way to make them grow, but may presume that will be done for us. Observation and a garden notebook will teach us much. Well-made, dry paths and walks are a practical necessity, for wheeling soon cuts them up unless the foundations have been well prepared. Fruit and flower gardens must have both sun and shelter, or plants will not grow, and early and late frosts will do a deal of unnecessary damage. The house-drainage scheme must not be overlooked, and advantage should be taken of all manurial products.

In effect, then, the burden of my paper is this: House and garden must be treated together, and be the product of one mind—the architect's. He may scheme his garden as he pleases so long as it is subordinated to the house, and he always keeps before him its fundamental uses and objects—seclusion, usefulness, and pleasure. . . .

#### NOTES.

On March 12th last Judge Somerville, of the United States Board of General Appraisers, ruled in favor of the protest of Mr. Bohm, an architect of Indianapolis, against the assessment of 20 per cent. on certain drawings made by him in Europe.

A competition has been instituted to secure suitable plans for the buildings of the Carnegie Technical Schools, Pittsburg, Pa. Five leading architectural firms have been invited to submit designs in a limited competition, and will each be paid \$1,000. The competition is open to all architects whom the Committee may invite. Five additional prizes of \$1,000 each will be paid to the five architects whose designs stand highest in merit. Architects desiring to enter this competition are requested to provide the committee with information as to their professional work upon blanks to be had from Director Arthur A. Hamerschlag, 313 Sixth avenue, Pittsburg, Pa.

## THE CANADIAN ARCHITECT AND BUILDER

### PLUMBERS' WORK, PAST AND PRESENT.\*

By W. H. ALLEN,

Late Teacher of Plumbing, Cardiff Technical Schools.

It would certainly be interesting to consider, in the light of present-day practice, the methods adopted by the plumbers of old in the centuries that are gone, but in that case the subject of my paper should have been that of "Plumbers' Work, Ancient and Modern"; so for the purpose of setting out with a clear understanding of my intentions, I propose to confine my comparisons to those of my own experience and recollections during the past thirty years.

And to prevent misconceptions of any remarks that I may hereafter make, let it be understood that I propose dealing with the subject entirely from a plumber's point of view. By that I mean that, while I fully recognize and appreciate the many improvements that have taken place during the above period from a public health point of view, I look forward with pleasure to the discussion that will follow upon this proposition, viz. :—That the progress made has been prejudicial to the plumber as a craftsman, and that the whole of the benefits from such progress and improvements have been to the benefit of the public.

From a purely trade point of view, then, are these improvements to be regretted? In reply I would say, with all the emphasis possible, certainly not! If these improvements have made life any easier, or have added anything to the sum total of human happiness, we as plumbers have no right to regret that we as a trade have suffered; and considering how small a proportion we are of the people, we must stand aside, and if necessary "go to the wall," if by doing so we can in any way make those of our day and generation the better for it.

This gives rise to another thought:—Have we as a trade been fully alive to the fact that, owing to the more modern methods of manufacture, &c., the work to be done by the operative has been constantly reduced? Have we done all that we might have done to add other branches to our trade when we saw so many slipping away from us? My own opinion is that in this respect we have been somewhat lax, and we have only ourselves to blame for the position we now find ourselves in.

But I must not dwell upon this further, or my allotted time will be taken up before I approach the subject proper. I must therefore leave it with you for further elucidation in discussion.

#### ROOF WORK.

The first call upon the plumber in the construction of a building is when the roof is ready, and here we find a marked difference. Much lighter lead is used, and far less of it. We find valley tiles, hip and ridge tiles used in place of lead, and zinc has become a keen competitor with lead for valleys, gutters, bays and dormers. Parapet gutters, lead hips and ridges are practically a thing of the past—not that this can be attributed to the fault of the plumber or architect, but to the present-day demand for cheaply-built premises, also to the construction of concrete and asphalt flat roofs, which has removed the necessity for lead flats.

The old way of lining eaves gutters (made of wood)

with lead, and rain-water down pipes made of lead, has been entirely superseded by the extensive use of cast-iron. Lead rain water heads, and the covering of finials, gargoyles, and other ornamental finishes, has been reduced to a minimum by the use of those made of cast-iron or terra-cotta. So that it will be seen that the quantity of plumbers' work in connection with the external work of a building has been very much reduced in the period I have mentioned.

#### WATER SUPPLY.

The question of how the building should be supplied with water is the next consideration.

To-day all we have to ask is "Where is the main?" and then to run our pipes from the prescribed point to the various fittings we have to supply. But it was not always so. In the days before the advent of constant supplies at a sufficiently high pressure, many things had to be taken into consideration, such as the method of supply, whether from some higher point by gravitation or from the more frequent source of wells. Was it to be an ordinary pump or a lift and force pump? Was it to be a deep well pump, or was it to be supplied from rain-water storage tanks? Then the sizes and positions of the storage tanks, the rising main to them, the supply pipes from them—all this meant a great deal of work for the plumber, and in this connection the plumbers have been great losers, and the public have benefited materially.

When one realizes how difficult it is to-day to find work in a plumber's shop when work is quiet, one is forcibly reminded of the days that are gone. One can remember, when there was nothing else to go on with, the old story of, "Make up a few pumps," the burning up of the barrels, the fitting-in of copper chambers, making the spouts and the casting of the taper box-pieces; and how careful we were told to be when, as boys, we had to hold the iron bar in the sand mould, ready to swish it around, smartly and regularly, so as to get the box-pieces of an even thickness; and how, if it was successfully accomplished, our mate took all the praise, but when it turned out of uneven thickness, how the boys had to bear all the blame!

And, again, who does not remember, when the taper box-pieces were superseded by the spindle valve, how a quietness as still as death had to reign in the workshop while the valve was being fixed level in the tail pipe ready for wiping? The making of cup-leathers, the leathering of boxes, the casting and leathering of clacks—to say nothing of the sundry journeys to the blacksmith's to see if the iron work was ready—all this has gone never to return.

The young plumber of to-day can have no conception of the amount of work the plumber had to do in connection with deep well pumps, both of the long barrel pattern and the short barrel which are fixed in the wells; the fitting of the suction and rising main pipes, the fixing and repairing of the pumping gear, sometimes involving the use of many intricate cranks and cog wheels. This was always attended to by the plumbers. He was the mechanical engineer of these jobs, and the existence of such arrangements added considerably to the plumbers' work.

The change in internal fittings has been very marked also. Instead of the well-made H.P. taps that we have now, we then had to deal with plug taps made of the

\*A paper read before the South Wales and Monmouthshire District Council for the National Registration of Plumbers.

diaphragm pattern; taps poor in design, often defective, and the plumber was called in to remedy the defects.

