PAGES

MISSING

The Canadian Architect and Builder

C. H. Mortimer Publishing Company - - Publishers.
W. A. Langton - - - - - - Editor.
Offices: Confederation Life Building, Toronto, Canada.

October, 1905.

Vol. XVIII.—No. 214.

ILLUSTRATIONS ON SHEETS.

Golf Club, Winnipeg.—Messrs. Darling & Pearson, Architects.
Public Library, Sarnia.—Mr. M. R. Burrowes, Architect.—Plans.
Cheap Cottage Exhibition at Garden City.—Mr. Percy Houfton's Prize Design. Mr. Baillie Scott's Design.

ADDITIONAL ILLUSTRATIONS IN ARCHITECTS' EDITION.

Public Library, Sarnia.—Mr. M. R. Burrowes, Architect. View of Building.
Wall Decoration in the Royal Bank, Vancouver, by Mr. James Blomfield.

CONTENTS

Drying Plaster in Winter.

The excellent article from the *Engineering Record*, reprinted on another page, suggests that the winter, so far from being a bad time to dry plaster, is, if the proper arrangements are made, a very good time for the purpose. The arrangements are:—a house, which has the heating apparatus installed before plastering and is kept comfortably warm, and windows kept open enough to admit and expel air constantly without lowering the general temperature of the house. Then, as the capacity of air to receive moisture is in proportion to its warmth, we have an ideal condition —the continual admission of cold air, empty of moisture, to take up moisture continually as it grows warmer and more eager for it, until at last when it is at its warmest and fullest, being also at its lightest, it is shoved out of the openings at the top by more cold air coming in to repeat the process. The air of summer, which comes and goes substantially at the same temperature, cannot be more effective, for drying purposes, than this.

The Brig of Ayr.

The Auld Brig of Ayr is in danger, in fact it only preserves its form because the town council have built a centring under it pending decision as to whether it is to be taken down and rebuilt or is to be replaced by a modern bridge. One of the great English building firms, Sir Douglas Fox and Partners, have been consulted and report that there can be no question of taking down and rebuilding stone for stone, because so many stones are cracked and broken that the new structure would be to a great extent a new bridge. Its aged appearance would disappear; its wrinkles and furrows, its distorted arch, its weather-worn arrises would be corrected, and all its history and associations would be lost. Sentiment would not be served by that course and the town of Ayr might as well make a motive of utility and have another kind of bridge. But it is not necessary to do this or to take the bridge down at all. Thanks to a grouting machine, invented by the late Mr. Greathead, many ancient historical buildings which were cracked from top to bottom have been repaired, and are to-day stronger and firmer than they have ever been. By means of the grouting machine, liquid cement can be blown by compressed air into the heart of any wall, no matter of what thickness, whether the crack is wide or as narrow as a sheet of cardboard. And this treatment, the report considered, would meet the case of the Brig of Ayr. Decision was reserved.

House Mottoes

There are indications in our exchanges of the approach of a fashion for mottoes and inscriptions as a form of decoration for houses. Unfortunately the tendency of the fashion seems to be not only to use mottoes but to use the same mottoes. Certain mottoes are said to be appropriate for certain rooms and lists are given. That certain mottoes are suitable for certain rooms must be true; at any rate we can perceive that certain mottoes are not suitable for

certain rooms. But an ordinary mind rebels against too much concentration of mood in rooms. We do not as a matter of fact get into moods much now-a-days. Our fore-fathers felt the moods genuinely; they were more child-like than we are, and mottoes taken from their writings ring false now-a-days if applied to ourselves. There is not much revelry in dining-rooms now. We are sober even in our eating and never get properly drunk at all. Our dining-rooms are places where we talk, and incidentally are fed. Our libraries are working places for those who use books and smoking places for those who do not. None but a prig would inscribe a library with sentimental and vain-glorious exclamations about his love for books in themselves. It is the end for which a man uses his books that will furnish the mottoes that inspire or sustain him; mottoes which he likes to have before his eyes. In a general way the proper mottoes for decoration are those which people select for themselves and it is to be feared that the best of these will never be put up. It is the exceptional person who can express himself truly, so as to meet the eyes of other people but without regard to them in his mind.

Made in Berlin.

A really remarkable exhibition called the "Made in Berlin Exhibition" has been held during the current month at Berlin, Ont. It consists entirely of articles manufactured in the town, and the variety, for a town of 11,000 inhabitants, is surprising. Sixty-five varieties of manufacture are estimated. Doubtless some of them are varieties made by the same house. But a rough list, made at the exhibition, is striking. Leather and furniture come foremost, the two original industries. The sole leather now reaches England, and there is a furniture house that turns out designs as good as anything imported from the Michigan factories. Then there are office and shop fittings, pivoted bins, wooden ware, brooms, felted boots and shoes, rubber goods, buttons of all kinds, machinery of several kinds, gasoline engines, water motors, boilers, furnaces, pumps, automobiles, and bicycles, refrigerators, pianos, mattresses, trunks and leather articles, clocks, electric meters, suspenders, furs, boots, clothing of several kinds, besides beet sugar, beer, cigars, confectionery, biscuits &c. With all this industry, the general impression made by the town upon a visitor is rather of a pleasant place to live in than of a manufacturing town. It is a town of neat houses on good streets that are well kept, boulevarded generally, with granolithic sidewalks and an abundance, perhaps an over abundance, of trees. Every house, no matter how small, has ground about it; the large houses have extensive lawns, usually concealed from the street only by the number of trees which surround them. Chimneys are not a feature of the town. Instead there are the towers of several large churches. And the country about is beautiful. As a typical Canadian manufacturing town, the place is one of which Canadians may be proud. How much of its prosperity is due to the industrious German character of its inhabitants, how much to the accident of its position in the midst of a fertile agricultural country, one cannot say. Both conditions, no doubt, contribute, and, as both industry and fertility are common qualities in this country, Berlin may be taken as a type of what a Canadian manufacturing town may be made.

CANADIAN ARCHITECT AND BUILDER COMPETITION FOR STUDENTS.

A HOUSE OF SMALL COST IN COUNTRY TOWN.

The small house is a fertile and a useful theme for study in this country. That it is susceptible of many solutions is shown by the variety of designs recently furnished in England for a cottage of a given number of living rooms and bedrooms. These designs are suggestive of the sort of thing required for the small houses of a country town here but they require adaptation and some expansion. It is this adaptation and expansion that is proposed as the subject of this competition. It is not however an expansion of the plans, reprinted in this and the last two numbers of the CANADIAN ARCHITECT AND BUILDER, that is required so much as an expansion of the theme—a six-roomed house. That is the problem in both cases, but the English cottage is intended for an agricultural labourer, ours is intended for a mechanic, and the cost should be about $1500, or twice that proposed for the English cottage. It must be borne in mind, however, that English prices are not our prices, and that the exhibition cottages are all said to be over the proposed cost, except when erected, as they were for this exhibition, at cost price.

It is proposed to place the six-roomed cottage for this competition on a lot of 40 ft. frontage by 100 ft. depth, situated on the west side of a north and south road. The house will be supplied with water and have sewer connection.

The drawings required are: The two floor plans; elevations of the front, rear and one end; a perspective view, showing the front and that end which is not shown in elevation.

The drawings are to be arranged neatly on one sheet having the proportions of 8 to 12. The scale is to be not merely noted but drawn. A brief description of material used is to accompany the drawing.

Both drawing and description are to be marked by a cipher or nomme de plume. The author's name is to be enclosed in a sealed envelope similarly marked. The three communications—drawing, description and sealed envelope—are to be parcelled together under one cover marked "Drawing for Canadian Architect and Builder Competition," and sent to the C. H. Mortimer Publishing Company, Confederation Life Building, Toronto, on or before February 1st, 1906.

Judgment of the sketches will be made by a committee composed of members of the Ontario Association of Architects and of the Eighteen Club of Toronto. The following prizes are offered: First, $15; second, $5; third, one year's subscription to the CANADIAN ARCHITECT AND BUILDER, Architects' Edition.

The CANADIAN ARCHITECT AND BUILDER is to have the right to reproduce any or all of the drawings.

TORONTO CHAPTER, O.A.A.

The regular Tuesday luncheon of the Toronto Chapter of the Ontario Association of Architects, started again, after the long vacation, on the 3rd October. At the first luncheon a committee was appointed to wait on the Board of Control in reference to the conditions of competition for the new public library. As a result of this committee's work, the preliminary draft of the conditions has been referred back and it is to be hoped that more acceptable conditions will be prepared.

ORNAMENTAL TROLLEY POLES.

Many experiences of the vulgarity of standard objects of utility, which are made ornamental, makes one receive without much enthusiasm an announcement that American ornamental trolley poles have come into the market.

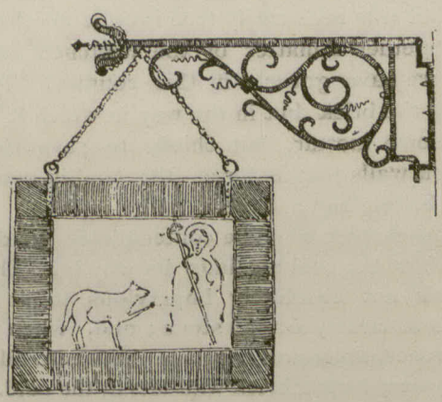
The best ornament for utilitarian objects is the ornament of a meek and quiet spirit; and, when the object is a trolley pole, the primary beauty is most emphatically the grace of uprightness. Overhead

THE DISAPPEARANCE OF THE VERTICAL LINE IN CITIES, AS SEEN BY HARRY FURNISS.
(From the Windsor Magazine.)

wires of any kind are an injury to civic beauty and the ultimate aim must be to get rid of them; but their evil influence is much mitigated if the poles which carry them are plumb. This is all that is required of double poles. Their purpose requires no excrescence of any kind and there is therefore no occasion for ornament. Single poles, which have an arm on either side or on both, are susceptible of improvement by care in their structural design. There is a junction to be redeemed from crudeness, and proportion to be observed between the vertical member and the arms; also the arms have ends which want emphasis, and, being the ends of a tube, would, for the sake of wearing well, be the better for a cap. At or near this point must be a hold for the wire. That is the sum total of the motives for structural design, and, if they are all satisfied in a simple manner, and the pole is plumb, which it is likely to be, the necessity is met with the least possible offence from the means.

Is it possible to go further and make the poles beautiful by adding ornament? A wrought iron bracket is at once suggested, and the designer of the American ornamental poles is not behind hand. The description of these poles reads: "Under the arm projecting from the top to support the trolley wire, extending from the pole to the end of the arm, is placed an ornamental bracket of scroll work or other design."

It is extremely doubtful whether, even if properly applied, scroll work of one design, executed mechanically and repeated without variation, would prove to be a source of much pleasure. But this application—the only application we are likely to get in the case of trolley poles—reveals its lifelessness in the word "under." The brackets are to go under the arm. The arm will have a separate identity, and we may leave it to the electric railroads' engineer to make sure that it does not depend upon the bracket for support. The bracket will in fact depend from the arm. And the liberal effort of the railroad company to be beautiful will meet with indifference which, if anyone thinks about it at all, will perhaps seem unaccounted for. Old work of the kind, in the old world, interests them; and this does not. Is it because it is new? Not entirely. Age is an advantage, even to ironwork—in the slight irregularities that come from various causes. But there is more than this. Old work had slight irregularities to begin with, because it was made by hand instead of mechanically, and by eye instead ot on a pattern block. For this reason alone no two objects of a kind would be exactly alike, even if of the same pattern. But as there would be little to be gained by following the same pattern exactly, and much to be gained (for the workman as well as for the spectator) in varying the pattern, there would probably be no two exactly alike in design, and the interest would be far greater than when the same design is turned out by the hundred because done mechanically. The chief reason, however, is that the



FROM A SKETCH BY T. F. LAIST, AMERICAN ARCHITECT TRAVELLING SCHOLAR.

old design was constructional. The bracket was not an ornamental addition to the arm, it was itself the arm. The top member was little if any thicker than the rest of the bracket. The scroll work was simply a method of making a strong arm out of weak material. It is constructional iron work; a small truss. This, recognized instinctively by the general public and consciously by persons experienced in design, is the bottom reason why old wrought iron work of the kind is interesting, and why a stout cast iron tube, decorated underneath by a scroll of mechanical wrought iron work will be a travesty, and its foolishness will be felt even by those who do not know wherein it is foolish.

