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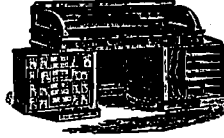
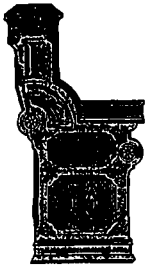
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PATENTED 1866 IN CANADA AND THE UNITED STATES. THE BEST HOT WATER RADIATOR IN THE MARKET.

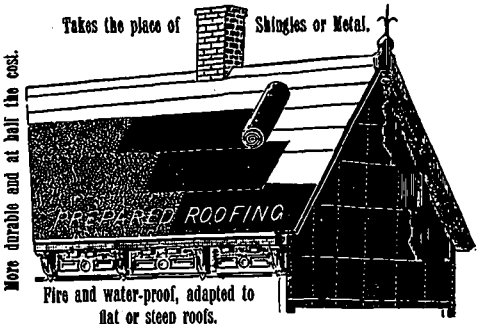
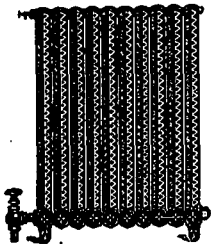
Quick Circulation; Easily Repaired; Its Capacity increased at very Little Extra Cost; does not need a Fancy Cast Iron Top or Marble Slab; in fact, Just the Radiator that Suits the Requirements of the Market.

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**ASBESTOS ROOF SHEATHING**

FIRE, WATER and FROST-PROOF.

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2 Ply Roof Sheathing, per 100 sq. ft. ....	\$2 25	ROOFING CEMENT-PAINT "Opaline" and "Hyaline," to cover sheathing.
3 " " " " " " " " " " " " " "	3 00	1 1/2 gallons to 100 square feet, in barrel lots.
Tin Caps, 1 lb. to 100 sq. feet. ....	10	"Opaline," to be applied hot, per gallon. ....
		"Hyaline," to be applied cold. ....
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All kinds of roofs covered by our Fire and Water-Proof Cement-Paint at \$1.25 and \$1.35 per square, according to kind preferred.

FOR SHINGLES OR METAL OUR ROOFING CEMENT-PAINT IS UNEQUALLED. PRESERVES BOTH WOOD AND IRON, STOPS LEAKS AND DECAY, AND MAKES OLD ROOFS AS GOOD AS NEW.

**A SUPERIOR ARTICLE AT A LOW PRICE IS SURE TO BECOME POPULAR.**

**A SINGLE TRIAL OF OUR ASBESTOS ROOF SHEATHING WILL GUARANTEE ITS FUTURE USE.**

**HOW IT IS MADE.**

Its fire and water-proof component parts are combined as follows:—

**3-PLY**—1st. A strong foundation of saturated Asbestos Wool. 2nd. A water-proof layer of Vegetable Gum. 3rd. A sheet each of best saturated roofing felt and Asbestos wool. 4th. Another layer of Vegetable Gum. 5th. Compressed Felt and Wool. All these are subjected to hydraulic pressure and formed into a solid impermeable sheet, and when put on coated with fire and water-proof Cement-Paint.

**2-PLY**—Has one layer less of Felt and Wool and Vegetable Gum. The merits of this Roofing are that it is inexpensive, durable, adapted to steep or flat roofs, portable, convenient, fire-proof, will not mildew, can be used over old shingles or tin, not affected by gases or condensation, easy to preserve by renewal of coating, a splendid sheathing, water, frost, air and vermin proof. Can be applied by unskilled labor.

**MANUFACTURE UNDER NEWTON'S PATENT, NEW YORK CITY.**

Office of New York Board of Fire Underwriters, 115 Broadway, New York, April 15, 1884.

DEAR SIR,—The insurance rate on buildings covered with NEWTON'S Prepared Roofing, painted with one coat of Victoria Cement-Paint, so-called, is the same as the regular rate on metal roofs.

Yours truly, JAMES HARRISON, Supt. for New York Board of Underwriters. 16 St. Henri Street, Montreal, April 7, 1888.

VICTORIA ROOFING CO. DEAR SIR.—We stripped off the old shingles of our warehouse last fall and put on your Patent Asbestos Sheathing and coated it with your Water-Proof Cement-Paint. It made a fine job, light and handsome. No icicles stuck to the eaves. Yours truly,

HAMMOND & CRANDALL.

Price, put on by us in Toronto, finished and coated with Victoria Fire and Water-Proof Roofing Cement-Paint, \$4.50 per hundred square feet.

**VICTORIA ROOFING CO.**

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66 Adelaide Street East, TORONTO.

**DIRECTIONS FOR APPLYING.**

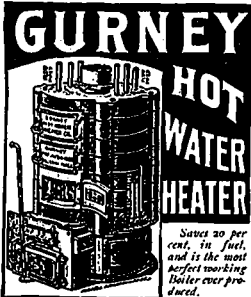
Sweep the boards of the roof clean of all nails, chips, etc., then commence at the eaves or gutter to lay the roofing; nail the lower ends, using ordinary lath nails with thin heads, shielded by tin caps. These let the second sheet lap over the first sheet two inches, being sure to pass all laps with the Cement-Paint, then nail as before and so repeat. Use great care in fitting around chimneys, gutters, etc.

Upon flat roofs nails should not be more than one and one-half inches apart from centre of caps, and two inches on steep roofs. The roofing should receive a coat of Cement-Paint the DAY IT IS Laid, unless it goes wet; if caught in a shower wait until the Sheathing dries before coating and sanding. The Roofing Cement-Paint should be applied in strips from ridge to eaves, beginning at end of building and working across to the other end. Use all the Cement-Paint the Sheathing will absorb without running, applying the sand as you go. Use no Gravel in any case.

**SEE WHAT THE INSURANCE COMPANIES THERE THINK OF IT:**

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- Huntingdon Car and Car Wheel Works, Huntingdon, Pa.
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HOT WATER HEATING FOR GREEN HOUSE, PUBLIC BUILDING and PRIVATE RESIDENCE.

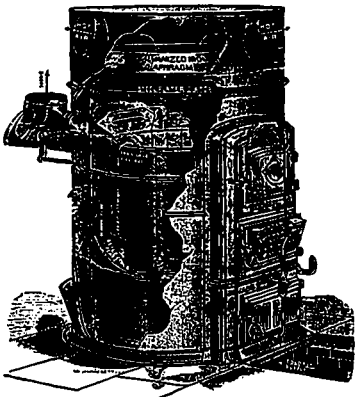
We have placed over 2000 of our Boilers during the past three years, and have heard nothing but praise and satisfaction.

NOISELESS IN OPERATION. NO DANGER OF EXPLOSION. EVEN TEMPERATURE OF HEAT.

A RECENT TESTIMONIAL: We have placed over 2000 of our Boilers during the past three years, and have heard nothing but praise and satisfaction.

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TORONTO - HAMILTON - MONTREAL - WINNIPEG. GURNEY HOT WATER HEATER CO., Boston.



J. M. WILLIAMS & CO., Hamilton, Ont. MANUFACTURERS OF THE ANTHONY STEEL PLATE FURNACES

They are entirely free from gases and dust. Easily managed, Economical and durable.

THOROLD HYDRAULIC CEMENT MILLS JOHN BATTLE, Proprietor, THOROLD, ONTARIO.

Dear Sir, I daily receive your letter of the 14th ultimo, requesting my opinion relative to the Cement manufactured in your establishment in Thorold, in reference to which the following is respectfully submitted:

JOHN BATTLE, Esq., Thorold, Ont. Chief Engineer of Canada, Canada. QUEBEC, MONTREAL, OTTAWA & OCCIDENTAL RAILWAY.

BUILDING MATERIALS.

Table listing lumber prices: 1/2 and thicker clear picks, Am. 1st, 1/2 and thicker, three uppers, Am. 1st, etc.

Table listing various building materials: Common Walling, Good Facing, Sewer, Limestone Rubble, etc.

Table listing iron and steel products: Iron, Refined, 8 to 10 lb. or ordinary size, Cast-iron, etc.

Table listing various building materials and hardware: Brick, Paints, Cement, Lime, Hair, Plaster, etc.