Baths were but rarely met with in the old days, owing to the difficulty of getting the necessary water; and this, with the hot water services, perhaps is the only compensation plumbers have for the substitution of constant service supplies against that of pump supplied houses.

The old form of supplying baths in the best houses was that of the triple valve arrangement, by which means the hot and cold water was supplied through the waist outlet; and while condemning it from a sanitary point of view, it was the means of giving a lot of work to plumbers.

The present-day method of fitting up lavatories is far preferable to that of the old, which involved much more work in fixing the supply valves against the wall, with a breeching pipe and supply to arm of basin, and its putty or red lead joint. This is yet another instance showing how the work has been lessened.

Sinks and troughs, which were formerly lined with lead, have been replaced with copper, or more frequently with those of glazed fireclay.

Supply cisterns, which were formerly of lead, are now made of galvanized iron, or in some cases of copper and but very rarely of lead.

Who would have believed in the old days, when we were busily at work striking out and wiping up service boxes and fitting in the old bells or poppet valves in water-closet cisterns, that the day was coming when such work would be as extinct as the Dodo? Yet it has all gone. The lining of the cistern, the making of the service boxes and wiping them in meant more work for the plumber than the whole job of fitting up a closet does at the present time. To-day we have the cistern delivered at our shop doors, complete and ready for fixing, and either made of cast-iron or earthenware.

When the plumbers had to make their own soil pipes, bends and traps they could always depend upon having work to do in the shop, but no employer would to-day dream of letting his men make a soil pipe with its soldered seams, and the introduction of hydraulic presses has entirely superseded the making of such articles by hand labor. All this has tended to reduce the available amount of work to a minimum.

A marked change for the better has taken place respecting the methods of wiping. Well do I remember the first lesson given to the plumber's boy, viz., that of cooling the plumbing iron, the getting ready of the quench hook, the cooling of the handle so far up, the seeing that the iron was not burnt, the filing off of the scales, and above all the correct way of handing the iron to your mate, as it had a nasty habit of falling back and touching you up. And after the great event of wiping was over, the care taken in picking up the bits of solder—for solder seemed more valuable than it does to the boys of to-day.

Before treating with the question of water-closets I would like to refer to the making of the rightly-condemned old-fashioned D-trap, but we did not know of its bad character then.

One can remember the old set of patterns hung upon the wall of the shop, religiously preserved from generation to generation; the wiping in of the dip pipe, and the great care exercised in seeing that it was not too far down or too high up. These considerations involv-

ed a deal of care and thought on the part of the plumbers of those days.

But whatever fault we may find with the D-trap, we must all acknowledge that it was a nice job to be making them, and it was with regret we parted with them, and have only our recollections of them left.

The old pan closet has been anathematized over and over again, and I have not one good word to say of it, only that it was the means of providing work constantly for plumbers. In well ordered houses it was a standing job to take them out, and clean, black and re-tin the copper pan once every 12 months. So here again the public have benefitted at the expense of the trade.

The valve closet, and one maker's in particular, was a source of much work. How many will remember the patience required in dealing with the intricate regulators, and resisting the desire to drop one's "big hammer" through the pan! But these are going the way of the old pan closet, and are practically replaced by the more modern closets in earthenware.

The work of fitting up wire bells was formerly done by plumbers, and was a very important branch of the trade. To give you an idea of the comparative cost of the old-fashioned wire bells as against electric bells I will tell you of a case that has recently come before me.

An architect is about to build a gentleman's residence a few miles out of town, and he specifies that the bells are to be of the old-fashioned kind, with wires and cranks, &c. The fittings are to be supplied by a certain firm who make a specialty of this class of work, and upon asking them for a quotation for the material required, they very courteously informed me that they had already quoted several people for the work, and their price was £60. Now if this job was done with electric bells, many would be glad to get it at from £15 to £20.

I only refer to this as an illustration of the decline in this class of work, because it is the labour item that would be more reduced than that of material.

But this is not the worst part of it. When electric bells were first introduced, we, as a trade, failed to see "the sign of the times," and neglected to grasp this branch of the trade as we should have done.

I am speaking generally because I am aware that there are some few exceptions to this general statement; but nevertheless the majority of us failed to grasp it, and so we can add bellhanging to the "what might have beens." Not that it is too late even now to recover ourselves. I am sure that if we once realize the necessity for it, we will take full advantage, and receive our share, of a branch of the trade that is rapidly falling out of our hands and into the hands of electrical fitters.

I am perhaps laboring this question of bellhanging, but it is because I have experienced on the part of the plumbers a strongly rooted objection to have anything at all to do with electric bell work.

In recent years there has been a very serious decline in the gasfitting branch of the trade, so far as it concerns the plumbing trade generally, and it is due to two distinct causes—1st, that of the introduction of electric light; and 2nd, to that of the competition of gas companies.

Taking the latter first, what do we find? We find that, owing to the fact that the companies supply stoves on the hire system, this branch of the work has practically ceased to exist so far as the trade is concerned,

because no one would buy a stove out and out when they can hire so cheaply and so frequently exchange them. It is a matter of finance to the company. It pays them to let the stoves out at a nominal charge for the sake of the extra gas consumed. And now we know that the company will fit up a house with pipes and fittings free of charge, with a penny-in-the-slot meter—not from philanthropic motives, but because it means a greater consumption of gas. All these things, small though they may be in themselves, tend to reduce the work available for plumbers.

Now as to the lighting of premises electrically. Here again we missed our opportunity as a trade, and again I must qualify this general statement. There were a few (but even those were somewhat late in doing so) who endeavored to commandeer this branch, which was at the commencement legitimately ours, whatever it may be now. At that time the electrical fitter was not. He had to be made. There were none at that time, and we as plumbers should have mastered this work, and so prevented it from slipping out of our hands. Whether this branch can be recovered I am very doubtful, because I think the electrical specialists are too firmly established; but I do not wish to discourage the attempt to do so that is being made by several members of the trade, and I feel assured that the result depends upon individual energy and enterprise. Whether we ought to stand aside and permit the electrician to monopolize the whole of this work is a matter of opinion that can be freely expressed by you in discussion.

Hot water work, or, as generally set out on the shop windows, "Heating Engineers." Why has this branch become specialized as it has of recent years? I know this is the day of specialization, but I do feel that we as a trade have ourselves to blame for some of it.

Perhaps it is hardly fair to put it that way either, in this case; because we never heard of hot water engineers until the ironmongers got hold of the trade. In the old days the plumber had to do it all, and he was always ready to tackle any job that presented itself. But when the ironmongers were masters of the plumbers they employed, they had no respect for the success of the trade or the maintenance of its position. They employed anyone they liked to do the work, and so a distinct class of men has been created, now designated as "hot-water fitters," and to the detriment of the plumber.