A further question arises:— whether, if the railroad company were zealous enough about beauty to have all its trolley-arms made of true scroll-work; wrought by hand, and of design varied as the fancy of the workman directed him; whether, in that case, complete satisfaction would be reached. Hardly, for here comes in another point of difference between us and earlier days. This was the mediaeval workman's natural way of accomplishing the end. He worked with small bars of wrought iron; we cast and roll iron of any shape and size; and the obvious way of making a trolley-arm now is to cast a pipe of sufficient diameter and fit it into a socket on the vertical post. This is the basis of the modern designer's problem. If it is of no avail to make it beautiful by tacking the beautiful mediaeval structure underneath, it is equally a sham, though more difficult to recognize as a source of failure, to make a true design in the mediaeval manner. Assuming the work to be equally well designed and

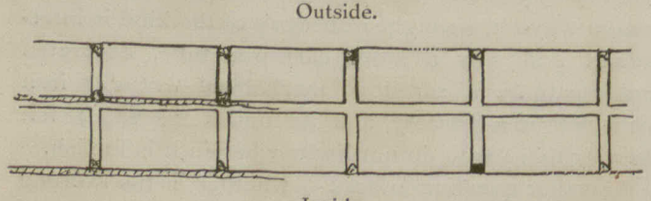
wrought, it must still be beautiful; but it has ceased to be fitting. For strong practical work, many times repeated, cast iron is the natural modern material, and, though the wrought iron scroll-work arm may be true Gothic design, the man who does the work well in cast iron is the true Gothic designer. In carrying out his work with the severe simplicity that the occasion demands he is not out of spirit with the old workmen; who were not always florid, but gave us also the plain wall spaces and simple constructions that we envy; and who, most likely, if they had been called upon to erect several thousand trolley-arms in one city, would not have tried so hard as we think to direct attention to them.

SPECULATIVE BRICKWORK.

It is accepted as a general truth in Ontario, particularly in the country, that a brick house is a cold house. This seems a strange conclusion to have arrived at about a good building material, but it is unfortunately true. That it is necessarily true is quite another affair. It is altogether a matter of the wretched habits of building we have got into in this country. The fault lies not in the brick but in the way in which it is laid. To save some mortar, but chiefly to save time, we build brick walls that as far as the wind is concerned, are little better than a sieve.

The householder when he contemplates his dwelling wonders how the cold air finds its way in. The brick it is true is not absolutely impervious to air but the mortar is as closely set as stone; and, when mortar fills the space under and over and between all bricks, it is a mystery how a brick wall lets in the cold. What air there is in the bricks must be immovable and ought to act as a protection, wrapping the house all round with the same non-conducting envelope that keeps a bird warm when it fluffs out its feathers.

The trouble is that the vertical joints are not full of mortar, as we assume that they are, but are open channels throughout the greater part of their length, stopped only at the outside and inside ends, and that only by an irregular plug of mortar that does not necessarily fit tight.



The proper way to lay a brick wall—nine inches thick or otherwise, but the nine inch wall for cheap houses is the subject of our discourse—the right way of building it, as generally understood, is to lay a course at a time; to finish the stretcher course as completely as the heading course, laying both halves of it at once, on a bed of mortar which extends the full thickness of the wall; and by sliding the bricks forwards and sideways as they are placed on the bed, some of the mortar, which is laid on thick for the purpose, is squeezed up to fill the vertical joints, both those running across the wall and that running lengthwise. This fills the bottom half of the joints. The top half is filled by throwing mortar into them when the next bed of mortar is spread. Thus all joints are full of mortar, and the wall is both strong and air-tight.

The speculative builder's method differs from this fundamentally in that he builds up the inner and outer portions of his stretcher courses separately. The use of coloured mortar for the face of the wall has no doubt given rise to the practice, but the particular result is an entire absence of mortar in the longitudinal joint all the way up, crossed and stopped only by the headers and the bed on top of them every sixth course. For the five courses between headers he builds separately two neat little four inch walls. It is a size convenient for keeping control of your mortar, and he makes it go as far as possible. The bed is made abundantly thick by the simple process of pressing down the centre with the point of his trowel and squeezing the mortar out at the edges. (The bed being thus hollow in the centre, the brick rests only on its edges, which gives it every chance to spall; but that is another question, and perhaps not a serious question in the case of a small house.) The mortar which bulges out at the edge of the bed, when a brick is set down upon it, he scrapes off handily with the point of his trowel and with it butters the end of the next brick, making an irregular blob of mortar on its outer edge—the plug on the outside, shown in the cut above. Some bricklayers have a particularly irritating way of catching up on their trowel any remnants of mortar they can and then, as they call it, "cleaning" their trowel by scraping these savings off on the top edges of the brick as they lie on the bed, and carefully smearing the scrapings over the top of the joints, making a thin protective coat which will effectually prevent any mortar falling in when the next bed is thrown on top of the course.

So much for the method. The result is a wall with vertical joints empty of mortar, except for a plug at the wall faces which, neatly pointed, makes a good showing, giving the impression of fullness of mortar to a wall which is as empty of it as it can possibly be without falling down.

And the result of this emptiness is that a candle has been—not can be, but has been—blown out when held on the inside of the windward wall of a house which was closed in but not back plastered.

The back plastering is usually considered to be the cure for the state of affairs, but it is not enough. Double back-plastering would be better, and that is the suggestion offered by the writer to any one who is caught, as he was, by an agreement for a house intended to be cheap, in which it would have been obviously unfair to force perfection upon the builder. The contractor for the mason work, who was anxious to do what he could, short of making his men work in an unaccustomed manner, so that they would be slower than he had calculated upon, himself proposed, as a solution, to back plaster the outside half of each division of wall before laying up the inner half. This has been done (as shown on the left of the plan above), and it looks so solid that the suggestion is here offered for the improvement of speculative brickwork at small cost of material or time.

In the budget recently brought down in the Canadian House of Commons provision was made for increasing duty on white lead from 5 per cent. to 30 per cent. This was done to afford protection to the new white lead industry established in Montreal, the first of its kind in Canada. As a result it is announced that the price of paint will advance about 75 cents per hundred. It is expected that the result of increased duty eventually will be that white lead will be wholly manufactured in Canada instead of being imported and ground into oil here, as at present.

OUR ILLUSTRATIONS.

GOLF CLUB, WINNIPEG, MAN.—MESSRS. DARLING AND PEARSON, ARCHITECTS.

The plan of this Club-house, which is shown in our illustration, requires the further explanation that the men's locker-room is in the basement of the wing which contains the smoking and reading rooms, and the club bedrooms are in the upper floor of this wing. There is a direct entrance from outside to the locker-room by way of the professional's shed. The communication with the house appears to be by a stair which lands at the ladies entrance ; but this, and the contracted ladies' quarters appear to be a temporary expedient. An open newel main staircase extending from the locker-room to the bedrooms is shown on the original plan, (which is we understand to be carried out). The ladies' room here shown becomes a card room ; the ladies having proper quarters in a splayed wing on the other side of the entrance hall, of which the main motive is a ball-room, in connection with which are the ladies' sitting room and lavatory and a private stair leading to their locker-room below. It is this private communication within separated parts, so that there is no interweaving of the passageway of one part with the passageway of another part which is so essential in all club planning, but especially in a club for sport of any kind in which both men and women share. In the perfect plan of this club-house the main stair is entirely enclosed, by doors, both from the entrance hall and from the service department. It is, as far as members are concerned, always a stairway for men only ; and as far as service is concerned it belongs only to men during the hour of descending in pyjamas to the showers and until such an hour as those who are staying in the house have gone to their work, when the women servants can ascend to " do " the rooms. This convenience is somewhat disturbed by the present derangement. Even in the early morning when there are no women members about there should be women servants cleaning the hall who will make it a zone unsuited for the companions of the bath ; a temperate zone where tropical vesture is out of place.

PUBLIC LIBRARY, SARNIA.—MR. M. R. BURROWES, ARCHITECT.

In plan this building seems to be eminently suitable to the scale of the requirements of a public library in a small town. There is evidently open access to the stacks so that the position of the librarian's private room and of the board room, while retired, is not inaccesslble. The general reading room and the children's room are under the eye of the attendant at the delivery desk, but students are given a more complete seclusion. The smoking room in the basement is an application of the doctrine that the public library is the proper alternative for the saloon. A village Johnson would soon make it the more popular resort of the two, gathering around him an evening circle, as the great talkers did in the days when the coffee house flourished in London. The space under the stack room is a filing room which, from the length of the approach, is evidently not considered an active department at present. When, however, the extension is built, and the projection for the librarian's office may also be extended without ceasing to be subordinate to the stack room wing, a stair inserted there would add greatly to the usefulness of the filing room not only for filing but for other kinds of work.

In external appearance it will be seen that the building owes much to its dome, and that, though simple, it takes its place among the neighbouring buildings as a monument of decided dignity. There is a skylight, 6 feet in diameter at the top of the dome which the example of the Pantheon at Rome shows to be the effective spot. This skylight admits light to the rotunda through a ceiling light which is twice the diameter—that is to say four times the area—of the opening in the dome.

DECORATION IN VANCOUVER BRANCH OF THE ROYAL BANK OF CANADA, BY MR. JAMES BLOMFIELD, VANCOUVER.

These wall paintings have an allegorical reference to Vancouver and the Royal Bank. Vancouver Triumphans represents the rising of the City of Vancouver with Industry on one side and Agriculture on the other. The figure in the lower panel is a personification of Acadia, representing the Maritime Provinces in which the Royal Bank had its origin. The coats of arms inserted in the frame round Acadia are those of the Crown, New Brunswick, Nova Scotia and, (at the bottom) the City of Halifax, which is the parent city of the Bank.

CHEAP COTTAGES—MR. PERCY B. HOUFTON'S DESIGN.

The decision in the cheap cottage exhibition at Garden City, Hertfordshire, gives the first prize for the £150 cottage to Percy Houfton, whose design we reproduce, with this view, of the cottage as executed, taken from the *County Gentleman*.

The material of the walls is 9″ brickwork, ronghcast in cement. The roof is of local red tiles. The living room is floored with stone quarries in cement ; the rest of the floor with granolithic cement. All on a 6″ bed of concrete. There is water snpply from mains. The inclusion of the coal place, w.c., and open lobby within the rectangle of the ground plan provides more space on the bedroom floor. The larder ought to have opened opposite to the stair, not from the scullery. The The small bedroom as easily as that next to it might have had a fireplace. The offer is made to duplicate this cottage (in England) for £175, ($850), including pro-

fit, architect's fees, and men's travelling expenses. 3½ per cent. could be saved by erecting two together ; 5 per cent by erecting four.

MR. BAILLIE SCOTT'S DESIGN.

Mr. Baillie Scott has produced what is called in some of the illustrations a "new-old" cottage. This design is an entry for Class 4, a pair of cottages at £35 a room. There is no assertion made that he has fulfilled the conditions. In a confession of faith, printed in an introductory portion of the catalogue of the Exhibition, he says "the question of money, however important, should always be a secondary matter to the earnest attempt to achieve that combination of the ideal and real which makes building as an art unique. The cottage should be a dream come true, the result of infinite pains, and whether it pays 5 per cent. or 6 per cent. is quite a secondary matter." So we may assume that, although it is entered under the class costing £35 a room, whether it will actually cost only that much or whether it will cost more is a question the consideration of which has not received infinite pains from the designer. However there is no question about his capacity for dreaming and we may consider it for its value in point of taste and character. "All buildings," he says, "even the smallest, have personalities, and the cottage should have a soul of its own." In some respects this is a case of metempsychosis. It is a twentieth century cottage inhabited by a seventeenth century soul.

The living room is 12′ × 20′ × 7′ 6″ high; the parlour 9′ × 12′; scullery 9′ × 12′. The bedrooms are 8′ high, and are respectively 12′ × 13′, 7′ × 11′, and 9′ × 12′. It is complained that the windows are too high; that cottagers confined to bed with illness could not enjoy the pleasure of looking out of the window.

The material is brick, roughcast, with oak half timber wall. The floors are paved with red brick on the ground floor. The entrance court is paved in patterns of cobble stones.

REVIEW.

NATURAL VENTILATION. PUBLISHED BY THE NATIONAL VENTILATING COMPANY, 1 MADISON AVE, NEW YORK. —We have received a booklet which, though intended to be an advertising medium, to exploit the patent devices of the publishing company, deserves notice in this column as the devices it advertises are designed to effect ventilation in the way in which in the opinion of experts is the only proper way;—that is by giving opportunity to the natural property of air to keep itself pure by continual movement. The natural order of things in air, as in everything else in the world, is preserved by gravitation. The heavier air descending pushes up the light and the agency at the bottom of movement is heat. Very slight differences of warmth in a room are suffcient to effect the delicate balance of air; the difference between an outside wall and an inside wall, between a portion of the floor that has sunlight and the remainder that has none; and the furnace of the human body is the immediate agent in securing pure air for each successive breath, removing the exhaled air, partly because it is warmed itself and partly because the air surrounding the body is kept perpetually ascending by the warmth communicated to it in its contact with the body.