PUBLISHED MONTHLY IN THE INTERESTS OF  
Architects, Civil and Sanitary Engineers, Plumbers, Decorators, Builders, Contractors, and Manufacturers of and Dealers in Building Materials and Appliances.

VOL. I.—NO. VI.

TORONTO, CANADA, JUNE, 1888.

(PRICE 10 CENTS  
\$1.00 PER YEAR.)

## Canadian Architect and Builder

A JOURNAL OF MODERN CONSTRUCTION METHODS,

PUBLISHED MONTHLY IN THE INTERESTS OF

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

C. H. MORTIMER, Publisher,

31 King Street West, - TORONTO, CANADA.

### SUBSCRIPTIONS.

The CANADIAN ARCHITECT AND BUILDER will be mailed to any address in Canada or the United States for \$2.00 per year. The price to subscribers in foreign countries, is \$2.50. Subscriptions are payable in advance. The paper will be discontinued at expiration of term paid for, if so stipulated by the subscriber; but where no such understanding exist, it will be continued until instructions to discontinue are received and all arrearages paid.

In ordering change of address give the old as well as the new address. Failure to receive the paper promptly should be reported to this office.

### ADVERTISEMENTS.

Prices for advertising set promptly on application. Orders for advertising should reach the office of publication not later than the 15th day of the month, and changes of advertisements not later than the 5th day of the month.

### EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited, and if found to be of sufficient merit, will be paid for. Subscribers are also requested to forward newspaper clippings or written notices of interest from their respective localities.

WE wish to correct an error which appeared in connection with the report of the committee appointed to judge the designs sent in to the CANADIAN ARCHITECT AND BUILDER competition. The name of the gentleman who won both first prizes is "Horwood," not "Howard," as printed last month.

THE demands of advertisers upon our space are becoming so great that we shall be obliged to increase the number of our pages, in order to do justice to our subscribers, who are entitled to a full supply of information through the various departments of the paper. It is our purpose to increase the size of the paper as occasion demands, rather than encroach upon the space hitherto devoted to reading matter.

A SUBSCRIBER to this journal who is a manufacturer of materials used in new buildings, and is naturally interested in knowing where and by whom proposed buildings are to be erected, complains that the list of permits granted for new buildings in Toronto and published in the CANADIAN ARCHITECT AND BUILDER, is robbed of much of its value by the fact that many of the buildings are well under construction before the permit is obtained. Other serious objections to the system of issuing permits after instead of before construction begins, were pointed out in these columns last month. It is time that the present practice should be reformed.

IF there was a law compelling people to build at an agreed upon distance from the street line, it would give a much improved appearance to the streets of our cities. The petition of say two-thirds of the property owners on any street should be sufficient to cause the Council to define the distance from the street line at which houses must be built. There are many streets in our Canadian cities which are ruined in appearance by some of the houses being built close to the sidewalk line. At present if a man builds some distance back from the street he takes the chance of having his neighbor erect a building further forward than his own, and of finding himself thus entirely shut off from the street ex-

cept the small portion directly in front of his house. With such a regulation as we suggest, a line of trees could be planted inside the fence as well as on the street, and the increased shade thus afforded would be of much value. House owners would also be enabled to use the lawns in front of their dwellings without the uncomfortable feeling that they were under the scrutiny of their neighbors and of the public.

OUR Pacific coast contemporary, the *California Architect*, is waging war against the lumber rings through whose operations it says the price of lumber is much higher than it would be if the demand governed the price. Our contemporary shows that building operations in San Francisco will fall far short of former years owing to the impossibility of getting lumber at a fair value. The *Architect* would very much like to see the import duty removed, which would allow supplies of British Columbia lumber to be brought into California and sold in competition with stocks held by the lumber "trusts."

IT is satisfactory to know that the railway companies have at last signified their purpose of placing guards at the crossings of the principal streets leading to the boat landings on the Toronto Esplanade. It may reasonably be assumed that had this action been taken five years ago, many lives lost during this period would have been preserved. It would seem that anything like a comprehensive scheme for the improvement of the Esplanade is still far distant, although it is a matter that demands immediate attention, and the neglect of which must lead to increased difficulties in the way of the ultimate accomplishment of the desired object.

IT is satisfactory to learn that an understanding has been arrived at between the Master Plasterers and their employes in this city, by which it is hoped the question of wages may be considered settled until April of next year. It now seems reasonably certain that the present building season in Toronto will be allowed to pass without a strike, and it is well in the general interest that such is the case. The amount of building in progress, owing principally no doubt to the scarcity of money, and the difficulty of obtaining loans, is far short of anticipations. We are informed that many workmen are walking about the city unable to get employment. Speculative building has been very much reduced in extent, and the few large structures in course of erection have only as yet reached the stage where employment can be given to stone cutters, masons and laborers. Under such conditions, workmen will consult their own interests as well as the general good by being reasonable in their demands.

ALTHOUGH there are generally more men to do the work that offers than are required, there are nevertheless capable men than can find employment. While low down there is always a crowd and much struggling for positions, high up there is room, although not for the lazy or incapable. It is a very rare thing indeed to come across a foreman of any of the building trades who is as good a man as he should be. He may be a good mechanic, and yet unable to take the position of foreman through his inability to control men or understand the plans furnished him for his guidance. A man who can understand plans and yet is not a first class workman does not make a good foreman once in ten times. Our advice to the young apprentice is, that he should make up his mind to become at least a first-class

foreman. If he does, and works hard, he will secure wages that he can never obtain as an indifferent mechanic, though he should have a dozen trade unions at his back. There is room at the top for good men as foremen, with the accompanying results in the shape of large wages.

WE note with pleasure that at an enthusiastic meeting held in Kingston a few days ago, it was decided to attempt the establishment of a School of Practical Science and Agriculture. The projectors of the undertaking state that the school it is proposed to found will not make skilled mechanics of those who attend—it is not proposed to do so—but it will give their education a practical trend; it will give them an understanding of the nature of woods and metals and their properties, and an expertness with tools which will insure them a rapid promotion in the workshops; it will contribute to their expertness, and secure for them, as journeymen, a remuneration befitting their efficiency. They further state their belief that the need of the hour is the spread of practical information, such information as can be obtained only in a technical hall. It was remarked as a lamentable fact that the education given in the public schools was not practical enough. It tended to the professions; something was needed to train young men for other callings. We hope that success will crown this laudable undertaking, and that the youth of Canada will no longer require to go beyond the bounds of their own country to obtain the technical knowledge necessary to fit them for success in mechanical pursuits.

WE see it stated that Mr. Percy Wood, the designer of the Brant monument at Brantford, Ont., is at work on a sculptured monument which it is proposed to erect at Ottawa to commemorate the suppression of the Northwest rebellion. Mr. Wood resides in England, and is no doubt a clever artist. Without wishing to say anything in disparagement of him, we desire, however, to express our unhesitating opinion that there is no reason why work of this kind should be given to a foreigner over the heads of our native artists, and without giving the latter an opportunity of showing what they are capable of doing. The same may with as much truth be said of architectural designing. If the people of Canada, and especially those who have the bestowal of patronage of this kind, desire or expect to see this country make satisfactory progress in art, they must display more loyalty toward native talent. If this course be not taken, and it becomes apparent that all the prizes worth having are handed over to foreigners, we shall not be able to retain in this country artists of first-class ability. Such a result would before many years react upon the progress and prosperity of the Dominion, and indirectly at least upon the interests of those whose unpatriotic conduct had brought it about. Let us give every encouragement to the development of Canadian ambition and talent, and thereby assist in making this country the pride of Canadians.