Another important factor, too, must be considered, and that is the building of greenhouses and conservatories has developed into a special business. Firms undertake the whole of the work, inclusive of the heating work. So this branch has ceased to exist as an admitted branch of the plumber's trade.

It is assuredly worth our while to make every effort to get as much of this work as we can, and in passing permit me to suggest that we might, as a body of men deeply interested, spend more time together than we do in considering what means can be best adopted to regain our lost position, or, to put it another way, to secure as our legitimate work what should in all fairness belong to the plumber.

I think I have cited sufficient to prove a great diminution in the work of the plumber, notwithstanding the fact that the number engaged at the trade doubles itself every five or six years. And after the instances I have pointed out, which serve to show a great reduc-

tion in the available amount of work, you will ask how we have managed to live through it all?

Well, on the other side of the count we have to put the greatly increased number of houses fitted up with conveniences that would not have been done if the water supply was as it used to be. And again you must remember that we have been building new houses at a very rapid rate, and this new work has helped us. But we know it cannot always be so. Building operations have been severely checked of late years, and will probably be so for some time to come; and it is when we have reached the limit of our building resources that the pinch will be felt so far as it relates to the work of the plumber.

It therefore behoves us to carefully examine our position, and to ask ourselves if we are doing all we can to establish an equilibrium, by taking up other work in the same ratio as we have lost it and are losing it. We can never return to the old order of things. The making of pumps and D-traps has gone, and can be buried as useless; and in these days of progressive sanitation we would not, if we could, have them back again.

The advantages of a constant supply of pure wholesome water to a community cannot be represented by a money value. It is one of the essentials of life, and a pleasing feature of the healthy advancement of our national and municipal progress. The abolition of unsanitary fittings and the substitution of those of a sanitary kind are also amongst the blessings of an enlightened age. We must therefore "wake up," and by facing our difficulties we shall know best how to meet them.

Permit me in conclusion to justify myself for the position I have taken up in including what may be called the outside branch of the trade. I have included them because each of these branches have been deemed to be a part of the trade, both during my apprenticeship and in my after life; and because they are so considered even to-day in the majority of the shops in the provinces.

In large centres like London, Glasgow, and other places, it may be that lead layers stick to that particular branch; and inside or sanitary work might be done by another set of men. And so with the branches of gasfitting, bellhanging and heating. But in this district I know from experience how very much one branch depends upon another, and while the specialist of our trade might be inclined to smile and think I have made "a mountain out of a mole-hill," I feel assured that many of you who are able to see the matter through my spectacles will consider that the peculiar conditions of the trade justify me in so including them.

#### PERSONAL.

Mr. J. A. L. Waddell, of Kansas City, Mo., has had the degree of Doctor of Laws conferred on him by the Missouri State University. Mr. Waddell is a Canadian.

Mr. Herbert B. Rugh, formerly of the firm of Guilbert & Rugh, architects, Racine, Wis., has just opened an office at No. 367 Main street, Winnipeg, and would be pleased to receive catalogues and samples from the trade.

A large number of members of the Institute of Civil Engineers of Great Britain are to visit the United States and the St. Louis Exhibition in October as the guests of the American Society of Civil Engineers. It is said to be their intention to visit Montreal on September 20th and 21st, Ottawa on the 22nd, and subsequently Quebec, Toronto and Niagara Falls.

CAUSES OF A NEW YORK BUILDING FAILURE.

Mr. H. de B. Parsons, the expert appointed by the New York City authorities to report upon the causes of the recent collapse while under construction of the Hotel Darlington, a steel frame structure, states that primary causes for the failure of the structure were faulty design and carelessness and neglect in the erection of the members. The actual cause of the collapse was the lack of lateral support for the columns, which permitted them to act as 'long columns'—that, the ratio of length to least radius of gyration exceeded the limit of safety.

Mr. Parsons further states: "Each floor was lettered and the columns varied in size on the same floor, a specimen schedule being as follows: "

Floors.	Letter.	Column.		
		Side. Inches.	Thickness. In.	Height. Ft. In.
Basement	A	9	1	10 6
Ground	B	9	3/4	14 6
2	C	8	3/4	10 10
3	D	8	3/4	10 10
4	E	7	3/4	10 10
5	F	7	3/4	10 10
6	G	6	3/4	10 10
7	H	6	3/4	10 10
8	J	6	3/4	10 10
9	K	6	3/4	10 10
10	L	6	3/4	10 10
11	M	6	3/4	10 10
12	N	6	3/4	10 10

Hight to under side of roof beams..... 144 2

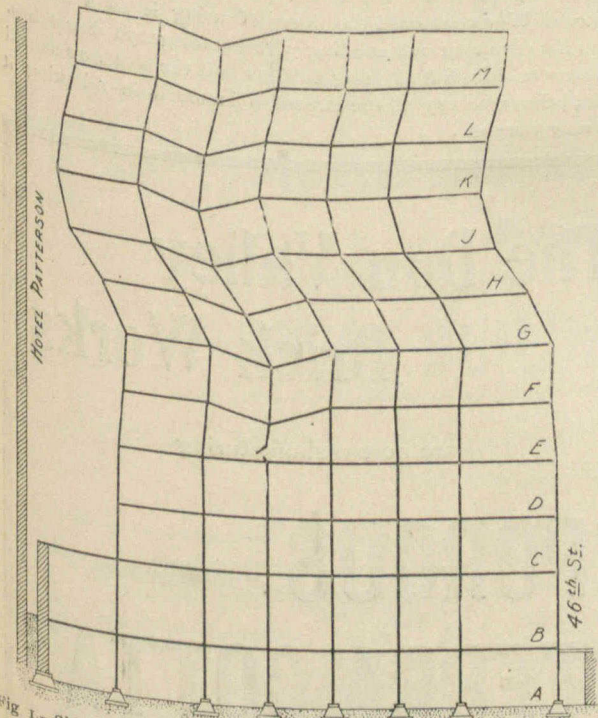


Fig 1.—Side Elevation of the Steel Frame, showing in slightly exagge ated form the failure of the column on the fourth floor, resulting in the collapse of the structure above it, which crashed through the lower portion of the building. The break occurring just back of the centre of the floor, the structure had a natural tendency to fall toward its centre, the greater amount of metal in the front, however, pushing the rear portion backward.