There is therefore provision made by Nature to remove exhaled air as soon as it is vitiated. In order to take advantage of this law for the ventilation of a room, it is obvious that there must be the means of removing the air from the room at once, in pursuance of the impulse upwards, without giving the vitiated air an opportunity to remain in the room until it is cooled, descends, and mingles with the purer air below so as to lower its quality.

This is what is aimed at by the contrivances of the National Ventilating Company, which are, briefly, metal boxes fixed on the bottom and top rails of windows for the entrance and extraction of air. The lower box consists of two parts, an outside hood in the form of a tunnel through which the wind can blow, with the result that as soon as it does so it closes a pivoted valve and air can only enter the room from the side opposite to the wind. This it is claimed not only prevents the violent entry of outside air but makes it enter pure, since all dust and other particles of impurity are carried past in the current of the wind and cannot return under the lee of the hood into the eddy from which air is drawn into the room. The inner member of the lower ventilating box is devised for two ends:—(1) To break up the columns of air by passing it through a coarse membrane, so that it enters the room in small separated columns and becomes mixed with the warm air of the room, thus preventing draughts. (2) To deflect the entering air upwards. This it is claimed involves a movement of the warm air of the room towards the window so that a seat near the window has not as its accompaniment a draught along the floor.

The upper ventilator is simpler. Invention in its case seems to have been devoted to procuring the extraction of the inner air without giving the outer air occasion to enter.

The normal application of these appliances is to a glass panel inserted below the bottom rail and above the top rail. In case of their insertion in old work, the separation of the meeting rails which this would involve is made good by a specially devised weather strip.

We have given this booklet notice in the conviction that it is worth study. Artificial ventilation, by the propulsion of air, does not receive favourable comment in the report of the Committee of the British House of Commons, or from other investigators. Artificial contrivances are apt to run counter to natural means, and, in the case of the movement of air, the natural means are so clear that any system that proposes to work in accordance with them commends itself.

Of course it is not true to say that natural means of ventilation cost nothing for their upkeep. Natural ventilation has as its basis the application of heat. The method under review implies a greater supply of heat, equivalent to the greater supply of fresh air, and the cost of the extra consumption of coal will be the cost of its maintenance. If any man does not want to pay for ventilation he must submit to vitiated air and pay for that daily by impaired vigour, ill health and even disease.

The new Canadian Bank of Commerce Building at Edmonton, an illustration of which appeared in the ARCHITECT AND BUILDER for September is constructed with Roman stone, manufactured by the Roman Stone Company, of Toronto.

PLASTERING IN WINTER.

The very severe weather which was experienced in this country the past winter, resulting in the practical cessation of building operations in nearly every section, serves to direct attention afresh to the difficulties which always attend the attempts to satisfactorily plaster a building when the temperature is at a low degree. In discussing the matter a writer in a recent issue of the *Engineering Record* points out how many of the defects noted in connection with plaster work done in winter may be remedied, as their causes seem be very little understood. He says:

Heretofore wall plaster has been a mixture of varying proportions of slaked lime, sand and hair, made at the building, usually out in the open with no protection from the elements. If cold weather came on the mixture would freeze and could not be used until thawed out, with consequent injury to the binding qualities of the material; or, as often happens, the frozen mixture is applied to the walls to soon come off as the frost thaws out. Then, too, the quality of lime used varies greatly in quality, and poor lime is cheap. Sand also differs greatly in quality, and sand that contains a large percentage of loam requires less time to bind it together; but loamy sand makes a very inferior plastering mortar. When lime of the best quality is obtained and good sharp sand is at hand, the proportions that enter into the mixture are uncertain and are guessed at by the laborer who does the mixing. This laborer is the unskilled workman of the job, and if he does not properly manufacture the mortar all the skill in the world in applying it to the wall by skilled workmen will avail little.

This unsatisfactory state of affairs in making plastering mortar has now been overcome, as many manufacturing plants have been established throughout the country which slake lime by machinery, dry the sand, card the hair, automatically weigh the proper proportions of each and mix the whole together thoroughly by machinery and deliver this mixture in a dry state to the building in suitable containers, usually jute bags. As the material so prepared requires only water to be added at the building to make it ready for use it does away with a great many of the disadvantages of the old way, and has the great advantage of insuring a uniform plastering mortar of every superior quality that is easily handled.

Plastering mortar prepared in this way can be taken into the building and mixed with water in water tight boxes on the floor where it is to be used, and this avoids all chances of freezing if the building is properly heated, as it should be.

SOME OF THE TROUBLES ENCOUNTERED.

In the treatment of some of the troubles encountered in plastering in winter, we will not consider those met with when plastering mortar is made at the building in the open in the old way, but will consider that if the mortar is made at the building it is properly protected so far as its manufacture is concerned. With this exception the following comments apply equally to all kinds of plastering mortar.

Plaster is necessarily applied in a wet state, and the surplus water has to evaporate or be dried out of it. It is this surplus water and other dampness in a new building that are the chief causes of trouble in winter plastering.

In winter, when the temperature is low, evaporation takes place slowly or not at all. In most cases the building is cold, is not inclosed, or possibly the windows have only muslin screens, but at any rate the conditions are usually bad for drying out the moisture from the plaster and from the other parts of the building. If very cold weather comes on the damp plaster freezes and then there is trouble.

The amount of dampness in a building is very much greater than is usually supposed. In frame structures there is moisture in pretty much everything that enters into it—the brick in the chimneys, the cement concrete in the cellar and bathrooms, even the lumber contains much moisture. In the larger brick or stone buildings with thick walls, concrete or tile floors the amount of moisture is very large. The greater part of this moisture will have to be dried out of the building sooner or later, but until this is done it is liable to be a source of trouble, and this is particularly the case in winter.

The methods used to get rid of this moisture are for the most part crude, and in many cases are the causes of greater trouble than the moisture itself. In hardening, the plaster of Paris and lime in wall plaster combine chemically with some of the water, either in the form of water of crystallization or in formation of hydrates. Therefore, all of the water added to wet the plaster does not have to dry out. The so called hard or patent plasters contain more or less plaster of Paris; they do not require so much water to be dried out as other plasters that do not contain plaster of Paris; in other words, they dry quicker. This chemical change or hydration takes place gradually, and it is not desirable to dry the plaster so quickly as to prevent its taking place properly. An overheated building is quite, if not more, injurious than an underheated one. The majority of builders regard the ideal drying conditions in winter to be an overheated, tightly closed building with no circulation. This is far from being right. Circulation of air is, if anything, more important than heat, if the outside atmosphere is above freezing. On such days as the atmosphere outside is very damp and moist it is better not to open the windows.

IDEAL CONDITIONS.

The ideal condition is to have a gentle heat to keep the atmosphere warm, and allow sufficient circulation of air to absorb and carry off the moisture. It is especially important that the heat should be kept up during the night. The proper way to accomplish this is to have the heating apparatus installed in a building and in working order before any plaster is applied. Temporary connections can be made, and heaters placed in the middle of the room. By doing this, and observing the simple precaution of opening the windows from the top during the day time to allow a free circulation of air to let the moisture out, the greater part of the troubles of winter plastering would disappear. No time is gained by not doing this, and it is a mistake to think that a building can be plastered quicker by starting the work before the building is properly heated. On the contrary, it is much quicker to delay starting the plastering until the heating apparatus is in working order, as the plaster dries out within a few day's time in this case, whereas it is liable to be weeks and months when this is not done.

With a temperature sufficiently high to evaporate the moisture the plaster dries quickly, and the rest of the work can follow at once, but the usual method is not to wait until the heating apparatus is in order, but to inclose the building with muslin screens and use stoves, salamanders or open fires to dry out the building. Usually the fires are not kept going at night, and in consequence the bnilding (which has probably been overheated in the day time, as is always the case of the ceilings in the rooms in which the stoves or salamanders are placed) is allowed to become cold at night. The chances are, too, that no precaution has been taken during the day time to permit a draft of air to circulate through the rooms to carry off the moisture. What is the result? The heat of the day vaporizes the moisture, and the cold of the night, after the fires are out, again condenses it and it settles on the plastered walls and is absorbed, or if the temperature is very low the moisture freezes on the face of the plaster, which is found covered with ice the next morning. In many cases this process of heating by day and cooling by night is kept up for weeks, with the moisture for the greater part still in the building at the end of that time, or possibly a sufficient amount of it has been gotten out to make the plaster appear sufficiently hard to finish, and the finish coat is applied. Each coat should be thoroughly dry before the next coat is applied.

After applying the finish coat of plaster all moisture from the under coats has to dry through the finish coat, and as the finish coat is denser and more compact than the under coats it takes very much longer for the latter to become dry after the finish coat has been applied than if this drying had taken place before the application of the last coat. The results are usually as follows :

1. The Effect of Dampness Remaining in Plaster.—The most serious effect of plaster remaining damp and soggy and not drying out in proper time is to cause it to lose its set or strength, and in consequence it does not become hard. In other words, the result is the same as if the plaster has been retempered.. It is a well-known fact that with plasters or Portland cements when they are retempered their strength is lost. As time goes by, therefore, the plaster that has been allowed to remain wet and soggy dries out, but it is very apt to fall from the wall or crumble away like so much sand,

2. Staining Due to Dampness.—The scratch and browning coats of plaster should be perfectly dry before the finish coat is applied. If the finish coat is applied before the scratch and browning coats are dry any staining from the wood lath (sap) or from brick or terra cotta walls will be carried by the dampness through to the surface of the finish coat, leaving a discoloration or stain. All moisture in the scratch and browning coats, and for that matter in the brick walls as well, dries out through the finish coat, with the result that the latter remains damp until this moisture has entirely dried out. This seriously injures the finish coat and it is liable to remain soft. In large office buildings where the walls are massive the dampness remains in the plaster for a long time and beads of water are frequently seen standing on its surface. In case of brick walls, when the water evaporates it leaves long, fine crystals of substances that have been brought to the surface in solution. Usually these substances are crystals of carbonate of soda, chloride of soda or other soluble salts. The use of damp proof paints on brick or terra cotta walls, before plaster is applied, prevents much dampness coming through the plaster, and they should be used whenever possible.

3. Effect of Frost on Scratch and Browning Coats of Plaster.—The general effect of frost on plaster is to seriously injure its binding qualities or strength. The plaster becomes soft and does not set hard, and the plastered wall that has been frozen is liable to fall. If the frost has gotten into the first or scratch coat of plaster and causes it to lose its strength, it will not be strong enough to hold up the two succeeding coats (browning and finish), even though no frost has gotten into these last two coats ; but should the scratch coat not be injured to such an extent as to cause it to fall the frost will thaw out, and in this process push off the browning and finish coats.

It is not an uncommon thing to see the browning coat separate from the scratch coat in large sheets where frost has affected the latter. In like manner, if frost gets into the second or browning coat this will be damaged, as in the case of the scratch coat, and if the third or finish coat is applied while frost is still in the browning coat the finish will be pushed off in sheets when the frost thaws out, just as was the case of frost in the scratch coat.

4. Effect of Frost on The Finish Coat of Plaster.—Frost causes the finish coat of plaster to become soft and chalky, and without strength or hardness. The finishing coat rubs off like whitewash and is a constant source of annoyance to the occupants of the house.

5. Plaster Appears Dry.—Scratch and browning coats of plaster appear to be dry on the surface when, in reality, underneath the surface they are still wet. This appearance is often misleading, and the finish coat is applied too soon, with the result of having the finish coat remain damp until all the moisture has dried out from the under coats. As the finish coat is less porous than the scratch or browning coats it naturally takes longer for a wall to dry that has had the finish coat applied while the under coats are still wet than if the moisture in the under coats were allowed to dry out before applying the finish coat. This dampness in plaster is the cause of the disfigurement of decorations.

6. Staining and Cracking Due to Use of Salamanders and Coke Pots.—The sulphur and smoke from the coke or coal used in the salamander disfigure plaster. The smoke blackens the wall, but the sulphur of the coke unites with the lime in the finish of the plaster and forms sulphide of lime, which is yellow. These are the yellow spots or blotches that appear so often on the surface of plaster that has been applied in winter time. As the sulphur only unites with lime when it is damp, these yellow stains appear in round spots, the moisture drying out in small circles, just as if water were dropped on blotting paper and were allowed to dry. These small damp spots absorb the sulphur of the coke and cause an unsightly wall. The small furnace used by the plumber also adds to this yellow staining. Coke pots when placed too near the recently plastered wall are apt to dry it too quickly, and in consequence draw the wood lath, causing the lath to twist or buckle and the plaster to crack.