THE newspaper accounts of the disastrous conflagration which took place a few days ago at Hull, P. Q., reveal a state of things by no means creditable to the residents of that unfortunate city. Two scourgings should have been sufficient to teach the people of Hull that a city constructed largely of wood requires the most perfect fire-protecting apparatus, and above all, a fire brigade thoroughly equipped and trained to act promptly and intelligently when the emergency demands

their services. The appliances and fire brigade that were unable to prevent the spread of fire from a building standing isolated in an open square, must certainly have been of the poorest description, and the people showed culpable carelessness regarding the safety of their lives and property, when they entrusted both into such hands. The firemen were utterly disorganized, and did little more than add to the excitement of the occasion. So completely did they "lose their heads," that in moving from one point to another they left the caps off many of the hydrants, and the great volume of water which thus escaped soon reduced the pressure to a point where it became useless for fire purposes. The grief of the Roman Catholics upon witnessing the destruction of their beautiful cathedral which they supposed to have been fireproof, was very touching indeed. The value of the structure is placed at \$160,000. It was built of stone, with sheet iron roof and cupola. The condition of the two thousand people whom this fire has left homeless and almost without shelter calls for sympathy of the most practical kind. We trust that this thrice repeated calamity which has befallen their city may lead the people of Hull to adopt common sense methods for the prevention of such catastrophes in the future.

SOME very bad management is exhibited by the Toronto Public School Board in connection with the building of new school houses. A case in point is a new school house at present under construction near Dufferin street in the western part of the city. This school house has only four class rooms in it, which in itself is not objectionable, if any provision had been made for adding four more in the future. There is no doubt that inside of two years this school will have to be enlarged to an eight room school, and this can only be done by tacking on the rooms in any manner possible. A design for an eight room school should have been adopted, which would have admitted the erection of four of the rooms now and the other four later on. While we are on this subject we would like to offer a suggestion, which is, that a plan for the city schools should be adopted and improved upon as far as possible in the future as experience may teach, and all schools built according to such plan. We would not have the elevations similar by any means; but would advocate as great a diversity in the elevations as there are schools, so long as they were artistic. So far there has been a very great diversity in the plans and a wonderful similarity in the elevations, for they have all been alike bad until within the last year or two. Some of the plans have been very good indeed, but the greater number have been extremely bad. There is not the slightest reason in the world why they should not be all good, and that could be best brought about by adopting a good plan, and building all the schools according to that plan. It might be necessary to change the plan slightly in each case to obtain the necessary diversity in the elevations. In conclusion we may say, that some of our supposed best planned schools are really inferior to others which are regarded second in order of merit.

THE Public School Board of Toronto has discredited itself by the manner in which it has gone about the appointment of an Inspector of School Buildings. Instead of making the appointment solely on the ground of the fitness of the applicant to perform the duties of the position, politics, personal friendships and such like considerations have been the influencing factors. The names of two candidates are before the Board, and the votes of the members appear to be about equally divided between them. For a couple of months past the contending factions have been exercising their greatest ingenuity to outwit each other, and by some means secure the election of their respective candidates. Several of the regular meetings of the Board have had to be abandoned for want of a quorum, because it did not suit the purpose of certain members to be present. Thus the legitimate objects of the Board and the educational interests of the city are made secondary to the desire of the members to put their favorites in office. One portion of the Board, and we understand the majority, support the appointment of Mr. Bishop, while the other portion support Mr. Downey. We believe that Mr. Bishop would have been appointed long ago if it were not the supposed intention of his supporters to make him architect of the Board instead of building superintendent. His opponents claim that while he may make a very good superintendent he would not be a suitable man for the position of architect. We are inclined to think that Mr. Bishop is a better man than Mr. Downey for the position of superintendent. That he would make a good architect we very much doubt. We have knowledge that it is his belief that he is to be practically architect to the Board, as he has been making

some statements as to the works on school architecture which he proposes to study, etc. Now to be a superintendent is one thing, to be an architect is another; and if Mr. Bishop is to assume the duties of an architect, we oppose his appointment. The Public School Board, if it appoints an architect, should appoint a young man of decided ability and education, who will be young enough to enter on his duties with the energy characteristic of youth, and with vim enough to fight for new principles against those of the past.

MANY of the principal Canadian towns have adopted systems of waterworks during the last few years. We notice that in many instances municipalities do not purchase the plant and operate the system, but the ownership and control of the same remain in the hands of the company which puts in the plant, the town paying a sum yearly for its water supply. It appears to us that it would be much more advantageous to these towns to own and operate their waterworks systems. A company will not put in a plant and supply a town with water for a certain amount without being assured that a fair profit will accrue to itself after paying the cost of maintenance. This being the case, there should be no reason why each town might not own and operate its own system, and instead of handing the profits over to a company, put them into the municipal treasury for the benefit of the citizens. The waterworks department of the city of Toronto contributes a very large amount yearly towards defraying the cost of municipal government. Every year the profits derived from this source increase in volume. Would it not be a foolish thing for the City Council to allow a private corporation to control our waterworks system and grow rich at the expense of the citizens? The same view holds good in the case of smaller towns and cities. The people of Brantford have been figuring on this matter, and a local paper states the result as follows: "The question that will likely agitate the minds of citizens very soon is whether or not the city will own the waterworks. It is thought that the work will cost in the neighborhood of \$150,000. This money can now be obtained on the British market at 4 per cent., or the whole sum for an future of \$6,000 per year. The rate which any company have so far proposed to charge the city for hydrant use is in the neighborhood of \$7,000 per year, so it would seem to be a clear saving of over \$1,000 per year for the city to own the waterworks. All the cities in Canada that own waterworks systems have found them profitable investments. There is no reason why the city should not reap this benefit rather than let the profits go into the pockets of shareholders who may happen to live in some other city than Brantford." When a town hands over the control of its water supply to a company the latter is in a position to dictate its own terms, and sooner or later the citizens will find that they have made a grievous mistake.

A WALK through the northwest part of the city of Toronto is sufficient to cause astonishment at its tremendous growth. In the last two years ground that was then laid out in farms has been covered with houses. Where and how this rapid building up of the city is to stop, it is difficult to say. Some people seem to think immediately, and yet, although in their opinion the time is so close, it is like to-morrow always one day off. But it was not to speak of the growth of the city that we set out, but of the indifference shown by the people to this wonderful increase. Streets are laid out without one thought of the future, every attention being paid to obtaining the greatest possible number of feet at the highest obtainable price per foot. There is almost no attempt to provide parks or small gardens amidst the interminable stretches of streets, and where it is done, one hardly knows whether to be glad or sorry. We understand that just east of Dufferin street and south of the railway, a plot of ground has been dedicated as a park, on which there is not a single tree. There would not be any objection to this, if it were not that just north of this proposed park, on the other side of the C. P. R. tracks, there are a number of acres of beautifully wooded ground which would require but little to make them into one of the most beautiful parks in the city. We are not positive that this ground is in the city, but if it is not, it soon will be. Here we have a beautiful wood divided into small lots, the owner of which must cut down a large number of the trees to obtain space on which to build, and at the same time within one quarter of a mile we have a treeless piece of ground devoted to park purposes, which it will take thirty years at least to change into shady groves and winding paths. How does it come that all our opportunities are allowed to slip through our fingers like water through a sieve? Can it be that we as a people are not astute enough to see

advantages when they offer, or is it an indifference to the general good if the personal interest is not benefited that results in our neglecting opportunities that will offer but once. If we lose the Queen's Park we will be without any open ground except in the extreme east and west of the city. Small parks at close intervals are a thousand times more beneficial than the same amount of ground in large plots miles apart. In this city where street cars do not run on Sunday (and we are of those who hope never to see them running), it is impossible for the greater portion of the inhabitants to take any enjoyment out of large parks miles distant. What is wanted is the small square of ground covered with grass, having flower beds and large shade trees, at close intervals throughout the city. We are also advocates of the large parks, but let us first have the small ones, and then the large ones will follow. These parks could all be less or more connected by drives. We would strongly advocate the appointment of a Park Commission which should have the power and ability to work up, adopt and carry out a noble and generous scheme for supplying our people with pleasure grounds, breathing places, and at the same time glimpses of nature to aid in their intellectual and moral improvement.