"Practically the building was pin connected. The bolts fastening the girders and beams against the column lugs were of smaller diameter than the holes, so that the columns received little or no lateral support. The column lengths were bolted together at the top and bottom, and acted as continuous columns. All loads were eccentricly supported on the side brackets. In consequence, the columns were too long to carry the superimposed weight and buckled. One column situated at or near the 'center of fall' broke. The upper part of this column being deprived of its support fell, and pulled with it the floor members bolted to it. Each

of these floor members pulled over the adjacent columns to which the other ends were attached, and these columns having no lateral support broke at the lower flange, as the pull had a lever arm of about 10 feet, or the length of the column. This action and reaction of the stresses affected only the structure above the level of the original fracture. In fall, the mass off material from above crashed down and broke that part of the structure below the level of the original fracture.

"The exterior columns did not break of as low down as the interior columns, because the mass fell away and

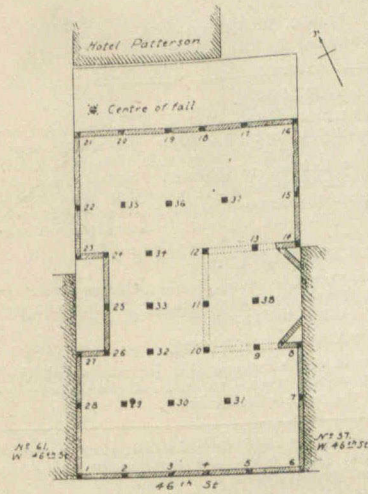


Fig. 2.—Floor Plan, showing the location of the cast iron columns according to their proper numbers, and indicating the "centre of fall" slightly to the rear and left of the centre of the building.

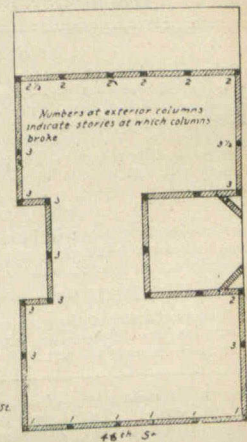


Fig. 3.—Floor Plan, showing the location of the cast iron columns in the outer walls, and indicating the stories at which these columns broke. The inside columns were practically all broken off at their bases.

did not crush them as it did the interior ones. The uniformity in hight at which the exterior columns broke strongly indicates that the primary fracture occurred at or about the level of the fourth floor.

"As proof that the top fell into and toward the 'center of fall' before the lower part of the structure collapsed, columns G II and K II were taken out of the debris near the 'center of fall' and from beneath other members, which originally were connected at points lower down in the building. Near the same spot column D 36 was found standing in a nearly upright position. Of these columns, the first was broken at the centre and the other two at the flanges. Furthermore, as more of the structure was south of the 'centre of fall' than north of it, the northern, or rear, portion was forced outward against the Hotel Paterson."

NOTES.

The British Consul General at Berlin reports that the efforts to form a combination of the cement manufacturers throughout Germany for the purpose of improving the conditions of the cement manufacturing industry, have thus far not succeeded. Manufacturers in certain districts have got together, and they are now striving to bring in the South German and other North German groups.

In the course of the recent excavations at Pompeii there has been discovered and placed in the Museo Borbonico at Naples a bronze wire rope an inch in circumference and some 15 ft. long. It consists of three strands laid spirally together, each strand being made up of fifteen wires twisted together, and its construction does not, therefore, differ greatly from that of wire ropes made to-day. Pompeii was destroyed in A.D. 79; but how long wire ropes had then been known it is impossible to tell, though, judging by the knowledge shown in the construction, it may be safely concluded that they had been known for a considerable time. The uses to which these ropes were put are not definitely known; but further excavations may possibly shed some light on the subject.



—THE—  
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NOTES.

The report of the building inspector of Vancouver shows that during the eight months since October 1st, 1903, there have been erected in that city 568 dwellings and over 100 buildings for business purposes.

As mentioned in a previous number it had been decided to remove the Eiffel Tower in Paris, but this decision has now been changed, and the Tower is to remain and to be adapted for use as a wireless telegraph station. The civil engineers of France presented a request that the Tower be not taken down, and the Minister of War conceived the idea of using it as a Military Station for receiving and sending wireless telegraph dispatches. The inventor, Mr. Eiffel, being anxious that the structure should remain, offered to pay all the expenses incurred in adapting it to its new purpose.

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LIST OF BRITISH FIRMS WANTING CANADIAN AGENTS.

- Fenning & 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 Elkyl Patent Bath Syndicate, Ltd., London, E.C.  
 Mather & Platt, Ltd., Manchester, patent sewerage distributor and water softening apparatus.  
 Mellows & Co., Ltd., Sheffield, Mellows Eclipse Glazing System.  
 The Wouldham Cement Co., Ltd., 35 Gt. St. Helens, London, E.C.  
 E. Freeman, 20 Bucklersbury, London, E.C.

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.

PLASTERERS' PRICES.

The Plasterers' Section of the Toronto Builders' Exchange have recently adopted and issued in printed form the following schedule of prices and rules of measurement, based on the existing prices of material and labor:

**RULES OF MEASUREMENT.** — Rendering, lathing, plastering, deafening and limewhiting measured by superficial yard; all measurements taken full and 5 per cent. allowed from total for openings.

For circular work allow double measurement.

For domes and groins allow three measurements.

Cornices, mouldings, beams, etc., measured by square feet. Circular work measured double.

Coves, angles, beads, metal angles, jambs and enriched members measured per foot run.

In case of deductions from contracted work, an allowance to be made to contractor of 15 per cent. for loss of profit. This rule only applies where total amount of work done is less than amount contracted for.

Dubbing out to be charged where plaster exceeds three-quarters of one inch in thickness.

Allowance for hoisting charges to be made for all work over two stories in height.

Heaters, fuel and attendance, where not specified, to be charged for.

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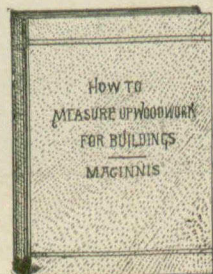


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 in ordering woodwork may be avoided by correct measuring. Rules and directions are given in the new book . . .

**HOW TO MEASURE UP WOODWORK FOR BUILDINGS**  
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79 Pages  
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*Canadian Contractors' Hand-Book and Estimator.*

The third edition of the Canadian Contractor's Hand Book is now on sale. The book has been revised and enlarged to upwards of two hundred pages, and the title changed to the Canadian Contractor's Hand-Book and Estimator, considerable matter bearing on the cost of performing various kinds of work having been added.

The price of the third edition, mailed free, is \$1.00 to subscribers of the CANADIAN ARCHITECT AND BUILDER, and \$1.50 to non-subscribers. Order from the publishers,

The C. H. Mortimer Publishing Co. of Toronto, Limited  
 Confederation Life Bldg, Toronto.  
 Alliance Building, Montreal.  
 310 McIntyre Block, Winnipeg.