7. Decorating on Plaster that is not Thoroughly Dry.—When plaster is damp, as shown above, the lime, which is a constituent of the finish coat of all plasters (there is no exception to this rule), acts as a bleaching agent. Paper applied on damp plaster, therefore, will not fade or discolor, and paint or kalsomine will be similarly affected. Naturally, the more delicate the tints of paper or kalsomine, the more liable they are to be affected. Often rooms are repapered and repainted, and even the second application of paper or paint is applied. If the dampness in the wall is excessive the paint is pushed off from the plaster and peels off in spots several inches in diameter.

Walls should be thoroughly dried before they are decorated, and this takes time. If proper care has been taken in heating the building when the plaster was being applied, and this heat has been kept up until the trim is on and the walls are hard and dry, there is no reason why, with proper precaution, the walls cannot be decorated. Paint is very much less affected than kalsomine or paper. Delicate shades of either are more liable to damage, but if the walls are properly sized they can be decorated with satisfactory results. If very expensive decorations are to be made directly on the surface of the plastered walls it is best to allow the walls to become seasoned for at least one year. When decorations are on canvas, or if burlap is used instead of wall paper, little trouble is experienced. The trouble lies in the mistake that plaster that is hard and does not feel wet to the touch is considered by most persons to be dry, but this is far from the truth.

As poor drying conditions in winter are the cause of the troubles of plastering in winter, replace them with proper drying conditions and there will be no trouble. This can be easily brought about by observing the following simple precautions :

1. A building should be well inclosed. Nothing is gained in time by starting plastering before a building is properly ready to be plastered.

2. A building should be well heated by furnace, steam or hot water heat. Salamanders, coke pots, stoves or open fires should not be used. They are not necessary and their use does not hasten the work. If however they are used their bad effects can be materially lessened if care be taken in their use. In case of coke pots or salamanders, have them lighted out of doors, so that the first smoke will pass away and the coke become well ignited before they are placed in the house. Coke should always be used and not coal, as there is less sulphur in coke and less smoke than in coal.

3. A building should be well ventilated. The windows should be opened from the top in the day time and closed at night. This allows the current of air to circulate through the building and carry out the dampness. It is a great mistake to keep the building tightly closed during the time it is being plastered. Fresh air is a good dryer.

4. If the precautions in regard to properly inclosing, heating and ventilation are looked after carefully there will be little trouble in winter plastering. It is not well to paper or paint too soon on new plastering. Even under the best conditions the plaster finish acts as a bleaching agent, and it should be well seasoned before it is decorated. When it is necessary to decorate quickly the precaution should be taken of using canvas or an extra heavy coat of sizing before either papering or painting.

CHICAGO FOUNDATIONS.

Horace says in De Arte Poetica, "It is difficult to treat common topics with originality." There has been so much written regarding foundations for high buildings in Chicago that it is difficult to write anything that is not trite, and it is practically impossible to say anything new. The soil on which Chicago is built consists of loam and made ground down to datum, about 14 ft. below street grade, then comes a layer of hard, stiff blue clay 6 to 12 ft. thick; below this the clay, while generally of the same character as the hard stratum above, becomes softer, and remains soft to a depth of 60 to 70 ft. below street grade. This soft layer, as a general thing, only differs from the hard layer above in the amount of water it contains, and the buildings in their settlement sqeeze out this water, thus increasing the thickness of the hard layer.

When the foundations of the new post office were put in, extremely hard clay, that had to be cut out with knives and thrown into the wagons with pitchforks, was found down to a depth of 35 or 36 ft., although when buildings near it were built soft clay was found at about 20 ft. below grade.

It was found early in the use of spread footings that it was not advisable to dig into the hard stratum at all. The foundations where placed upon this hard stratum wherever it was found, and this in some cases only allowed a clear height in the basement of 7½ or 8 ft. Before the Masonic Temple was built the soil was tested by supporting a tank on a plate having an area of 2 sq. ft. This tank was gradually filled with water. The final load was 5,650 lbs. per sq. ft. Two tests were made, each lasting about 100 hours. In one test the plate rested directly on the top of the hard clay. In the second test the plate was placed at the bottom of an excavation in the hard clay 2 ft. 4 in. deep. The total settlement in test No. 1 was 1 13/16 in. and in No. 2 4⅛ in. Below this soft clay comes a very hard, compact clay, frequently containing boulders of various sizes, some of them being 5 or 6 ft. in diameter. This clay continues down to either the rock or a layer of sand and gravel of varying thickness which occasionally overlies the rock. Rock is found in the downtown districts at about 100 ft. below street grade. In an artesian well sunk at the Chicago & Northwestern office building now being completed this limestone rock started at 100 ft. below datum and continued down to 434, then came a layer of blue shale 53 ft. thick, then 350 ft. of limstone, then 160 ft. of soft white sandstone, then 300 ft. of limestone, and finally at 1,400 ft. a white sandstone was found which contained water in sufficient quantity rising to within 100 ft. of the surface.

The old masonry foundations of the four to six-storey buildings erected after the fire were, of course, spread foundations, and their load on the clay ran from 8,000 to 15,000 lb. per sq. ft. There must have been great settlements, but with the streets varying so much in grade as they did, and with the masonry buildings, it did not make much difference how much they settled. However, as the heights of buildings increased and more room in the basements for mechanical plants became a necessity, it was found that some other kind of foundation was required, and the spread footing made of layers of beams imbedded in concrete followed naturally. The settlements of buildings supported upon these spread foundations were considerable, ranging from 8 in. to as much as 30 in. This settlement is anticipated when construction is begun by raising the level of the bottom of the footings by the amount it is thought the buildings will settle. This causes the sidewalks to be steep at first, but they approach their proper slope as the buildings settle. The foundations of the Great Northern Theatre were raised 9 in.

It has also been found that the tall buildings with spread foundations do not stop settling. This continal settlement is caused by the wind tending to reduce the pressure on the soil on the windward and increasing it on the leeward side. Some of the tallest buildings erected 12 to 15 years ago are still settling—very slightly, it is true, but the movement is enough to be detected. Another fact noted is that all the tall steel buildings lean north and east. This is due to the fact that in the spring and summer, when the buildings are being erected, the prevailing winds are from the southwest, and as the greatest settlement occurs during erection, this constant pressure against the unfinished structures is sufficient to cause them to lean slightly.

The following incident will show how great is the initial settlement. In the Masonic Temple four of the main columns, near the lifts, carry heavy loads and have large footings, and between them are two small columns which only carry the stairs. As these had much smaller footings than any others in the building, they were given a higher load per square foot. During the construction of the building the four columns had received the greater portion of their loads when the erection of the stairs was begun. It was found at once that the connections on the stairs would not fit those on the columns, the latter being too high. Levels, taken to ascertain whether the small columns had been forced up, showed that they simply had not settled with the rest of the building. About 75 tons of pig iron were then loaded on both footings and allowed to remain for a week. Although the load then amounted to 7,000 lb. per square foot, twice the load on any of the other footings, the column only settled about 1 in., less than one-half the desired amount, and so the connections had to be changed all the way up the stairs.

It was found early in the history of floating foundations that live load must not be considered when designing foundations. The reason for that is that the foundations get the dead load immediately, but the live load does not come on until the building is finished and the greater part of the settlement has taken place.

One of the finest buildings in Chicago, a wholesale warehouse built nearfy 30 years ago, was designed by a Boston architect. He proportioned the foundations for the same live and dead load he used in designing his columns. The result was that the outside walls, where the percentage of dead load was very great, settled at once, and the interior columns, where the percentage of live load predominated, did not settle. If you go into that building today you will see porters helping the regular truckmen to wheel their trucks up the hills caused by the curve in the floors.

The great settlement of buildings in these floating foundations and the necessity for increased basement height, owing to the increasing use of water tube boilers and other improvements in the mechanical plant, lead to the gradual abandonment of this style of foundation, notwithstanding its cheapness. But the chief reason for the change and the discarding of the spread footings was the building of the tunnel by the Illinois Tunnel Co. This was a remarkable piece of work. Thirty miles of this tunnel 40 ft. below street grade have been completed, and the whole work has been carried on without any tearing up of the streets. Indeed, very few people in Chicago knew it was being built until it was practically completed. Shafts were sunk at curb line, and the dirt was hoisted through these shafts and carried away at night. This tunnel, together with the present agitation about subways for the street car lines, render the concrete walls going to rock, the only safe method of constructing foundations for high buildings in the business districts.

* A paper by Mr. E. C. Shankland in the "Technograph" of the Engineering Societies of the University of Illinois.

Many of the buildings now being erected have basements going down to the level of this tunnel. A great deal of the clay excavated in foundations of buildings is now taken out to the lake through this tunnel, saving the teaming of it through the streets.

While most of the large warehouses along the river are on piles and a few in the business center rest on piles, yet a very large percentage of the buildings put up in the past five or six years rest on concrete caissons. Concrete wells would be a better name, as they are simply holes dug just as ordinary wells are and filled with concrete. These were first used in Chicago in the Stock Exchange erected in 1892, but two years before this the City Hall in Kansas City was built upon steel shells going down to rock, excavated and fflled up with hard brick laid in Portland cement. Excessive loads were carried on Z-bar columns passing through the centres of the piers and going down to rock. The site of the building was formerly a ravine between abrupt bluffs. These had been so cut away and levelled as to leave a 50-ft. filling of rubbish under two-thirds of the building and a solid clay bank under the other third. The fill was made by its use as a public dump. This is the first building I know of to make use of this kind of foundation.

The concrete wells as now built are put down 4 or 5 ft. and then lined with wooden lagging 2 to 3 in. thick, tongued and grooved, and either 4 ft. or 5 ft.4 in.long. Each section of this lagging is held in place by two steel bars, generally 4 in. wide by ¾ in. thick, made semi-circular, in two pieces turned up at the ends, so they can be bolted together. If the ground is unusually soft three rings are used in each section, and the sections are made shorter. When the first section is lined a new section is dug and lined up, and so on down to the hard clay 60 or 70 ft., or to the rock, as the case may be.

Where the wells are only carried down to the hard clay they are belled out at the bottom to twice the diameter of the shaft, but if carried down to the rock, which is the better way, they are not belled. When the holes are excavated to the bottom the concreting is begun and the rings are taken out as the work of filling progresses. Sometimes the lagging is also taken out, but this is not done as a general thing. When soft, swelling clay is found, or where the well is close to a high building previously erected on spread footings, both the rings and lagging are left in as a means of safety.

It is sometimes necessary to use iron shells for lagging for a portion of the distance. In the Chicago Edison building recently erected at the corner of Market and Washington Sts. a very soft sand stratum full of water was discovered at a depth of 85 ft. It might also be called quicksand. It was necessary to get iron shells and drive them down ahead of the digging, as that was the only way the water could be kept out by the pumps.

These wells do not settle in themselves, still they cause some settlement to adjoining buildings. This is due to the impossibility of digging the clay so that the lagging will fit close to it. There are bound to be vacant spaces back of the lagging which will be filled up later by the earth pressure, and this movement will show itself in the settlement of the foundations of the buildings close by. Slight settlements in a building across a 40 ft. street have been known to occur, presumably from this cause.

With spread footings the maximum load on the clay was 3,500 lb. per square foot, generally a load of 3,000 lb. per foot was used. Concrete wells are proportioned for a load of 40,000 to 45,000 lb. per square foot at the top. This means for a belled well, about 14,000 lb. per square foot on the clay and about 60,000 lb per square foot if it is carried down to rock. For piles the maximum load allowed by the city ordinance is 25 tons per pile, but generally the load does not exceed 20 tons per pile, although 50-ft piles, driven to a stand, are good for 50 tons.

One great advantage of concrete wells is that they can be constructed before the old building is taken down. When Schlesinger & May built their corner store on State & Madison Sts. all the wells for the new building were put in without the crowds in the store knowing anything about it, and the crowds were unusually great, as the work was done during the Christmas shopping season. Of course, part of the basement had to be given up, but all the dirt excavated was hauled away at night.

At the present time wells are being sunk in the basement of a five story building at the corner of Monroe and LaSalle Sts., which had been occupied up to May 1st, when the building was torn down to make way for the Northern Trust Bank building. This saves from 30 to 60 days in erecting the building, a very important item.

Another form of foundations which has not been mentioned is concrete piling in places where wooden piles or spread footings cannot be used and concrete wells are too expensive. Wooden piles have to be cut off at or below datum, which is 14 to 15 feet below the surface of the ground. This is all right where there are basements, but in some cases a basement is not required. Then, if wooden piles are used, the footings will have to be excavated to datum, the piles driven and cut off at datum or lower, and a stone or concrete pier built up to the basement floor. This is very expensive.