## PERSONAL.

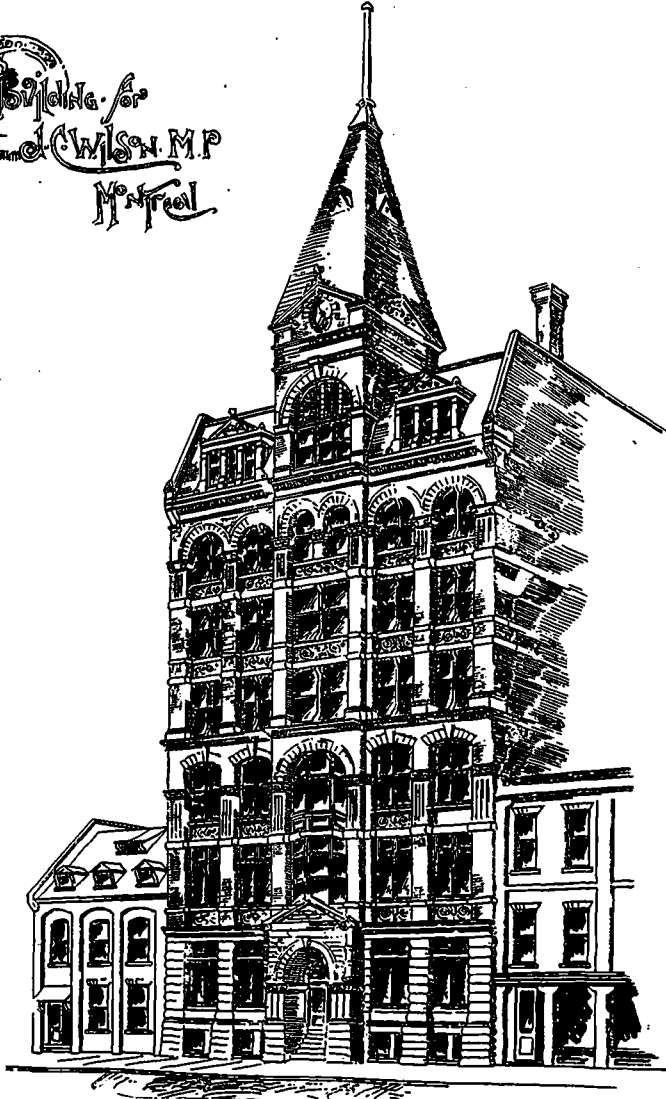
Aclair & Co., painters, Quebec, have dissolved.  
T. Chappesier & Fils, builders, Montreal, have dissolved.  
Phillips & McLeod, planting mill operators, Aurora, have dissolved.  
Geo. Wiley, carpenter, of Kingston, Ont., has fallen heir to \$1,000 by the death of an uncle in England.  
Mr. Robt. Forsyth, of Montreal, has threatened action for damages against the city of Toronto for alleged violation of contract.  
Collingwood Schreiber, chief engineer of Government railways, is at present in Nova Scotia making an inspection of the roads there.  
Mr. A. Gobeil, Secretary of the Public Works Department, Ottawa, is at present on the Isle of Orleans, Gulf of St. Lawrence, seeking to recover his health.  
Mr. Fred. Thompson, electrician of the Royal Electric Co., Montreal, has been invited to lecture before the Art Association of Sherbrooke, Que., upon "The Wonders of Electricity."  
Hon. G. W. Ross, Minister of Education for Ontario will visit the United States with the view of acquiring information regarding the method of conducting schools of science and practical engineering.  
Mr. T. R. Hewson, C. E., of Belleville, is said to be considering an offer from the Government of Japan to go to that country for seven years, to superintend railway construction. It is understood he also has an offer from a railway in Utah and Colorado.  
The many friends of Mr. Thos. C. Keefer, C.E., K.C.M.G., of Ottawa, have learned with deep regret of the accidental death of his daughter Jessie, who was drowned "while endeavoring to rescue her two nephews who were carried away by the current and lost their lives while bathing in the river."  
We learn from the *Progressive Age*, New York, that Mr. John Fensom, of the Fensom Elevator Works, Toronto, Ont., and a party of friends were out sailing on the Passaic river recently, on Prof. F. Reckensau's new electric boat "Magnet." This boat is equipped with storage batteries of the Electrical Accumulator Company, of New York, and is the first electric boat carrying the American flag. Mr. Fensom was greatly interested in the success of the trial.

## FAULTY CONSTRUCTION.

THERE is urgent need of some intelligent control of building construction in this city. One who has a knowledge of construction will see much in the erection of our buildings which is faulty. He will also notice occasionally construction which will astonish him very much, and make him wonder if the building of our buildings is left to the whim of ignorant men. Piers of brick 6 inches wide may be seen carrying brick joints two or more storeys high. Iron columns so attenuated that they can only be likened to columns of needles are placed under joists of two and three storeys in height. Built up columns of scantling nailed together may also be seen carrying uncommon loads. Breasts of summer of wood and iron are made to span openings much beyond their safe carrying capacity. In fact almost any construction is not apparently too risky or dangerous to be adopted in this city.

No man having any knowledge of construction would place any weight on a 6 in. brick pier ten or twelve feet high, and yet it is done every day in this city, and that with the sanction of the Commissioner of Works. Neither would any one place a heavy load on a column of more than thirty diameters. It is safe to state that there have been few columns placed in position of late which were under thirty diameters, and yet such a column requires a factor of safety of ten according to competent authorities. That a factor of ten has been allowed no one would be foolish enough to imagine. It is really a question of how many of them have any factors at all. That they do not give way under their loads will be sufficient proof in the opinion of those ignorant in such matters, but not of experts. When a column gives way it only proves that it was defective in the material, or that it was ten times too weak to carry the load imposed upon it. There have been a number of accidents in this city during the past few years, due to the ignorance of our builders or supposed architects. Fortunately none of these have resulted in loss of life, (although most serious injury has resulted to a number of men,) or we would have had some notice taken of this most important matter. It would seem that we must wait until several lives have been lost before action will be taken to check improper methods of construction. Much as we would like to have some action taken, we prefer to have things remain as they are if it is necessary to have action only as the result of death through the ignorance of those who should know and do not, and who should not be allowed to work in ignorance, except at that which cannot cause loss or suffering to their fellow men.

Building for  
J. W. Wilson M.P.  
Montreal



Perspective Sketch

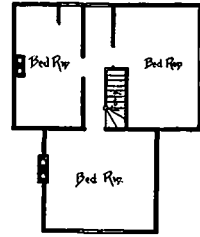
J. W. Wilson  
- Architect -  
Montreal -



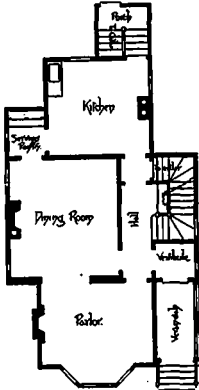
West Elevation



North Elevation



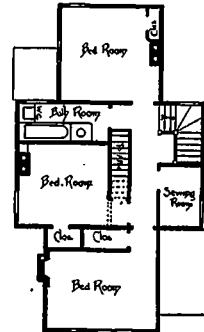
Attic Floor



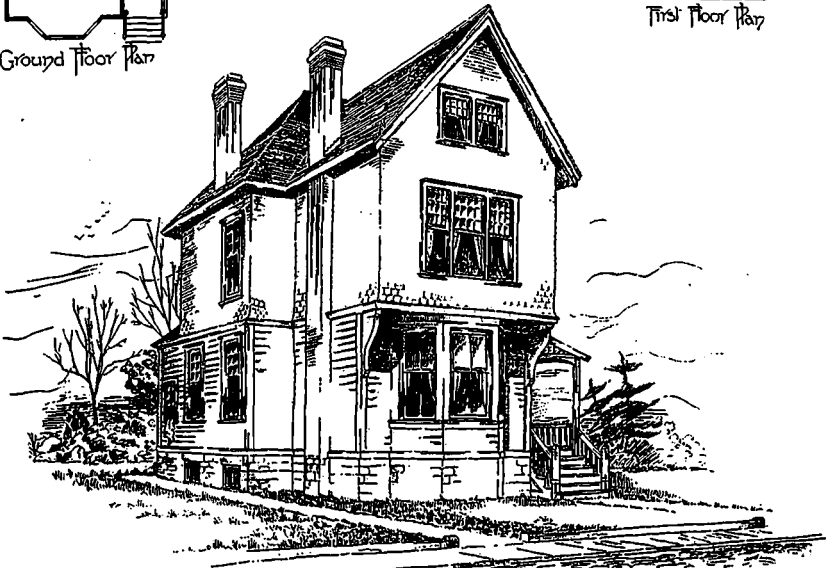
Ground Floor Plan

CANADIAN ARCHITECT  
 COMPETITION FOR A \$2500. HOUSE  
 DESIGN SUBMITTED BY NEVIS

—————  
 Sub



First Floor Plan



View from South East



## THE RECENT ART EXHIBITION.



THE combined exhibition of the Royal Canadian Academy of Arts and the Ontario Society of Artists was opened on the evening of May 7th, and closed with a ball on the evening of Friday the 25th of May. The exhibition was a highly creditable one, and showed the great advancement which has been made by Canadian artists during the last few years.