Where color is mixed with finishing coat of plaster an additional charge is to be made for same.

PRICE LIST.—Metal lathing nailed to wood furring per square yard, 36c.

Metal for junctions, beams, coves, arches, columns, etc., to wood furring per square foot, 5c. (but not less than 5c. per foot run.)

Metal lath formed to wood cornice brackets, etc., per square foot, 10c. ; (but not less than 10c. per foot run.)

Metal lath tied to metal furring, on plain surfaces, per square yard, 40c.

Metal furring and lathing to metal brackets for cornices, domes, groins, etc., subject to special prices.

Wood lathing, plain surface, 16 inch centers, 12c.

Wood lathing, plain surface, 12 inch centers, 13c.

Wood lathing, one inch wide, additional, 2c.

Rendering, before strapping, 8c.

Rendering, after strapping, 10c.

Deafening, 1 1/2 in. thick, lime mortar, 20c.

One coat of mortar on lath, 25c.

Two coat on lath, hard white finish, 30c.

Two coat on lath, stucco finish, jointing additional, 37c.

Three coat, hard white finish, 37c.

Three coat, stucco finish, 45c.

Patent or hard plaster, one coat on lath, 30c.

“ “ two coat, lime finish, 37c.

“ “ three coat, lime finish, 43c.

“ “ two coat, stucco finish, 47c.

“ “ three coat, stucco finish, 50c.

Portland cement on brick, stucco finish, \$1.00.

“ trowelled, \$1.25.

“ on metal lath, additional, 30c.

Keene's cement work, portland backing on brick walls, \$1.25.

Same on metal lathing, \$1.50.

Moulded cornices, one cent (1c.) per inch in girth, but not less than 18c. per foot run, material not to exceed 1 1/2 in. in any place. All mitres over four in a room to count as one foot each by the girth.

Coves, per foot, 10c.

Coves, metal, per foot, 15c.

Angle beads, per foot, 10c.

Metal angles, per foot, 12c.

Window or door jambs, 3 in. deep and under, 10c.

Centre flowers, ordinary stock, 24 in. diameter and under, put up, each, \$2.00.

Enriched members, not over 2 in., ordinary stock, per foot run, 10c.

Larger or special centre flowers or enrichments governed by character and selection.

All work modelled to be charged extra.

PRICES OF TIME AND MATERIALS.—Plasterers to be charged per hour, 53c.

Lathers, to be charged per hour, 48c.

Laborers, “ “ 37c.

Overtime to be charged time and one half.

Metal lath, per yard, 30c.

Lath, per thousand, \$4.25.

“ per hundred, 50c.

Lath nails, per pound, 6c.

Sand, per yard, delivered, \$1.50.

“ per barrel, 30c.

Mortar—Per load, double team, \$5.00; delivered, \$6.00.

“ single “ 3.00; “ 3.50.

“ 1/2 “ “ 1.50; “ 2.00.

“ 1/4 “ “ 75c; “ 1.25.

“ barrel, 75c.

“ hod, 25c.

“ pail, 10c.

“ load, shingling mortar, delivered, \$3.

Putty, per barrel, \$2.00.

“ per pail, 25c.

Plaster, per barrel, \$2.50.

“ per keg, 75c.

“ per pail, 40c.

Rock finish, per bag, 75c.

Patent plaster, per bag, 60c.

“ per pail, 25c.

Portland cement, per barrel, \$3.00.

“ per bag, 75c.

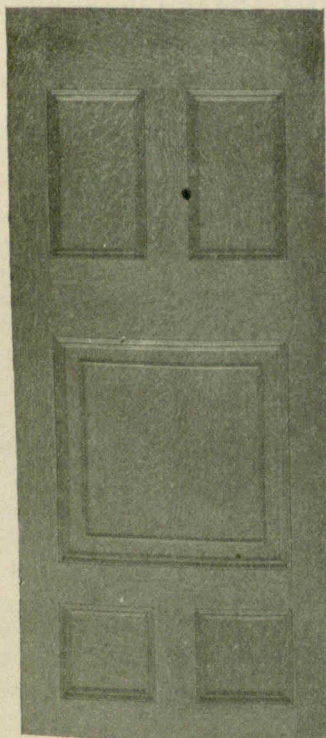
Cartage, per trip, single, 50c.