A good example is the power house recently erected by the Union Electric Co. at Dubuque, Iowa. The site is on the bank of the Mississippi River, on sand. No basement was required. The variation of the gauge of the river at that point is about 22½ ft., and the ground at that point was about the level of high water. Spread footings were out of the question, and if wooden piles were used the piers would have to be excavated to a depth of 22½ ft. This was equally out of the question, but concrete piles solved the difficulty.

One of the most interesting and very often one of the most difficult problems in the constructional design of a tall building is the foundation for the party wall. An example is the Great Northern Theatre and hotel building running from Jackson to Quincy and adjoining the Great Northern Hotel on the east. The east wall is a party wall, with foundations 22 in. wide. The theatre is in the center of the east building, and its walls, running east and west and carrying the walls of the building above the theater, weigh 60 tons per linear foot.

The problem was to take care of this wall where it ran over the east side of the party wall and joined the wall. It was done by cutting through the party wall, and putting in girders parallel to the theatre walls and supporting them. These girders were supported on 30-ton jack screws, and as the new building settled the screws were run down to keep the girders level. In addition to the two theater walls there were four other points where the new building joined the party wall, and these were also put on screws. The theater building is about 10 years old, and the screws are still being watched. When the settlement has stopped the jacks will be imbedded in concrete.

In the case of the Journal building there was no party wall contact on either side. It was, therefore necessary to keep entirely on the lot. There are four columns in a row traversely, and these columns rest on double cantilever girders the full width of the lot, 41 ft., and these rest on piles which it was not necessary to drive closer than 6 to 7 ft. from the walls of the adjoining buildings.

One of the earlier examples of cantilever girders is the Rand-McNally building erected in 1889. This building is on spread foundations. While party walls were desirable when spread footings were used, the contrary is the case now that concrete wells are in such general use. The wells can be kept entirely on the property, and cantilever girders in the foundation will allow the columns to be put close to the lot line. In the Chicago & Northwestern office building there are cantilever girders in the foundations weighing over 26 tons apiece.

LONDON AS A CENTRE FOR ARCHITECTURAL STUDY.*

It has been suggested that a short article on this subject might prove interesting to a good many to whom architecture and the study of old buildings are of increasing interest. London, of course, being dealt with, having special regard to the general student and amateur. Those professionally interested in architecture must look at old buildings from a slightly different standpoint, and with a more critical eye for their constructive qualities.

The connection between architecture and the humanities is an entrancing and interesting subject, inasmuch as throughout the ages architecture has been the mirror of the history of each period, and is an index to the religious and historical events which serve as landmarks in the history of mankind.

Architecture, when studied from the historical standpoint, has principals and special evidences of its own that enable one to interpret the moral, artistic and religious character ofhumanity, and indeed an insight into the characteristics of a people is to be obtained by a study of the buildings erected by them. . .

The study of architecture seems, indeed, very necessary for every educated person, as it gives a general ground plan of the arts of form, and of the trend of humanity in past ages, which are essential to a proper and complete comprehension of history.

What is true of the world in general is equally so of a city, and thus by studying the architecture of London, consisting of buildings of every period since the Conquest, along with their history, the proper "atmosphere" of each period is obtained, both architecture and history helping each other, and enabling one to realize the meaning of the different forms in each period, and their relation to the times.

It may be convenient to consider five avenues or means of study which London presents to students. These are (1) the Crystal Palace Courts, (2) the museums, (3) the buildings, (4) the libraries, and (5) leetures.

1. *The Architectural Courts at the Crystal Palace*, dating from the great exhibition of 1851, are among the best means ever attempted to create object-lessons of the different styles of architecture arranged in chronological sequence, and though invaluable to the student of architecture, appear to be little known by the general public. The Egyptian, Greek, Roman, Pompeian and Saracenic Courts were designed by Owen Jones; and the Byzantine, Mediæval, the Renaissance Courts by Sir Digby Wyatt, each of the courts being executed so as to portray as far as possible the leading qualities of each style. In addition there at the Crystal Palace many excellent models of ancient buildings, such as the Egyptian Temple of Abou-Simbel, the Athenian Acropolis, the Forum of Rome, the Colosseum, and St. Peter's Rome.

2. *Museums.*—No city in the world possesses museums of such importance as London, so much so that London is the "Mecca" of art students from every country, as they are frequently able to study a subject or period of art better here than in the countries where the illustrative objects are found.

A. *The British Museum* is a treasure-house of all the early forms of art—Egyptian, Assyrian, Greek and Roman. Here we see Egyptian columns, capitals, sphinxes and mummy-cases, as well as Assyrian wall-slabs showing the life-history of the Assyrian Kings, and giving interesting details of the wars and hunting expeditions, and representations of palaces and other buildings. But it is in Greek architecture that the Museum is especially rich. The remains of buildings of the Archaic period, such as the Temple of Ægina, the Temple of Diana at Ephesus, and portions of the later temples, are surpassingly interesting, more especially as little or nothing remains of these buildings *in situ*. Then the Parthenon room, with its excellent model of the Acropolis, showing the position of its world-famous structures, and a splendid model of the Parthenon itself, deserves attentive study. Most important, however, are the Elgin Marbles, consisting chiefly of fragments of the Parthenon brought to London in 1801 by Lord Elgin, and comprising the greater portion of the Panathenaic frieze which was sculptured on the peristyle wall, the carved metopes, and a large part of the sculptured pediments. These represent the finest sculptures of the Periclean Age, and are the masterpieces of the great Phidias.

In the adjoining apartments are columns, capitals, caryatid figures and sculpture from the Erectheum at Athens, the picturesque temple of Apollo Epicurus from Bassæ, the celebrated Mausoleum from Halicarnassos, two complete Lycian tombs, the Nereid Monument at Xanthos, and many examples of the Greek stele. Numerous specimens of Roman art, such as altars, sarcophagi, mosaic pavements and the like, are also preserved here, and it is considered that this collection of Classical antiquities is the most important in the world.

B. *The Guildhall Museum* of the Corporation of London has many examples of Roman art, which have been found from time to time in the city, and amongst these are some excellent Roman pavements, and other remains of the Roman occupation.

C. *The Victoria and Albert Museum* is another institution in which the architecture and ornamental detail of past ages can very profitably be studied. It is especially rich in Gothic and Rehaissance art, but contains also many Greek and Roman examples, such as the models of the Parthenon, pediments from the Temple of Zeus at Olympia, and plaster casts of all periods. There is also a full-size model of Trajan's column, casts from well-known Roman capitals; pulpits, altar-pieces, chimney-pieces and Mediæval ironwork from all parts of Europe; and models of Renaissance buildings and their painted vaults. The Elizabethan room from Bromley Palace, complete with its moulded plaster ceiling, panelled walls, carved chimney-piece, tables, chairs and fitments, is an excellent sample of that interesting period.

The many examples of furniture of all periods, and the ceramic ware of Della Robbia and others, make this museum a delightful place for the lover of architecture and the allied arts. Indian and Saracenic architecture are well represented in the western galleries.

D. *The Royal Architectural Museum*, in Tufton Street, Westminster, originally founded by lovers of Gothic architecture—Sir Gilbert Scott, Beresford Hope and others—has lately been taken over by the Architectural Association, but the museum is still open, free to all students, and contains excellent casts of every conceivable feature in Gothic architecture.

E. *The Soane Museum*, in Lincoln's Inn Fields, is rich in Greek and Roman art, models of buildings and original architectural designs, among which the sketch-book of John Thorpe, the architect of Elizabeth's time, and other interesting exhibits, may be studied with interest.

3. The buildings of London dating from the time of the Conqueror may briefly be summarized as follows:

In the *Norman Period*, there is the Keep and S. John's Chapel of the Tower of London, the circular portion of the Temple Church, and the very fine remains of the Monastic Church of S. Bartholomew the Great, Smithfield, recently opened out and cleared of the factories and stables which had been built into it.

In the *English Period*, Westminster Abbey forms a petrified history of the English people from the time of the Confessor, although the present structure mainly dates from the reign of Henry III. The many associations and the poetic atmosphere surrounding this world-famous structure render it probably the most interesting and attractive in England, and architectural students can herein trace the evolution of Gothic architecture up to its climax in the sixteenth century. The Eastern portion of the Temple Church, Lambeth Palace Chapel, and S. Mary Overie, Southwark, and other buildings of this period.

In the *Decorated Period*, there is the Chapel in Ely Place, Holborn, the Dutch Church, Austin Friars, por-

* A paper by Mr. Banister Fletdhar, F.R.I.B.A., in University Extension for June.

tion of Westminsters Abbey cloisters, and many of the tombs and chantries of the old Abbey.

In the *Perpendicular Period*, there is the chapel of Henry VII. (probably the finest example of fan-vaulting in England), portions of the cloisters in Westminster Abbey, S. Margaret, Westminster, the porch of S. Sepulchre's Church, Holborn, the Savoy Chapel off the the Strand, Westminster Hall (with its hammer-beam roof), and Crosby Hall (a merchant's house of the fifteenth century), now used as a restaurant.

In the *Tudor Period* there is the picturesque Clock Tower, Chapel Royal, and the Old Presence Chamber of S. James's Palace, Lincoln's Inn Gate-house in Chancery Lane, and, at no great distance from London, Wolsey's Palace at Hampton Court.

In the *Renaissance Period* London is particularly rich.

Of the Elizabethan or Jacobean Periods are Gray's Inn Hall, Middle Temple Hall (with its fine hammer-beam roof and screens), Staple Inn, Holborn, the Charterhouse, Holland House, Kensington, the facade of Sir Paul Pindar's house (now in the Victoria and Albert Museum), while Hatfield House and Audley End, Essex, are with easy reach.

In the later period (latter part of seventh and eighteenth centuries) there is no city or district which approaches London in the interest and variety of her monuments.

The works of Inigo Jones are shown in the Banqueting House, Whitehall (now the Museum of the Royal United Service Institution), S. Paul's, Covent Garden, Greenwich Hospital (part), York Water Gate, the Queen's House (now the Royal Naval School) Greenwich, Lincoln's Inn Chapel, Barber-Surgeons' Hall, and Ashburnham House, Westminster.

Sir Christopher Wren is in particular associated with London, the great fire in 1666 having given him the opportunity of erecting over fifty churches in the English Renaissance style, in addition to his masterpiece, S. Paul's Cathedral, which is perhaps the most satisfactory of all Renaissance Churches. The steeples which usually form part of his church designs, give to London a peculiar picturesqueness quite its own. His secular designs also are of great interest, and the Monument (near London Bridge), Temple Bar (since removed to Hertfordshire), portions of Greenwich Hospital, Hampton Court Place (part), Chelsea Hospital, Marlborough House, the Orangery in Kensington Gardens and the quiet domestic work in the Temple and elsewhere, have given to London a traditional and reposeful character which is always pleasing.

There is no space left in this short article for later archtiecture, which is equally interesting and in London is specially rich, except to mention the following as important: Somerset House, the National Gallery. S. Martin's-in-the-Fields, by Gibbs; the mansions of the nobles—as Apsley, Devonshire, Grosvenor, Dorchester, Stafford, and the Bridgewater Houses; the halls of the City Companies, the Houses of Parliament (which rank as one of the world's finest architectural achievements), and the new Westminster Cathedral. Many important and finely designed modern buildings have been erected which indicate that the traditions of English architecture are being renewed, and the many improvements in London thoroughfares, such as the formation of Kingsway, and the new Victoria Memorial and Processional Avenue in the Mall, will tend to beautify the Capital City, and to make her more worthy to be the centre of a world-wide Empire.

4. *The Libraries* of London are specially rich in architectural works, which enable one to study not only the local architecture, but also that of every country and period. Among the most important may be mentioned the Libraries of the Royal Institute of British Archtiects (where students under certain regulations are allowed to study), the Architectural Association, the British Museum, the Guildhall Library the Art Library at the Victoria and Albert Museum, the Public Library, Manresa Road, Chelsea, and the small Lending Library of the Worshipful Company of Carpenters, London Wall. In no other city in the world are there libraries so rich in architectural literature and in rare and valuable works on the architecture of past ages.

5. *Lectures* organized by the University Extension Authorities are frequently given in various districts, and the time, indeed may have arrived when a central course, dealing with the subject in a more consecutive manner, may be given, fitting in with the the three-year course of the Humanities lately approved by the Senate. If such should be the case, London will be able pride herself in being the first of the Universities to deal rightly with architecture as a necessary part of liberal education. I am, of course referring to those persons to whom a liberal education is considered an essential, not as a means of gaining a living, but in order to enable them to enjoy to their utmost their daily existence by giving them additional interest in their surroundings.