There are many works of high merit, and many others which would have been of equal excellence if their authors had devoted the careful study, and conscientious work to their pictures which they are quite capable of doing. There is more than one picture which has suffered severely through carelessness in the finishing of some parts of the work. It is exceedingly annoying to see a picture which has had some exquisite drawing and coloring, almost ruined by the bad drawing or color of the balance of the work. It would be better for an artist to exhibit but one work, and that the result of preserving and laborious effort, exemplifying the best that he can do, than to show three or more works having among them all only sufficient value to constitute one good picture. It is also better to carefully and well paint a small canvass than to give value to but oasis in the surface of a large one. There is no doubt but the attempt to do too much is caused to a very large extent by the lack of appreciation of good work, and the impossibility to sell a really valuable work at its proper value. Small pictures carefully and conscientiously handled, should bring somewhere near their value, and they would serve to educate the people in good and vigorous art. A large picture which does not in all its parts represent the best work which its painter is capable of doing, will not serve to educate a people in art. Then by all means let us have from each artist in every instance the best work which he is capable of doing. It should not be necessary to judge a man by what he can do under certain conditions, but by what he does do. In the long run a man will be judged by what he accomplishes, and not by what he might have accomplished if he had had the ambition and perseverance to have worked as he should have done. Ambition is very weak when it does not spur a man on to work to the utmost of his strength to gain the top rung of the ladder of fame.

We give below a list of some of the most valuable of the pictures exhibited. It may not be a full list, as no doubt there were others which deserve mention and which are not included. There are also many pictures which we should have noticed because of their very superior excellence in parts, if it had not been that they were equally inferior in other portions. It must of course be understood, that we are not an infallible art critic, and that what we may praise may be bad, and what we condemn may be good. We only hope that we may be somewhere near the average opinion of those capable of judging in matters artistic.

No. 14, "Mt. Sir Donald, Macdonald Valley," by L. R. O'Brien; this picture is full of radiant color and superior technique. No. 19, "Divided," by F. C. V. Ede, is a clever sketch in the Italian school. No. 21, "Walrus Scar," by C. S. Millard, although not attractive as a picture, contains masterly effects of light and shade and perspective. No. 24, "Morning Stars, Ross Peak Valley," gives one the impression that it is a study for a picture, rather than a finished work; it, however, is a good example of this artistic ability in the handling of washes. No. 30, "Cloudland—view from the Terminal Mountains from the Selkirk Glacier by L. R. O'Brien, a very careful piece of brushwork, but the atmospheric effects aimed at fall short of the intention. No. 32, "A Dark Pool on a Dull Day," by D. Fowler. Is a drawing which reminds one of Constable; it is a poetic work representing a dark pool on a dull day; the effect of the reflected foliage is a pleasure to look at, especially on account of its apparent ease of treatment. No. 35, "Fort on Route," by L. C. V. Ede, is a purely academic study full of good drawing; the oxen are particularly well drawn. The figure looking out of the picture, however, is dwarfish in comparison with the principal figure. No. 42, "Mount Carrol, Roger's Pass, B. C.," by F. M. Bell Smith, is one of the most charming and poetic pictures in the exhibition; it is full of interest and atmospheric effects; we regret that the bottom right hand corner is most carelessly handled, which mars an otherwise clever and faultless painting. No. 44, "Cottage near Llanberis North Wales," by C. Stewart Millard, is an excellent example of this artist's work;

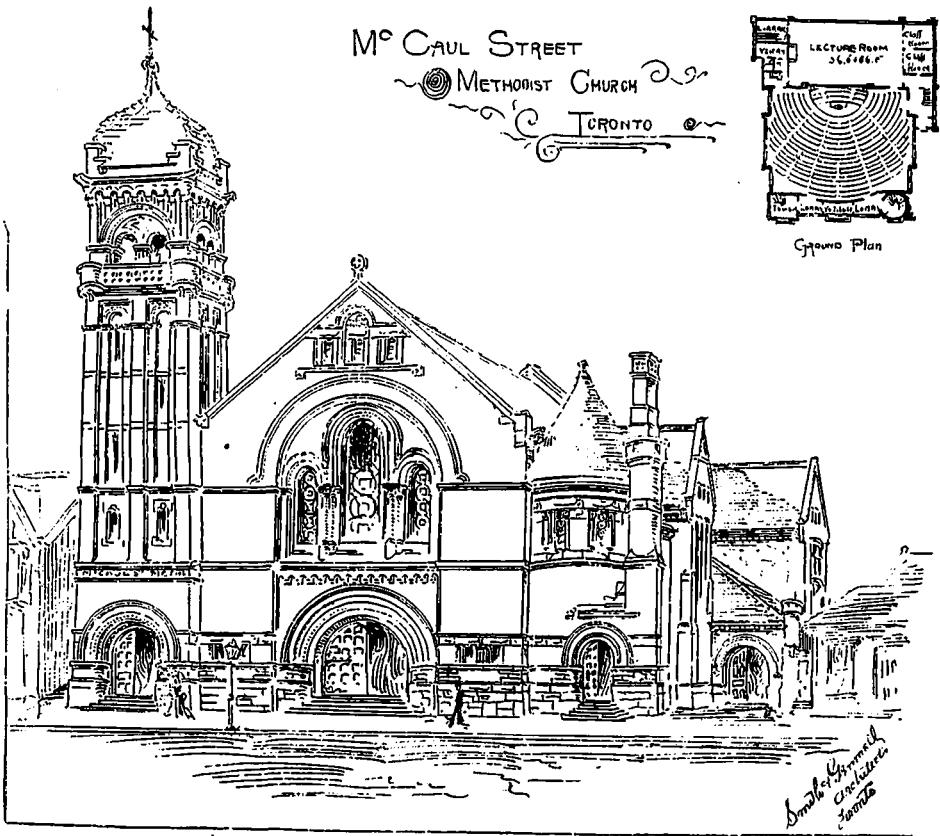
it represents a laborer's cottage built of stone with a moss covered roof. No. 45, "Mid-day Shade," by J. Spence, is full of sunlight and effective natural effects; it is one of the best pictures of this artist, rich in colors, well drawn and full of careful work; it is a picture which fills the beholder with pleasure and delight. No. 49, "The Crest of the Rockies at the head of Bow River Pass," by L. R. O'Brien, is one of the most carefully detailed pictures on the east wall; it is extremely natural and full of good conscientious work. No. 53, "The Day's Decline;" the same may be said of this picture. The laurel certainly rests between the president and Mr. F. M. Bell Smith in the water color exhibit. No. 56, "A Breccia, Casco," by F. M. Bell Smith; this picture is strong in the foreground, which represents a rocky shore covered with sea-wood and the breakers being dashed into spray on the rocks; in other parts this picture is weak. No. 59, "Tolling over the Sand Hills," by D. Fowler, is a landscape well handled, but nothing can be offered in excuse for the intensity of the blue in the sky and water. No. 73, "Road Through High Park," by Jas. T. Rolph, makes one wish that there were more pictures from the hand of this artist equal meritorious. No. 77, "Sunshine and Shadow," by G. A. Reid; it is impossible to speak of this work as a picture, but decoratively it is good. No. 81, "Grey Day in July," by Homer Watson; the wheatfield is too solid in effect and does not convey to the imagination the idea of the field being composed of individual blades, which seriously injures an otherwise strong work. No. 82, "Saw Mill," by Homer Watson; in this picture Mr. Watson is seen to better advantage; the effect of gloom, however, is too intense, and the general effect would have been greatly improved by lighting the middle distance and certain parts of the foreground; there is neither a sufficient volume of water nor rapid descent to cause the commotion shown in the moving water; the large tree which we presume is intended for an oak is too coarsely painted. No. 83, "Narcissus," by A. F. W. Haywood is a very tender and truthful work. No. 91, "Portrait Sir John Macdonald, 1866;" no finer work has ever been exhibited by a Canadian artist, than is expressed in the head and best portions of this portrait; the effect of color is pleasing and natural, but we regret that sufficient attention has not been given to the drawing of the arms and a portion of the coat. No. 97, "Flowers," by A. F. W. Haywood; while one is looking at this work the imagination might easily convince the beholder that he was not only enjoying the sight of beautiful flowers, but also their delicious perfume; it is a simple little picture and has the appearance of having been but a work of pleasure. No. 108, "Road through the Fields," by Homer Watson; this picture is one of the best of the artist's works exhibited in this exhibition; it does not show any desire to cover canvass, but a love of Nature and an earnest desire to portray it truthfully. No. 112, "Little Gossips," by Robert Harris; this picture represents two young girls seated on a sloping beach with a village on the side of a hill, in the distance. The figures are beautifully composed and full of motion, altogether it is a very clever work. No. 123, "Pas Derrier Chez Mon Frere," by W. Bryman; this is one of the cleverest pictures in the exhibition, but it is evidently unfinished. No. 124, "The Guller Plover," by M. H. Reid; this picture is semi-Flemish in feeling, and is carefully drawn and cleverly painted; the various textures are well rendered. No. 127, "Father will Return," by Paul Peel; an ambitious work representing a child seated in a wheelbarrow playing with a wisp of hay, while its mother stands near by leaning on a scythe and anxiously watching for the return of the father; the child is spiritedly drawn but the mother is rather inanimate. No. 149, "Portrait of Mr. Jacob Spence," by J. W. L. Foster, is a fairly good portrait well handled. No. 167, "Col. Gzowski, A. D. C. to the Queen," by A. D. Paterson; generally this is a good portrait and an excellent painting with superior color values; on the whole we prefer this artist's portrait of Sir John A. Macdonald, No. 169, "The Meadow Lark," by Paul Peel; one of this artist's smallest and at the same time best pictures exhibited; it represents a field scene in the summer time; the female plover stands near by a wheelbarrow, on which she is offering merrily peering into the distance, evidently attracted by an object of great interest; the most interesting effect of sunlight is worthy of notice. No. 170, "Drawing Lots," by G. A. Reid; this picture is attractive, but yet objectionable; first for its startling color, secondly for its defective drawing; this class of work when it is so pure in color should be faultless in drawing. The length of limbs, especially the legs, will not bear comparison one with the other; much could have been made of this picture, it is a happy subject; but there is not sufficient difference in the three figures in the painting. No. 172, "Friends," by Robert Harris; one of this artist's clever character sketches, representing possibly an English navvie after a hard day's work seated at home apparently enjoying the company of his dog; the dog, which is placed in front and looking directly out of the picture, is sparkling with genius. No. 174, "Portrait," by Hugh de J. Glazewell; this work is superior, first, for its painting of the figure and property effects, next for its drawing; but, however, we regret it is defective on the right side of the drawing; there is not the refinement and poetic feeling which we noticed in Nos. 91 and 167. No. 175, "Harmony," by Robert Harris; had we our choice of pictures in this highly creditable exhibition we would choose No. 175, which is one of the smallest canvasses exhibited. It represents a young lady seated at a piano. The action of the figure breath of Nature in every detail; the flesh seems as if it would yield to the touch; the draperies seem as if they would fall into as pretty folds if they should be disturbed; this picture would be considered a gem in any gallery on account of its purity and simplicity. No. 185, "Studio Interior," by G. A. Reid; this oil picture sparkles with good work; it represents the interior of a studio, and almost comes next to Mr. Harris' picture, although by no means as refined in detail.