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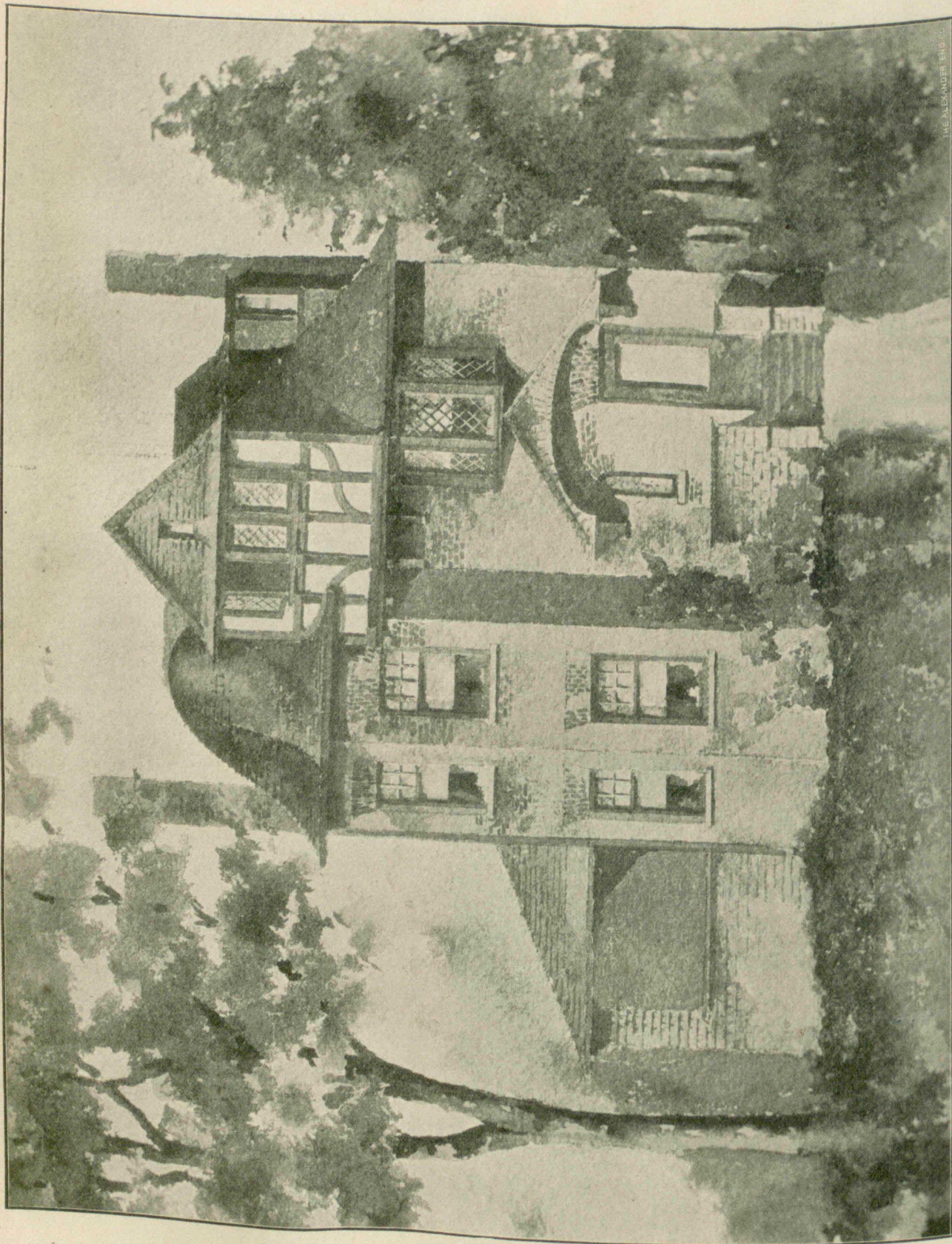
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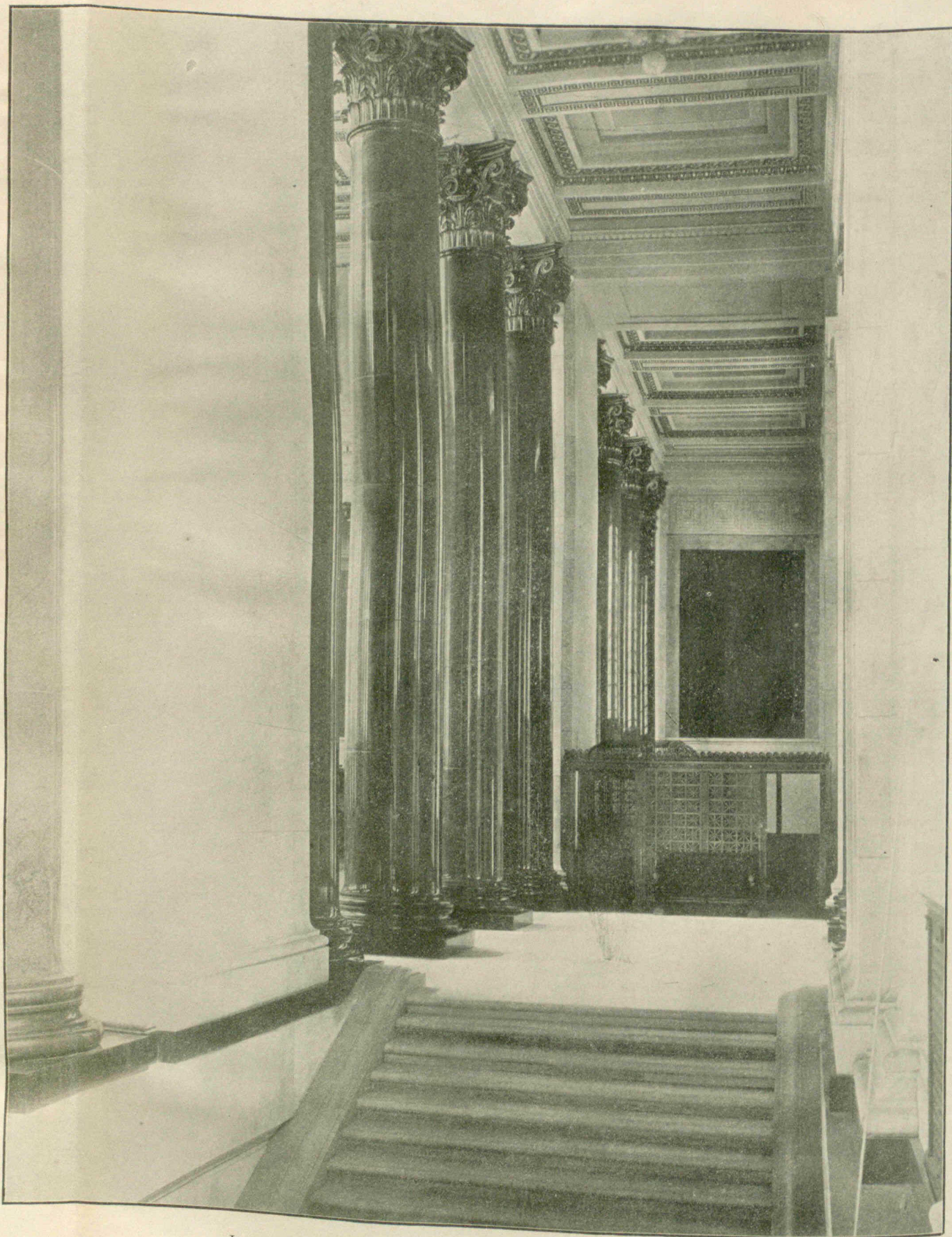


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PROPOSED NEW BUILDING FOR THE CENTRAL CANADA LOAN AND SAVINGS COMPANY, TORONTO  
SPROATT & ROLPH, ARCHITECTS

## BRICKWORK AND STONE FACING.

We have received a request to name some application which would protect stone facing from the effect of the acid in the brick backing on the stone. There is perhaps some misunderstanding as to the real nature of the difficulty in such a case. As a rule the exudations from brickwork are alkaline, not acid. These alkaline salts (chlorides and sulphates of soda, lime and magnesia) are hygroscopic, and, therefore, keep the brickwork perpetually damp unless it is exposed to rains, which dissolve the salts and wash them away. If the brickwork is faced with limestone before these alkaline salts have been removed, the salts would probably find their way to the stone and cause exfoliation. If the exudations are really acid, the best treatment would probably be to apply limewash. The lime would neutralize the acid; but we have never heard of such a case. Any treatment (such as steeping the stone in silicate of soda) which would protect the stone from atmospheric acids would also protect it from acid exudations from brickwork. But if it is really protection from alkaline hygroscopic salts that is required, in that case no treatment save that of allowing the brickwork to become seasoned before placing the stone in position would be entirely satisfactory.—THE BUILDER.

All the difficulties between the master and journeymen plumbers of Kingston have been satisfactorily adjusted.

The Fibre Asphalt Company has recently been organized in Guelph, Ont., to manufacture asphalt roofing material.