Although it has only been possible to touch but slightly on the all-engrossing subject, lovers of London know full well how it abounds with treasures of art. And what of the setting of these—what of London itself? In the opinion of the writer, who has visited many cities of note from Chicago to Constantinople, and from Vienna to Cairo, there is no city which can approach London in its picturesqueness and variety.

Paris may be more stately, but London has the greater charm, and that is owing in a great measure to her atmospheric effects, which, as the French sculptor Rodin has pointed out, are finer and more varied than the drier climes of Italy or France, where you may count on your blue sky, it is true, but which are hard and changeless compared to London, where we see each day a sky as varible and often as beautifully colored as one could desire. A day spent by the Chelsea Embankment will enable us to discern a change of sky and atmospheric effects that are in themselves a perfect drama, and even the London fogs produce a harvest of weird, changeable and mysterious impressions!

London gives a clear insight into the English character, with its strong individuality and freedom from control. It also indicates the power and influence of English nobility, which in the past have provided a unique heritage of beauty and health by the formation of the London Squares—oases of green and quiet in the busy turmoil of city life.

The parks and open spaces, which during the last quarter of a century have multiplied so quickly, show the advancement of democratic principles, and the enlightenment of the governing bodies of London, and their conversion to the doctrine of the paramount importance to the citizen of pure air, beautiful buildings, and the healthy and artistic surrounding which have followed in their train.

THE LIEGE EXHIBITION.

Mr. G. M. Bayly, architect, of Ottawa, has returned from Liege, Belgium, where he supervised the erection of the Canadian building at the International Exhibition. "The Canadian exhibit," Mr. Bayly says, "cannot fail to bring before the people of the old lands the magnificent resources of Canada. As a result of the Canadian Government's enterprise there should be an increased immigration to Canada from Belgium, Holland, France and other Europen countries adjacent. These are largely represented at the Liege Exhibition, and as they are all densely populated States, they should furnish a good field for Canadian immigration." Commissioner Hutchison will not likely return to Canada until the close of the Exhibition.

The Society of Russian Civil Engineers is arranging for an international building trades' exhibition to be held at St. Petersburg from April 3rd to May 23, 1906. Particulars will be furnished by the Bureau des Austellungskomitees der Baukunstaustellung 10, Serpuchowskaja, St. Petersburg.

MONTREAL NOTES.

The subject of a new look-out for the mountain has been much to the front lately. To be so much debated, however, it is a subject which seems to give very little real concern. It has already been pointed out, in these notes some time ago, how schemes were brought forward, entered upon, half erected and then cleared away again with great lightness of heart. On the last occasion on which the look-out has been under consideration the sub-committee appointed to deal with the subject advertised in the daily papers for plans from "landscape architects, architects and others," and in response received two sets of designs. This of course does not fairly represent the interest which such an occasion ought to arouse. The fact of the matter was, of course, that the conditions attached to the competition were such as no architect of standing would be at all inclined to comply with, and quite at variance with the conditions recommended by the Province of Quebec Association of Architects. Now it would surely be to the advantage both of the city councillors and of the association of architects, to say nothing of the city, that in cases of this kind they should work hand in hand and not at cross purposes. There is probably in a case like this no manner of bad understanding between the two bodies concerned, the evil being simply that there exists no understanding at all; each going on his own way, blissfully unmindful of the other's existence. It would be a happy thought on the part of either one to make the other's acquaintance, and the business of the public in such matters as this would then stand a chance of being creditably done.

So much building is now going on in Sherbrooke Street that the whole aspect of this, the finest driveway of Montreal, will soon have greatly changed. Most of the new buildings about hold their own with the older ones, in point of architectural merit, but are of a very different character. The old separate private houses with grounds around them are disappearing—some of them literally falling to pieces, owing to the treacherous streak of soft blue clay which traverses this neighborhood. The new buildings are big flats and other extensive works which prefer to dispense with gardens and trees of their own. The place is thus rapibly becoming a boulevard, and will probably be a very magnificent one.

One of the new Sherbrooke Street buildings, Strathcona Hall, at the corner of McGill College Avenue and almost opposite the principal gate of the College grounds, was formally opened on Saturday, 7th October. The building is the quarters of the McGill College branch of the Young Men's Christian Association, and contains rooms for about 60 students, besides dining and recreation rooms. Externally the facade towards Sherbrooke Street has been carefully designed and detailed, the work being executed in cream coloured sandstone. One is left wondering however why the elevation towards McGill College Avenue should have been executed in brick. It is true the brick seems to be of some unusual and specially selected sort, but, as architecture, a two faced treatment of this kind is impossible and regrettable.

The Mount Royal Club House, also in Sherbrooke Street, is now roofed in. The building, which is designed by Messrs. McKim, Mead & White, is of simple design, severe even to Spartan severity, but needless to say detracts nothing from the dignity of the neighbourhood.

Farther eastward the Students' Union building is now rapidly approaching the roof line. This building is also severely designed, and, like the Mount Royal Club House, it is built entirely of Montreal limestone.

Eastward still and also in Sherbrooke Street a new Commercial and Technical School is about to be erected by the Protestant Board of School Commissioners. The design, prints of which have been published in the daily papers, promise a fine building. The architect is Mr. A. F. Dunlop.

Messrs. Maxwell Bros. have now got well under weigh with the erection of their design for a nurses' home at the Royal Victoria Hospital, which they valiantly hope to have ready for the roof before the arrival of severe weather.

CONCORDIA SALUS.

THE SKETCH CLUB, P.Q.A.A.

The Sketch Club of the Province of Quebec Association of Architects held the first of their Winter Series of meetings in the Rooms of the Association, 5 Beaver Hall Square, on Friday, 13th October, the President, Mr. C. S. Burgess, A.R.I.B.A., in the chair. Between twenty and thirty members were present.

This being the first winter session of the Club, the president devoted the principal part of his opening address to a statement of the proposed method of carrying on the season's work. This is arranged for as follows:

Two sub-committees have been appointed, one to take charge of all competitive design and prize work, and the other to arrange monthly programmes of lectures and addresses.

The competition committee consists of Mr. J. Archibald, President of the P.Q.A.A., Mr. W. S. Maxwell and Prof. P. E. Nobbs. These gentlemen have drawn up a code regulating the competitive work to be engaged in by the club, and have instituted three classes of competition. The first of these is a competition in measured drawings of old work in the Province of Quebec and the Lower Provinces. This was announced some months ago, and drawings are to be sent in before the end of October. The prize, of $40, is this year offered by Prof. Nobbs. The second class of competitions is that of Monthly designs—the work to be done at home—a prize being given for each month's design, and another in addition presented by the P.Q.A.A. for the student who shall distinguish himself most in the series. A third class of competition is the Sketch Competition. In this it is intended that the subject shall be set and the work of designing be done entirely at the club rooms within the space of an evening. The reward in this case will be that the victor shall have his name engraved on a pewter pot to be kept at the club rooms for the purpose.

For the lectures and addresses it is proposed to have speakers from within the profession and from without so that members may get a pretty all round view of themselves. Special points are to be made of literary reviews by members, as introduction to discussions, and also of debates on subjects open to difference of opinion. The committee appointed to superintend this part of the work consists of Mr. Jos. Venne, Mr. Fortin and Mr. Burgess.

At the introductory meeting, after the programme had been explained, a general discussion as to management of details took place. It was arranged by vote to hold the meetings, which are to be weekly, upon Wednesdays. Mr. W. S. Maxwell made a number of suggestions as to the method of work on the Sketch Competitions, the first of which was arranged for Wednesday, 18th October. After the adjournment of the meeting, refreshments were served in the Library of the Association.

BACHELOR OF ARCHITECTURE COURSE AT McGILL UNIVERSITY.

It has been announced that there are this year fifteen students attending the Architectural Classes at McGill University. As this is a substantial increase on previous years it seems to indicate a growing inclination towards the scholarly method of studying architecture, and Professor Nobbs may at the same time be fairly congratulated on the fruit of his enthusiasm and energy.

ARCHITECTURAL CLASSES.

The architectural classes which have been conducted under the joint auspices of the Ontario Association of Architects and the Toronto Architectural Eighteen Club for the past three years were resumed for the coming season on Monday, October 16th.

The mathematical classes will be conducted as formerly by Mr. A. H. Harkness, B. A., and the arrangements in regard to the studio classes will be announced later. The fees, covering tuition in both courses, are five dollars, payable to the treasurer of the joint committee, Mr. A. H. Gregg, 59 Yonge street.

As regards the mathematical classes, it may be said that the course includes Euclid, Algebra, Trigonometry, Statics, Strength of Materials and Structural Iron Work.

The classes are held in the rooms of the Ontario Association of Architects, No. 96 King street west, Toronto, on every Monday evening beginning at 8 o'clock.

OUR SINFUL EXTRAVAGANCE.*

This North America of ours is vast indeed, our natural resources are great and we have grown to look upon them as inexhaustible. With ruthless abandon we have devastated our forests; we have worked our lands beyond endurance, our mines, our fields are handled without regard for the morrow. Within but a few years our enconomists have called our attention to this useless waste, and already we find ourselves confronted by a scarcity of certain commodities hitherto thought unlimited. People are just beginning to awaken to the true condition of things.

But of all the useless wastes that we have indulged in, in the United States and in Canada, that of fire, our annual bon-fire, is the most insane, in fact criminal, for by it is property not only devasted, but lives by thousands are sacrificed yearly. Think of it, in 1904 7,000 people were burned, an average of 19 fatalities through fire every day in the year, a record that nearly equals that of all the railroad accidents of the two countries, generally considered by far the most fruitful source of fatal accidents. And the record of 1904 was not an extraordinary one. The increase in deaths by fire has been growing steadily. Our present ratio is about nine lives lost by fire every year for every one hundred thousand of population. In 1900 the ratio was eight, and in 1890 it was five. Unless something drastic be done, what will be the ratio in 1950?

If the loss of life is appalling, the loss of property is disgusting. One hates to think that he is part and parcel of such a race of stupids. Not even China and Japan, with their paper and bamboo houses, submit to such a tax as we do. Our fire-losses are equal to $25 per year per family, and that tax shows but the loss of property actually consumed. We have burned up one thousand millions of dollars' worth in six years! Most losses, so called, are really but exchanges, one product turned into some other form, a loss, perhaps to many, but a gain to some one. Not so with fire. That loss is final, absolute, and the visual one is actual. The only gain to any one is an indirect one to the insurance companies, who profit just so much more by the added anxiety after a fire that new people have to be insured. But the insurance business is not run upon strictly philanthropic lines· The result of the transformation caused by fire is—smoke. $230,000,000 worth of smoke last year! And like last year's death record, the property-loss does not show as a spasmodic increase or something very extraordinary and unlikely to happen again. Even including the Baltimore fire it was but little over the regular increase, a record that has been climbing ever upward, a record that hovered about the sixty million figure in the 70's, the hundred million in the 80's, and that has not been under the one hundred and sixty million limit since 1900.

And mark you, that is the destruction of property. Along with that we throw away $150,000,000 or so more in the maintenance and perfecting of water plants and fire departments, salves to assuage the pain of the sore, not a cure for the malady. Then on top of that we go to work and gamble with the fire insurance companies and pay out countless millions more so that they may reimburse us individually should we suffer a loss through fire ! For every dollar that the individual loser receives as indemnity, the community has paid out three dollars as insurance premiums ! That is the average. I have in mind one city that has paid out in a given time $692,000,000 in premiums, and has received back $107,000,000 for its losses by fire during the same period. An unintelligent speculation, to be sure, but then, what gambling is intelligent.

But leaving aside the accessories, so to speak, and restricting ourselves to the actual destruction of property, the $230,000,000 of last year means a daily aveage loss of $630,000. Now, large as that is, we were satisfied some time ago that it did not tell all the story. We draw those facts from fire department records, insurance reports, etc., more or less fallible sources of information that are far from being all comprehending. We were sure that there were hundreds of fires unreported, in interior districts, destroying uninsured property, and where there were no fire departments. So, early in February of this year the Society of Building Commissioners and Inspectors prepared a most elaborate system, albeit expensive, to get all the facts concerning fire for at least a short period. The system was in working order by February 19, and was, I am sure, perfect on the 23rd. During the ten days of the test, from the 19th to the 28th, there were 1,315 fires, totalling a loss of $14,809,800, or one and a half millions a day. True, it so happened that there were some pretty severe fires during that period, but who tells us that there will not be as severe, or more severe ones, later on during the year, just as there were previous to that time ?