We hope that the next Art Exhibition in this city will be held in a building designed and built for the purposes of the Royal Canadian Academy, and that the paintings then exhibited will show a progress in art greater even than that displayed at the Exhibition just closed.

## LIST OF ARCHITECTURAL BOOKS IN THE TORONTO PUBLIC LIBRARY.

IT is doubtful whether the architects and builders of Toronto are aware of the large amount of literature written for their information and at their disposal in the Toronto Public Library. In the interest of our readers we publish a complete list of these books, as follows:—

"Les Promenades de Paris, Bois de Boulogne, Bois de Vincennes," by A. Alphand, "Dictionary of Architecture," by William J. Andsley; "Lectures on Architecture," Edward M. Parry; "An Analysis of Gothic Architecture," R. and J. A. Brandon; "Parish Churches," Brandon, Raphael and J. Arthur; "The Carpenter's Assistant," W. Brown; "L'Architecture," L. Canina; "Village and Farm Cottages," W. and J. Backus W. Cleveland; "Palais, Maisons and Vues d'Italie," P. Clough; "L'Architecture Prives," M. C. Daly; "Horticultural Buildings," F. A. Fawkes; "History of Architecture in all Countries," "Palaces of Nineveh and Persepolis," "The Temples of the Jews," James Ferguson; "Cave Temples of India," J. Ferguson and J. Burgess; "Constructive Art in Italy," Geo. T. Fort; "History of Architecture," Edward A. Freeman; "Architectural Ironwork," Wm. J. Fryer, jr.; "Les Plus Deax Edifices de la Ville de Genes et de ses Environs," M. P. Gauthier; "Churches of Kent," Sir Stephen Glynn; "Architecture," (in his "British Literature and Art"), J. M. Graham; "Monumenti della religione Cristiana de Roma," J. G. Gutensohn and J. M. Knapp; "Encyclopedia of Architecture," Joseph Gwilt; "Designs for Parish Churches," J. Coleman Hart; "Natural Principles and Analogy of the Harmony of Form," Dr. R. How; "Modern Dwellings," H. Hudson Holly; "How to Build, Furnish and Decorate," "Garden Architecture," John A. Hughes; "Tombeaux de Louis XII. et de Francois I," E. F. Imbard; "Dalmata, the Quamero and Istria," T. G. Jackson, "Architecture in Europe," J. Kenrick; "Compendium of Architectural Sheet Metal Work," A. J. Littleidge; "Ecclesiastical Architecture of Italy," H. G. Knight; "Architecture," Choix de Nouveaux Modeles de Serrurerie, E. Locoutte; Un Album D'Architecture, E. F. Le Preux; "Farm and Villa Architecture," I. C. Loudon; "Architecture, Toscane," A. G. Montigny and A. Famin; "Japanese Homes and their Surroundings," E. S. Morse; "Notes and Sketches of an Architect," Felix Narbonne; "Mediaeval Architecture," Wm. Nesfield; "Sketches for Country Residences," E. Newton; "Studies in Mercantile Architecture," Wm. S. Ogden; "Gothic Moldings," F. A. Paley; "Introduction to the Study of Gothic Architecture," John Henry Parker; "Earliest Egyptian Architecture," G. Rawlinson; "Picturesque Designs for Mansions, Villas Cottages, etc.," C. J. Richardson; "An Attempt to Discriminate the Styles of Architecture in England from the Conquest to the Reformation," T. Rickman; "School Architecture," "Masons' Bricklayers' Plasterers' and Decorators' Practical Guide," R. Robson; "Seven Lamps of Architecture," "The Stones of Venice," John Ruskin; "Rise and Development of Mediaeval Architecture," Sir Gilbert Scott; "Practical Masonry," E. Shaw; "City and Suburban Architecture," "The Model Architect," S. Sloane; "Ornamental Interiors," J. M. Smith; "Gothic Architecture in the Middle Ages," V. Stas; "House Architecture," J. J. Stevenson; "Early Christian Architecture in Ireland," Margaret Stokes; "Dictionary of Architecture," R. Stuart; "Examples for Roofs, etc.," E. W. Prendall; "Discourses on Architecture," "Military Architecture," Eugene E. Viollet le Due; "Vitruvius Britannicus or the British Architect," Campbell, Woolfe and Gandon; "Architects' Pocket Companion and Price Book," Frank W. Vogdes; "Spires and Towers of the Mediaeval Churches of England," C. Wickes; "Architectural History of the University of Cambridge," R. Willis and R. W. Charles; "Architecture in England," "Architecture in Japan," "Hospital Plans," "Terms frequently used in Works of Architecture," "Architectural Director, or Pocket Vignola," "Building," Beckett; "Companion to Gothic Architecture," "Gothic Ecclesiastical Architecture," Bloxam; "Treatise on Limes, Cements and Mortars," Burnett; "Materials and Construction," Campin; "Joins Made and Used by Builders," Christy; "Village and Farm Cottages," Cleveland and Backus; "Hand-railing and Staircasing," Creswell; "Handbook of Elementary Art Architecture," D'Anvers; "Gothic Stonework," "Building Construction," Davidson; "Foundations and Concrete Works," "Masonry and Stone Cutting," Dobson; "Wonders of Architecture," Donald; "Church, Parsonage and School Architecture," "Economic Cottage Builder," Dwyer; "Architecture," Garbett; "Useful Architecture," Halfpenny; "Building Stones," Hull; "Building a Home," Oakey; "Building Surveying and Architecture," Smeaton; "Classic