## NOTES.

The Chicago Metallic Sash Company are looking for a suitable site in Canada on which to build a factory.

"Every man is the architect of his own fortunes." "Yes. That's why the cost so often exceeds the estimate."—Life.

A contributor observes that it does not appear to be sufficiently appreciated that good brickwork cannot be done in cement-mortar with fine joints, which is not plastic and will not squeeze out and flow to fill vacancies like common mortar.

The deflection of reinforced concrete beams before cracking is about ten times that of a beam without reinforcement, and the strength of a beam reinforced with steel rods whose cross-section constitutes two per cent. of the total section of the beam is from four to five times that of a main concrete beam.

Sir Oliver Lodge in a recent paper expressed the opinion that lightning conductors of iron are quite as efficient as copper. The intensity of action with copper is, he feels, more likely than iron to set up sideflash, which, in the case of protected buildings, is believed to have been the cause of most lightning accidents.

The problem of renewing the air of a room without cold or warm draughts is said to have been solved at the Salle des Fetes of the Artistic Union Club, Paris, which has a capacity for air of about 3,600 cubic metres. The pure air from outside descends by a shaft into an adjoining room, where it is drawn out by a ventilator, and after passing over hot plates, enters the Salle des Fetes by apertures near the ceiling. At the same time the vitiated air of the Salle escapes by gratings in the floor into a flue, from which a ventilator discharges it outside.

## NOTES.

No permits for the erection of water tanks on the roofs of buildings will in future be granted in Baltimore unless such tanks are supported by solid brick walls.

An investigation was recently made by the Geological Survey of Canada into the properties of mineral pigments used in the manufacture of paint. Some new tints of value to decorators are said to have been discovered.

Since the recent great fire in Baltimore, building workmen are forbidden to smoke in new buildings under construction. The destruction of important buildings in Baltimore and Washington are assigned to carelessness of employees in this direction.

Construction and repair shops have been established at Winnipeg by the Canadian Otis Elevator Co. This step has been deemed necessary by the rapid growth of the company's business in that city. The new shops will employ about twenty men.

F. J. Lennox, architect, has suggested as a means of reducing the fire risk in Toronto that the council compel all electric wires in the business district to be placed in iron insulated conduits, also that all important mercantile buildings be equipped with water curtains.

It is said to be the intention of the British Fire Prevention Committee to establish a branch in Canada. Negotiations for this purpose, which have been proceeding for some time past, are said to be nearly completed. The Committee have drawn attention to the exaggerated and incorrect reports relating to the Toronto fire. There were no buildings in any of the blocks of a character that would be modernly described as fire-resisting or "fireproof," nor any tall buildings of the American type. The peculiar feature of the building arrangements of the blocks destroyed was that most of the party-walls ran from north to south, thus enabling the fire to have a clean sweep through most of the structures involved.

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These windows in a fire-proof building, complete the security, and in any building will thoroughly prevent the spread and advancement of the fiercest flames.

Better than iron shutters (even if they happened to be closed at the needed time); fire-proof glass remains intact, resisting both the intense heat of the fire and the action of water.

Many practical tests have proved its efficiency.

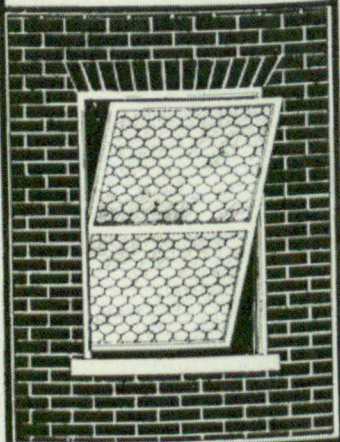
Used in conjunction with our hollow sheet-metal frames and other fire-proof fittings, it gives the most perfect protection available.

Its 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.,**  
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### THE USE OF STEEL IN AMERICAN LOFTY-BUILDING CONSTRUCTION.

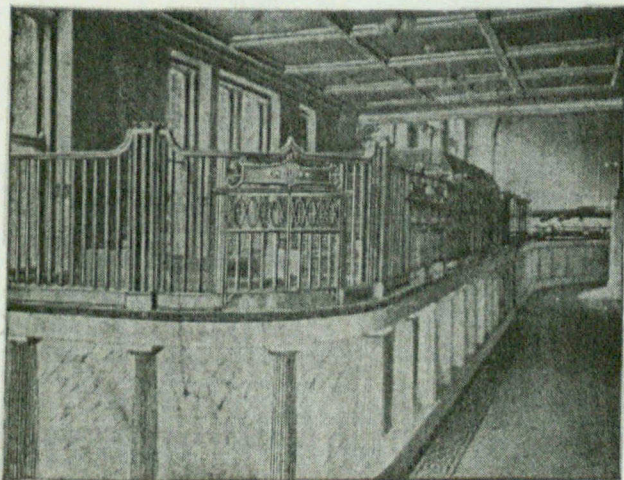
Mr. B. H. Tdwate read a paper on this subject recently before the British Iron and Steel Institute, which contained some interesting figures relative to the effect upon the steel industry of the employment of steel in modern building construction. These steel structures, said the author, have been rendered possible by the work of Bessemer and Siemens (past-presidents of the institute), and by the encouragement of the present president (Mr. Carnegie). The earliest structures of this sort were English—those of Pritchett, in York, of Sir W. Fairbairn, at Saltaire, the Crystal Palace (1851) for example. America, however, took hold of the idea and developed it, producing Jenney's frame system, Burham's grille foundation, and later the table-leg wind-bracing method, consisting of making each floor rigid of itself. The effect of the steel-frame system has been to add some 200 acres of habitable land to the business area of New York City, representing a yearly rental of  $1\frac{3}{4}$  million pounds sterling. Moreover, enabling a lower rate to be charged to occupants; offices in old buildings cost 12s. per square foot, in the new buildings, including conveniences and advantages unknown in the old places, 6s. per square foot. But the point of interest to the members of the Iron and Steel Institute is the effect this system has on the consumption of steel and iron, and on an average it may be taken that 200,000 tons have been absorbed in steel-frame structures in the United States annually during the last five years. An 18-storey building of 6,000 to 7,000 square feet will require, according to depth of foundations, between 1,200 and 2,000 tons of struc-

tural steel, in exceptional cases even more. The Park-row building in New York is said to have absorbed in its framework 9,000 tons of steel. In addition, there is the piping for all sorts of purposes, amounting to 20 or 30 miles per building, and more in hotels, and averaging  $3\frac{1}{2}$  to 4 tons per mile run. Then there is the mechanical equipment, including provision for ventilation, heating, fire protection, refrigeration, thousands of electric lights, telephones, electrical services, and the lifts which travel from eight to twenty miles per hour—600 h.p. or 700 h.p. in boilers is not unusual—all meaning a large consumption of iron and steel. Then there are tanks, pits, vents, drains, chimney stacks to be considered as well.