Granted that the record of a million and a half a day will not obtain the year around, and assuming, indeed, that we will not actually average more than half that amount, still that figure is exceedingly near the mark reached by the new buildings we are daily erecting, and that give such a semblance of progress. At a most liberal estimate we build but a million's worth a day,

* A paper by Alcide Chausse, Architect, Building Inspector of Montreal and Vice-President of the International Society of Building Inspectors, read before the convention of the American Society of Municipal Improvements, at Montreal, September, 1905.

hence are we destroying perilously near as much as we are creating. Talk of race suicide!

New York averages 8,700 fires a year, Chicago 4,100. We burn up three theatres, three public halls, twelve churches, ten schools, two hospitals, two asylums, two colleges, six apartment-houses, three department-stores, two jails, twenty-six hotels, one hundred and forty flat-houses, and nearly sixteen hundred homes every week of the year. We may say that every person who lives or has business in buildings is more or less exposed to danger by fire, owing to our recklessness, our criminal carelessness and ignorance; but setting aside such broad terms, we have estimates that there are 36,000 lives daily in danger; that is, there are that number of persons directly exposed to fire, persons who escape from burning buildings, lives that are in imminent peril. No war, however bloody, shows any such averages of lives daily exposed to destruction.

And what is being done to prevent this terrible loss? Little, almost hopelessly little, in the way of prevention, though much in the way of palliative. We throw water upon our fires (and are constantly endeavoring to throw it more scientifically) and expect the next fire to burn less fiercely because thereof. In San Francisco, for instance, there is little being done, comparatively, to improve the standard of construction. It is notoriously a wooden city, yet insurance-rates are fairly low because, forsooth, the *fire-department is excellent.* That is like extolling the advantages of a certain locality as a health resort; it may be miasmatic, yellow fever may stalk amuck, its houses and streets may be foul, but, Glory Be! its doctors are *so* skillful! As far as cure goes, note how little we have done. In all this broad land there are but three thousand buildings that truthfully can be called "fireproof," and that very largely only in their structural parts, that is, fireproof buildings like those in Baltimore whose steel frames and terra-cotta floors withstood the attack where all else about them, the stone, the marble, the wood went the way of all things combustible or destructible.

What is the cure? But two things will tend toward the accomplishment of the desired end, and neither water-supply nor fire-department is one of them. The first thing to do is so to surround our old and dangerous buildings with safe-guards, to correct their worst faults where practicable, and to compel their demolition as soon as possible. The second is to absolutely bar the erection of combustible structures in the future. Some would say that that would be a hardship upon the individual, for we have grown so accustomed to using wood that it seems to be the fixed mode of construction, sanctioned by time and custom, a sacred inheritance any tampering with which must needs savor of sacrilege. Therein lies the folly.

There was a time when wood construction was truly economical, indeed the only thing available. To-day, wood is almost a luxury. Lumber has gone up in price—over 150 per cent. in the last few years—while fireproof materials, brick, steel, fireproofing tile, cement, et cetera, have been cheapened in cost of manufacture. There is absolutely no economy in building even the simplest cottage of wood. Granted that the first cost in fireproof material is ten per cent. more than the wood. But consider the wear and tear, the maintenance, the insurance, and all such incidentals, and your frame cottage will have cost you in twenty years' time thirty per cent. more than a well-built, non-inflammable structure would have cost.

The deterioration in the value of a well-built, fireproof building, fire-resisting in its finish and decoration, is but one ninth of one per cent. a year, while that of the ordinary joists and stud-partition is nearly four per cent. a year. Besides, such improved construction has a host of other advantages; it is sound-proof, vermin-proof, warmer in winter and cooler in summer, and in every respect vastly superior to the old way of building.

Some weak-hearted ones would have us believe that to bring about those two conditions would involve superhuman effort, well-nigh an impossibility. But our cities have accomplished other reforms quite as revolutionary, and so thought at the time, as this would seem to be. The people sometimes chafe at what they term the restraint of individual liberty, involved in the enforcement of drastic curative laws. But not for long. North American intelligence is such as to readily recognize the value of individual sacrifice involved in a great public benefit. We may not hope, however, to bring the desired conditions about by mild persuasion, by preaching. It will take vigorous action, and the only action that will accomplish anything is the adoption of most stringent building-regulations, and their strict enforcement by competent, executive officers.

Building, in general terms, requires the clearest definition and restriction, while every class of building calls for thoughtful and comprehensive special legislation. If we think that theatre-builders ought to enjoy certain latitude, we have but to scan the record of the Iroquois theatre; if it be suggested that dock-sheds are hardly worthy of special legislation, think of what happened at New Orleans; if wholesale warehouses be deemed unimportant, note what happened in Toronto. And so it is with every class of building. Nothing can be deemed unimportant, for that very building, or class of buildings, may prove the ruin of half your city. Strict building-regulations, I say, are all important and supremely necessary. Two hundred and sixty four of our American and Canadian cities have realized this, for there either have been, or are being, adopted perfect building-regulations by as many cities. One hundred and sixteen cities or considerable towns heretofore unprovided with a special building officer or department have the creation of such office under consideration. There are happy indices of betterment wherever we may look, thank heaven! but it is just such societies as this, made up of thinking, public spirited men, zealous in the upbuilding of their several municipalities that can do a world of good in facilitating this work and bringing about its consummation even in our own times.

Of all cities that have given most thought and earnest work to this matter, Cleveland easily takes the lead. Her building ordinance may be said to be the combined work of nearly all the building experts in the country. A vast sum was spent upon its preparation. Every item was discussed by experts and its effects upon the legal side of the question as well as the technical were carefully weighed by specialists, and the society of which I am an officer, the International Society of Building Commissioners and Inspectors, has virtually advocated that ordinance *in toto* as its model and standard, and is urging every city in both countries to adopt it also with as little change as possible. Some may think it verbose. It has to be since it is complete, and leaves nothing to the misinterpretation or misjudgment of a perhaps too-lax officer. Every point is covered.

I submit, and you will readily appreciate, that it would be a tremendous advantage to have a uniform code throughout both countries. As it is now, one city will permit of a certain thickness of brick walls to carry a certain height of storey; a city fifteen miles distant therefrom insists upon an entirely different standard. So it is with allowable strains in framing, et cetera. The building business of all the cities is so closely related that this everlasting difference is not only confusing but leads to endless discussion and trouble. A hundred other considerations should compel us to advocate not only good building-regulations, but uniform ones, and I sincerely trust that each one of you gentlemen will not only advocate in his own city the necessity of wise and strict requirements, but that he will go a step farther and strongly urge the council, or whatever power is in charge of that branch of municipal service, to adopt the code that is most worthy of being made standard, and that has already been engrossed upon the statute-book of so many of the cities of the United States and Canada.

—THE—

CANADIAN ARCHITECT AND BUILDER

Monthly Journal of Modern Constructive Methods,

(With a Weekly Intermediate Edition—The CANADIAN CONTRACT RECORD).

PUBLISHED ON THE THIRD WEDNESDAY IN EACH MONTH IN THE INTEREST OF

ARCHITECTS, CIVIL AND SANITARY ENGINEERS, PLUMBER DECORATORS, BUILDERS, CONTRACTORS, MANUFACTURERS OF AND DEALERS IN BUILDING MATERIALS AND APPLIANCES.

The C. H. MORTIMER PUBLISHING CO. of Toronto, Limited

Publishers,

Confederation Life Building, - TORONTO, CANADA.

Telephone Main, 2362.

Branch Offices:

38 ALLIANCE BUILDING, MONTREAL.

Bell Telephone 2299.

720-721 UNION BANK BUILDING, WINNIPEG.

536 HASTINGS STREET, SUITE 3, VANCOUVER, B. C.

22 GREAT ST. HELENS, LONDON, E.C.

SUBSCRIPTIONS.

THE CANADIAN ARCHITECT AND BUILDER will be mailed to any address in Canada or the United States on the following terms: Architects' Edition, $3.00 per year; Regular Edition, $2.00 per year. The price to foreign subscribers is: Architects' Edition, 16 shillings; Regular Edition, 12 shillings. Subscriptions are payable in advance. The Journal will be discontinued at expiration of term paid for, if so stipulated by the subscriber; but where no such understanding exists, will be continued until instructions to discontinue are received and all arrears of subscription paid.

ADVERTISEMENTS.

Prices for advertisements will be sent promptly on application. Orders for advertisements should reach the office of publication not later than the 12th, and change of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of value to the persons in whose interest this journal is published are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

Subscribers who may change their address should give prompt notice of same. In doing so, give both old and new address. Notify the publishers of any irregularity in delivery.

ONTARIO ASSOCIATION OF ARCHITECTS.

OFFICERS FOR 1905.

PRESIDENT	EDMUND BURKE,	Toronto
1ST VICE-PRESIDENT	S. G. CURRY,	,,
2ND VICE-PRESIDENT	W. A. LANGTON,	,,
TREASURER	HENRY SIMPSON,	,,
REGISTRAR	W. R. GREGG, 96 King St.,	Toronto

COUNCIL:

J. W. SIDDALL	Toronto
JOHN GEMMELL	,,
J. WILSON GRAY	,,
JOHN E. BELCHER	Peterborough

PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.

OFFICERS FOR 1905.

PRESIDENT	J. S. ARCHIBALD, Quebec.
1ST VICE-PRESIDENT	ALCIDE CHAUSSE, Montreal
2ND VICE-PRESIDENT	R. P. LEMAY, Montreal
SECRETARY	J. E. VANIER.
TREASURER	D. R. BROWN.

P.Q.A.A. COUNCIL.

JOS. VENNE	Montreal.
H. W. DAVIES	Montreal.
L. A. AMOS	Montreal.
J. Z. RESTHER	Montreal.
J. R. GARDINER	Montreal.

AUDITORS—L. LEMIEUX AND P. E. NOBBS.

TORONTO BUILDERS' EXCHANGE.

BOARD OF DIRECTORS:

JOHN HOIDGE, President.
GEORGE DUTHIE, 1st Vice-President.
JOHN MALONEY, 2nd Vice-President.
JAS. CRANG, Treasurer.
T. MARTIN.
CANNON, Jr.
R. G. KIRBY.
A. MARSHALL.
GEO. GANDER.

Exhibition Board—RICHARD G. KIRBY.
Auditors—G. CLAY AND F. HOLMES.

LONDON BUILDERS' EXCHANGE

BOARD OF DIRECTORS:

HENRY STRATFOLD, President.
GEORGE C. YOUNG, 1st Vice-President.
JAS. S. LUNEY, 2nd Vice-President.
GEO. S. GOULD, Secretary-Treasurer.
473 English St.
J. JONES.
ED. MARTYN
JNO. WHITTAKER.
L. H. MARTYN.
A. NOBBS.

VANCOUVER BUILDERS' EXCHANGE.

BOARD OF DIRECTORS

E. COOK, President.
E. A. CARTER, Secretary.
H.A. BELL, Treasurer.
T. BRADERY.
C. P. SHINDLER
K. M FRASER
E. G. BAYNE
D. SAULT

WINNIPEG BUILDERS' EXCHANGE.

BOARD OF DIRECTORS

G. W. MURRAY, President. A. E. PORTER, Secretary.
A.T. DAVIDSON, 1st Vice-President. T.D. ROBINSON, Treasurer.
G BURGEAULT, 2nd Vice-President. ALEXANDER IRWIN, Sergeant-at-Arms.
Directors: T. G. Latimer, E. Cass, F. Powell, M. B. Martinson, D. Cameron, V. L. Bouche, Wm. Alsip, C. H. Simpson, Jas. A. Payne, T. W. Morley, Thos. Cotter, T. A. Giroin.

MONTREAL BUILDERS' EXCHANGE.

BOARD OF DIRECTORS

N. T. GAGNON, President.
EDWARD M. ROBERTS, Vice-President.
PHILLIP LAHEE, Hon. Treasurer.
J. HERBERT LAUER, Secretary.
JAS. SIMPSON AND J. H. HUTCHISON.
JOHN DUTHIE
JOS. O. DESLAURIERS
JOHN GRAY,
GEO. H. HOOD.
Past Presidents

CHAMBRE SYNDICATE DE LA CONSTRUCTION.

(French Bui ders' Exchange.)
8 St. James Street, Montrea'.

BOARD OF DIRECTOIS.

J. B. GRATTON, President.
G. MENARD, 1st Vice-President.
T. CHARPENTIER, JR., 2nd Vice-President.
ALCIDE CHAUS E Treasurer.
N. T. GAGNON, Secretary.
FELIX SAURAGEAU.
L. Z. MATHIEU.
H. CONTANT.
ELZ. COTE.
LOUIS PAYETTE.

VICTORIA BUILDERS' EXCHANGE, VICTORIA, B. C.