Architecture," "Gothic and Renaissance Architecture," Smith; "Lighthouses," Stevenson, "Science of Building," Tarn; "How to Build a House," Viollet Le Duc; "The Consulting Architect," Kerr; "Ventilation and Warming of School Buildings," Morrison.

**OUR ILLUSTRATIONS.**

**BUILDING FOR MR. WILSON, CRAIG STREET, MONTREAL.**

**T**HIS building which is to be used as a warehouse, will consist of basement and seven stories 61x22 feet, and will cost in the neighborhood of \$70,000. It will be built in red Perth sandstone, pressed brick and terra cotta. The names of the contractors are as follows: Stone, T. Barbeau; carpenter, J. Roberts; painter, Jas. Usberwood; plumbing, Hughes & Stephenson.

**RESIDENCE FOR REV. PROF. GREGG, TORONTO.**

Residence of Rev. Prof. Gregg, Toronto, built in 1887, on the west side of Madison Avenue, near Bloor street on a lot of 50 feet frontage. The materials used were Credit Valley grey stone, brick and tiles, with half-timbered gables and slated roof. The cellar contains laundry and furnace and fuel rooms, and the attic, three bedrooms and store closet. Cost about \$5,000. W. R. Gregg, architect, Toronto.

**NEW RICHMOND STREET METHODIST CHURCH, TORONTO.**

This new church, which is in course of erection on McCaul street, this city, is Romanesque in style. The dimensions of the auditorium of the church proper will be 70x83 feet; height, 50 feet; inclined floor and crescent-shaped gallery. The roof will be supported by four pillars. The seating capacity will be thirteen hundred. There will be five exits from the building; the main entrance being eleven feet wide. In rear of the church proper is a commodious lecture and Sabbath school room and class room. On the ground floor is the lecture room with a seating capacity of five hundred, which can be increased to six hundred by opening folding doors communicating with the committee room. In rear of the lecture room is situated the minister's vestry, library and lavatories. On the second floor, which is approached by two flights of stairs six feet wide, are the church parlor, class rooms, and infant class room, the latter furnished with tiers of crescent seats. Folding doors communicate with all the rooms. The building will also be supplied with a kitchen, range, hoist and all the necessary appliances.

**COMPETITION DESIGN BY "NEVIS."**

When we named the northwest corner as the position on which we desired to place a proposed house, we had in mind certain requirements in relation to the position of the rooms. To meet these requirements we made the house front the south. "Nevis" has fronted his house to the east, and we must consequently judge his plan more from his position than ours. He has placed his stairs in the northwest angle which is a good position, but his entrance door is to the northeast, and a long way back from the front, which is objectionable. The parlor has a bay window to the east, and is a very well proportioned room. The door to the hall and the sliding door connecting with the dining room, are too near the angles to be satisfactory. The dining room is too wide for its length. There is no object in having a dining room any wider than will serve its purpose, especially where economy must be studied. The serving pantry is too small for practical use; it would make a very good dining room closet. The kitchen is fairly good, but we would have placed the window on the north side of kitchen to the east of the chimney, and thus secured better ventilation. The doors are also too much in the angles of the room, which prevents the wall spaces being used, except beyond the swing of the doors. The porch is very well arranged, and serves its purpose admirably. It is better to have a landing outside of a door than to commence the steps at the door-

step, but such advantages must often give way to economical ideas. One serious objection to this plan is, that there is no kitchen pantry or any other place for the storage of the kitchen apparatus. The three bedrooms are of very good size and will receive the usual bedroom furniture without crowding. The doors or windows do not interfere with the placing of the furniture. The closet to the front room is rather long and narrow, but to have placed the door in the side of the closet would have ruined the wall space in the room. The sewing room is very small, and the window should have been to the front instead of to the north. Windows should not be placed to the north if it is possible to give them any other exposure. In this case a north and side exposure is shown in preference to a front and east. In our opinion it would be better to remove the south partition of this room and take in the passage. It is not absolutely necessary to have the sewing room made strictly private, and when to do so makes it of very little use we would not make it a separate room, but make the hall sufficiently large, and use it for that purpose. This room would make a good linen room, and possibly it would be better to use it for that purpose. The bath room is too long and narrow, and the window should have been placed in the south end. A window placed as shown in the plan will not light the room nearly so efficiently as one placed as we recommend. An effort should be made to arrange a bath room to take the fixtures properly. It is not enough that the fixtures are in the room and can be used; they should also be arranged to give an air of spaciousness and adaptability. The attic bedroom appears to be of good size on the

**THE NEED OF ORGANIZATION.**

*Editor Canadian Architect and Builder.*

SIR,—In the hope of arousing discussion and drawing out practical suggestions that may be acceptable, and in the near future acted upon, I shall attempt to express my feelings on the subject of encouragement to native talent—the architectural phase of the National Policy. I do not claim to be disinterested, but if those who are most interested remain silent we cannot wonder at the indifference of others. This is an age of combines. It would seem indeed that, except the profession of architecture, there is no occupation, however high or low, without its association, convention or union; many further requiring examinations and registration. These associations when making their power felt may to outsiders seem objectionable, but to their members we must acknowledge their many accomplished and possible prospective advantages.

Why should not an architects' provincial or national association become as serviceable to its members? and if so, why should not the architects of this city at once take the first necessary steps?

There was, some years ago, a half-hearted attempt at organization, and I believe there now exists here a club or Guild, but without some distinct purpose or object, interest soon languishes and nothing is accomplished. In the United States, however, and in the newer and more rapidly developing sections more particularly, Architects' Institutes have within a very short time influenced legislation and molded public taste and morals, not only for their own benefit, but for the advancement of public interests, notably in drafting sanitary laws, in

the conduct of competitions, and the erection of more suitable and creditable public buildings; the more honorable conditions having attracted the higher talent, and every architectural success is of lasting interest to the whole community.

My present purpose, though, is to urge the more selfish view, as perhaps more stimulating to determined action. I know of no city whose architects have more cause for complaint and protest than Toronto, where for some years past the very best buildings have been entrusted to foreigners, apparently without limitation as to expenditure or bargaining for reduction of

remuneration. Is there no native ability if encouraged by such conditions? What about the Ottawa Parliament buildings, our Provincial University buildings, St. James' Cathedral, Osogood Hall, etc., of a generation ago? Surely at this later day we have a right to expect more of a national sentiment, more encouragement for Canadians and encouragement of native talent. Is it lacking because we have no corporate society or name through which to make ourselves known, our wants supplied or our rights respected and enforced?

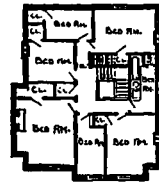
No foreign lawyer, doctor, or even plumber can do business here, much less secure the cream of what is going, but a foreign architect can and does without protest.