The steel-framed structural system, more over, permits of a considerable amount of the mechanical fitting work being done at the iron or steel works, so that when the columns, girders, etc., arrive at the site they are rapidly put together, hence a 20-storey building can be erected in less than six months, and with but slight interference with the customary traffic of the neighborhood; and an additional factor is that returns in the form of rents come in sooner than is the case in other systems of building. Certain points raised against these structures are not substantiated on closer examination—e.g., the variable dilatation of the steel, the concrete, and the masonry shell does not exist—and by covering the columns or embedding them in Portland cement or in concrete inside a fire-guard of terra cotta, it is found that danger from fire contact is satisfactorily obviated, and oxidation of the metal surfaces is prevented.

The annual convention of the Master Plumbers and Steam-fitters of Canada will be held in Toronto during the third week in July.

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Counter Railings, Metal Office Fittings, Grills, Iron Staircases, Fences and Architectural Iron Work of every description.

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WRITE FOR BULLETIN NO. 15

**CANADA FOUNDRY COMPANY, Limited, Head Office and Works: TORONTO, ONT.**

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PLASTER SURFACES.

Stucco (that is to say plaster's putty) must be thoroughly dry before it is painted in oil colour decoratively. It should also be left till all the free lime (which always exists in the putty) is neutralized by the action of the atmosphere. From one to three years is often allowed to pass before any expensive painted work is put on new plaster.

A solution of oil of vitriol may be applied to a plaster surface, in the proportion of a quarter of a pint to two gallons of water in the case of new stucco.

It destroys the salt in plaster and acts in this way: The vitriol attacks the salt, forming hydrochloric acid gas, which evaporates, leaving on the surface of the plaster sodium hydrogen sulphate, which is easily removed by means of water.

The following rules are to be kept in mind :—That

plaster is carbonate of lime; that distemper is carbonate of lime; these agree in nature. That chalk lime putty is best to mend plaster with; failing this, Keene's cement or Parian. First object, to get a level even suction or no suction (slight suction in the case of decoration or distemper, and no suction in painting the surfaces), so as to easily renew the distemper. That a badly cracked ceiling should be lined. For painting on stucco surface in oil it must always be filled up. That Keene's cement must be painted within 12 hours of using.—W. Fourniss.

The recent fire in Toronto has not only resulted in a great increase in insurance rates in that city, but has been the means of increasing rates in all the cities throughout the country. In Winnipeg the rate has gone up \$1.00 per thousand, and in Vancouver from 15 to 50 per cent., the rates in the latter city being as follows: On all frame buildings and contents, 15 per cent.; on all brick buildings, 25 per cent.; stocks in brick buildings, 50 per cent.

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WORTH

One Gallon will  
Cover about 90  
Square Yards.

TRYING.

FINISHED LIKE A MIRROR.

Your white Velure is the best we ever tried on the Yacht. 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.

HUGH DORRIAN, Yacht Builder.  
Nunquarter, Kirkcubbin, Co. Down, June 24, 1902.

BETTER FINISH. BETTER WEAR.  
FEWER COATS. LESS MATERIAL.

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### WHAT CUSTOMERS SAY

H.M. THE KING.

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.

C. RHEEDLEY BECK, Architect.  
11a, Prince of Wales Road, Norwich, Jan. 21, 1903.

ARCHITECT.

I am exceedingly pleased with the result of the Velure I 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.

A. K. PURDIE, F.R.I.B.A.  
Meadow Grange, Bloon, near Canterbury, Jan. 2, 1902.

IN A STEAM DISINFECTOR.

I am pleased to state that the Velure has been a perfect success so far. It has been subjected to gross 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.

J. BROOK, S.I.C., A.S.I., Surveyor, R.D.C.,  
Stratford-on-Avon, 6th December, 1902.

UNDER WATER.

Velure gives a beautifully smooth surface, which remains hard under water, and does not foul easily.

JOHN MACKENZIE, Bell Maker.  
Sandbank, Argyllshire, Sept. 26, 1901.

STANDS ANY AMOUNT OF EXPOSURE TO SUN OR FROST,  
HEAT OR DAMP, WITHOUT CRACK OR BLISTER.

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J. D. Macdonell & Co., 19 Yonge Street Arcade, Toronto, Ont.  
R. W. Ambrose, United Petroleum Co., of Canada, Ltd., Amherst, N. S.

BUSINESS NOTES.

The Amherst Foundry Company, of Amherst, N.S., have recently installed an enamelling department, and will manufacture baths, sinks and similar goods.

Mr. William Bunney, architect, formerly of Newmarket and more recently connected with the W. C. Edwards Company, of Ottawa, has recently accepted the position of superintendent of the New Century Refrigerator and Interior Hardwood Manufacturing Company, Dundas, Ont.

Everyone interested in wood finishing and wood finishing materials should write for the new edition of the catalogue of The Bridgeport Wood Finishing Co. This will be sent free to anyone writing the company for same at either New Milford, Ct. : 55 Fulton street, New York : 231 Dock street, Philadelphia, or 70 W. Lake street, Chicago, mentioning THE CANADIAN ARCHITECT AND BUILDER.

"The plans for my new house are definitely settled at last."

"So you're satisfied now, eh?"

"No. But my wife and the architect are."—Philadelphia Press.

The earth excavated for the foundations of several large buildings in the center of Chicago will be dumped through slutes into steel cars on the underground railway, and conveyed to the lake front.

The one hundredth anniversary of St. James Cathedral, Toronto, has recently been celebrated. This church was established in 1803, the congregation meeting in a small wooden building on the edge of the woods. In 1818 an extension was made to this building, which in 1829 was taken down and a new building, 140 feet long by 40 feet wide, erected on the site. This was destroyed by fire in 1839 and was rebuilt of stone with a wooden steeple. On April 7th, 1849, this building was also destroyed. The plans for the present building were then prepared, and, with the exception of the transepts and steeple, the structure was completed four years later. In 1871 the transepts, spires and pinnacles were added. The church authorities propose to publish, at an early date, a complete history of the church.



The most artistic and durable color effects on shingles are produced with Shingletint, which is a scientific combination of linseed oil, coloring matter, creosote, and the necessary drying agents.

Among the many shingle stains offered Shingletint is conspicuous not only for its superiority but because it can be called for by its distinctive name, thus offering the consumer protection against inferior goods offered for the same purpose.

When buying Shingle Stains it will be worth while to ignore the "just as good" argument and insist upon Shingletint.

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