BOARD OF DIRECTORS:

W. D. MCKILLICAN	Chairman
E. W. WHITTINGTON	Secretary
THOS. CATTERALL	Treasurer

PERSONAL.

MARRIED. CURRY—GLASS—At St. Andrew's Church, Toronto, on Wednesday, Oct. 18th, by the Rev. Dr. Parsons, Ellen Stewart Glass to Samuel George Curry, Architect.

The Gutta Percha & Rubber Mfg. Co., of Toronto, have recently issued an attractive and very complete illustrated Catalogue descriptive of their rubber tiling for floor covering.

The Canadian White Co., of Montreal, have been awarded the contract for the new head office building of the Federal Life Assurance Co., Hamilton, Ont., Messrs. Finley & Spence, Montreal, architects. This building will be an eight storey modern steel construction, fire-proof structure. The company take the entire contract and turn the building over for occupancy not later than August 1, 1906.

MAIN ENTRANCE TO THE C.P.R. STATION, WINNIPEG.
MR. E. MAXWELL, ARCHITECT, MONTREAL.

SUPPLEMENT TO
CANADIAN ARCHITECT AND BUILDER
OCTOBER, 1905

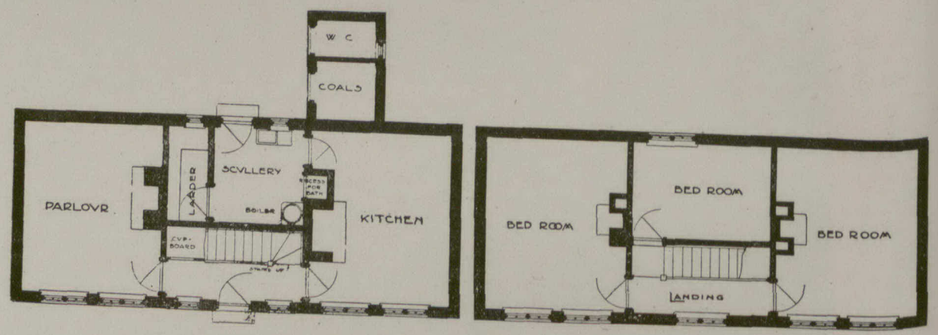
PUBLIC LIBRARY, SARNIA.

MR. M. R. BURROWES, ARCHITECT, SARNIA.

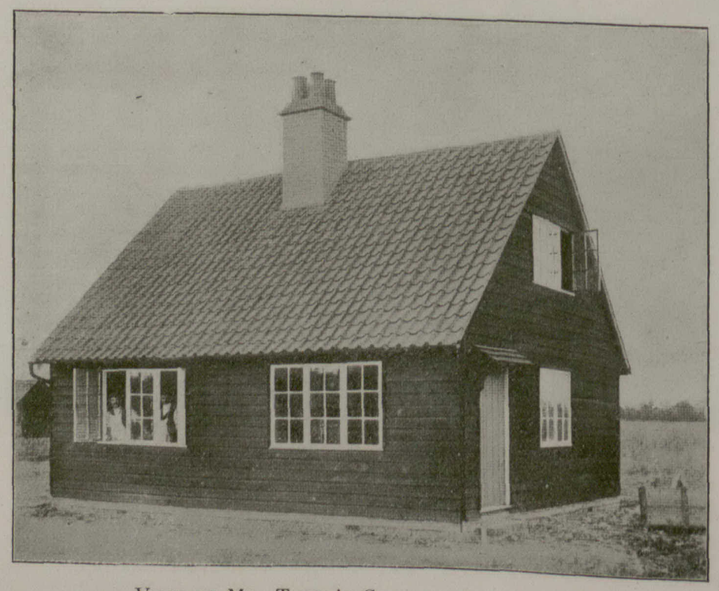
SUPPLEMENT TO
CANADIAN ARCHITECT AND BUILDER
OCTOBER, 1905

No. 500 Wilbrod Street, Ottawa. The Drawing Room.
Mr. J. W. H. Watts, R.C.A., Architect.

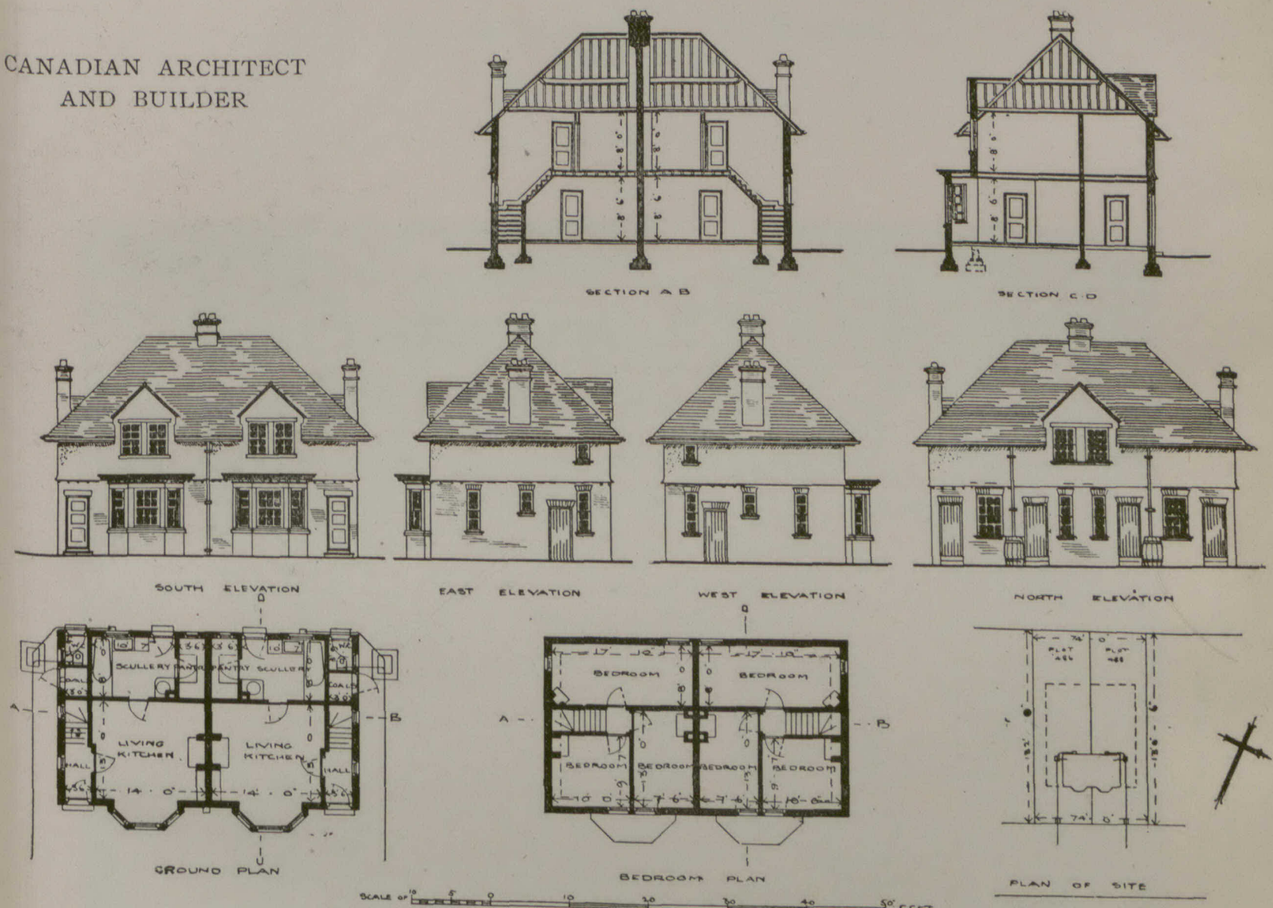
SUPPLEMENT TO
CANADIAN ARCHITECT AND BUILDER
OCTOBER, 1905



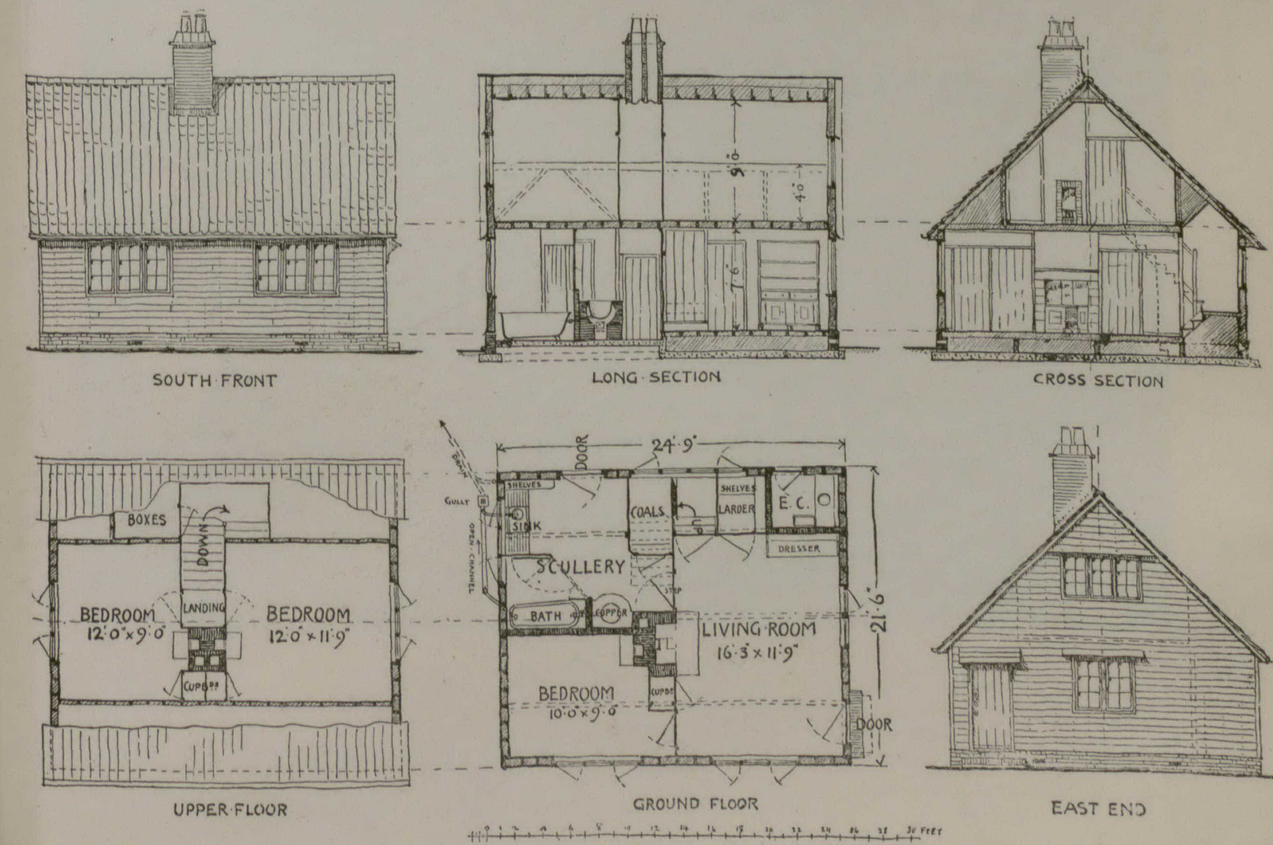
—Cottage built of Concrete Blocks by the Concrete Machinery Company, Limited, 18, Water Street, Liverpool. Architect, Mr. Gilbert Fraser, A.R.I.B.A., 67, Lord Street, Liverpool.



View of Mr. Troup's Cottage, as executed.



—Pair of Cottages by Mr. H. Cayley, A.R.I.B.A., Bank Chambers, Rothwell, Kettering.



—Cottage by Mr. F. W. Troup, Architect, 14, Gray's Inn Square, W.C.

No. 500 Wilbrod Street, Ottawa. The Library.
Mr. J. W. H. Watts, R.C.A., Architect.

SUPPLEMENT TO
CANADIAN ARCHITECT AND BUILDER
OCTOBER, 1905

VANCOUVER TRIUMPHANS.

ACADIA.

WALL DECORATION IN THE VANCOUVER BRANCH OF THE ROYAL BANK.

BY MR. JAMES BLOMFIELD, VANCOUVER.

SUPPLEMENT TO
CANADIAN ARCHITECT AND BUILDER
OCTOBER, 1905

THE CANADIAN BANK OF COMMERCE, EDMONTON.
MESSRS. DARLING & PEARSON, ARCHITECTS, TORONTO.

SUPPLEMENT TO
CANADIAN ARCHITECT AND BUILDER
OCTOBER, 1905

PAGES

MISSING