I venture to say that given the same opportunity, there are several Canadians capable of doing as good, and certainly as economical work, as a certain foreigner who has been allowed unlimited expenditure in our midst, and though inclined to the Reform side of politics, I cannot imagine a more unpatriotic act by any government than that daily developing in Queen's Park. Canadians in competition hampered by more unreasonable conditions as to cost, unremunerated after repeated attempts at the impossible, criticized and contemptuously thrown out at the bidding of a foreign competitor possessed of no world-wide fame but unlimited "gall," posing, after years of intrigue, as a disinterested expert, then at once receiving the commission to design and erect as he pleases at any cost. Is it not time to combine and insist on some adequate preparation, some legal professional standing, and at least a national registration.

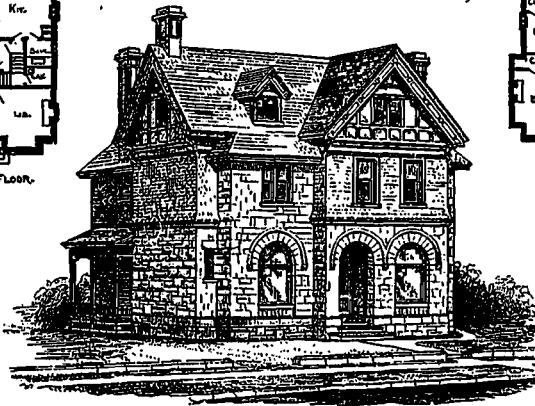
We have the records of what has been done in older countries, the more enlivening example of our Western



GROUND FLOOR.



FIRST FLOOR.



RESIDENCE FOR REV. PROF. GREGG, TORONTO.

plan, but we are afraid the available space in the north-west room is very small. The window lighting in this room is bad and should have been to the south, even though the change should affect the elevation. The matter of economy affects many of the suggestions we have made, and possibly the designer considered that he was bound by the limit of cost, and would not allow himself to improve the plan through fear of exceeding the limit of cost.

The elevations are very good, and we will not offer any suggestions; besides it is more our object to criticize the planning. We cannot conceive of what material the kitchen roof is covered. If of slate or shingle, it is much too flat; if with pitch, it is far too steep. Galvanized iron or tin would answer, but some other treatment of this roof should be adopted. The roof as shown is a bad one, and is very objectionable in elevation.

**TORONTO ART LEAGUE.**

**T**HE Toronto Art League is composed of a few enthusiastic art students who spent many pleasant and profitable evenings last winter in sketching from life. The approach of warm weather has rendered the continuance of these indoor meetings undesirable. As a substitute for them, a series of Saturday afternoon sketching parties have been arranged for. The first of these took place to the Humber last Saturday. The headquarters of the League are in the Imperial Bank building on Wellington street. The secretary is Mr. Dawson, Union buildings, Toronto street. Persons artistically endowed, who are in sympathy with the objects of the Art League, are invited to communicate with the secretary with a view to becoming members.

neighbors, and the proffered assistance of one who has experience, leisure and zeal. Have we not amongst us a sufficient number able and willing to undertake the active responsibilities necessary for organization and agitation until success be attained?

You, sir, deserve the thanks and co-operation of all interested, for the sympathy you have shown in your columns toward such a movement, and I trust you will not tire, but continue to incite to action those who perhaps only await leaders and an invitation to assemble.

Yours, &c.,

M. B. AYLESWORTH.

Toronto, June 9, 1888.

### TORONTO ARCHITECTURAL DRAUGHTSMEN'S ASSOCIATION.

THE regular weekly meetings of the above association have been discontinued until the early autumn. We understand an effort is to be made to get the members together occasionally during the summer and organize sketching parties. This is a very commendable idea, and one which we hope to see carried out. A great deal of pleasure and profit might be derived by the students from sketching details for instance of some of our best Toronto buildings.

### TORONTO ARCHITECTURAL GUILD.

THE ninth monthly dinner of the Architectural Guild, of Toronto, took place on Thursday evening, the 14th inst. There was a very large attendance of members, and a very pleasant evening was spent. Business of great importance was transacted, and which we hope will result beneficially to the Guild.

The principal matter under consideration was the conditions of the proposed competition for the Board of Trade building. The opinion of the majority was that, taken as a whole, they are exceedingly good conditions, and that the competition should result satisfactorily to all concerned. The objections raised did not really refer to the conditions. Very general satisfaction was expressed that Prof. William R. Ware, of Columbia College, had been appointed to act as the professional adviser to the Building Committee, and that he had consented to act. We believe that the Building Committee, when the competition is over, will be satisfied that their action in requesting Prof. Ware to act as professional adviser was the best policy which they could adopt to bring about a satisfactory competition.

The Guild also decided to keep up the monthly dinners, but that during the summer months they should be held at some of the many summer resorts which have sprung up about this very rapidly growing city.

The curriculum of the new School of Practical Science which it is proposed to establish at Kingston, Ont., will include architecture.

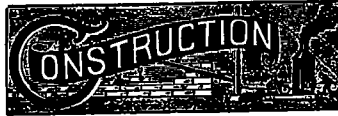
Fifty years ago last Wednesday, says the *Ontario*, the corner stone of the Belleville court house was laid by the Masonic order, and the occasion was a big demonstration in what was then a small village on Meyer's creek.

A Branford paper facetiously remarks that their city hall would easily pass for a 12th century ruin, while a Hamilton contemporary declares that the ambitious city has some archaic verandas whose origin judging by their appearance, must date back to the time when Rameses II. was making mud pies on the banks of the Nile.

Several changes in the design for the new C. P. R. station at Montreal have been decided upon. The height of the tower will be increased from 100 to 132 feet, and will enclose a clock. Trains will arrive under cover, and the iron covered sheds in which passengers will alight, will be warmed by steam.

One great advantage which a village has over the city, says Archibald MacMechan in *The Week*, is that the building contractor has rarely exercised his mischievous activity there. The villager builds his own house to suit himself, as his needs, tastes, circumstances dictate; and so where you do not get picturesque effect you get the first element of it at least—variety.

The United States Government contemplates the erection of a large number of new post offices and other public buildings, the expenditure on which would be in the neighborhood of \$21,000,000. The American Institute of Architects and the Western Association of Architects are endeavoring to have some of the designs for this work thrown open to public competition. They claim that the Government's supervising architect and staff could not possibly do such a vast amount of designing, and even if they could there would not be secured the variety of design which is so desirable and which an open competition would ensure.



## FOUNDATIONS OF BUILDINGS IN MANITOBA AND THE NORTH-WEST.

By R. BOURNE, C. E.

TO refer to the first importance of this subject to a builder in any country is needless; but in the vast and rapidly growing territories named above, the advantage of gaining a thorough and well-learned knowledge of this matter can scarce be over-estimated, especially as the theory and practice hitherto had in it are both naturally crude and experimental.

Further, the difficulty of arriving at a right conclusion as to the best kind of foundation to be used here is much increased,—1st, by the poor supply of Nature's foundations; and, by the nature of the climate; 2nd, by the expense attending experiments in this direction. For these reasons several of the most costly and carefully erected structures have seriously failed from the sinking of the foundations, generally under a limited part of the building. As to the first impediment named, viz, the natural strata, it may be well to state that they are: 1st, a rich black loam, in depth from 6 to 14 inches; 2nd, a yellow clay of a greasy nature, from which a good kind of brick is made, and which, from the character given to it, often causes land slides on the river banks, its depth being from 10 inches to 3 ft.; 3rd, a toughish blue clay, from 10 ft. to 30 ft. in depth; 4th, a coarse gravel, suitable for concrete, and sometimes containing boulders of some size, some 16 ft. deep; 5th, a water-bearing quicksand, usually at a depth of about 48 ft. from the surface.

This description applies particularly to the land in and around Winnipeg. In other parts of the country much firmer strata, i. e., coarse gravel or hard clay, are met with at or near the surface.

It can be readily seen that strata, such as named, present a problem hard of solution to the builder; for, even after sinking through the loam and yellow clay to the blue, a "pocket" of the yellow enemy may kill sink at a short distance underneath, and when pressure comes upon it, especially if beneath a corner, may slide away, and cause ugly cracks in the building. In fact, an instance just comes to mind where this has taken place in the costly and carefully founded residence which a city merchant has lately built close to the "Main street. This experience, which is rather common, makes it wise to test a foundation by boring, after sinking to the needed depth, and if one of these mischievous "pockets" is found, to use piles where it occurs.

Another injury caused by this usual enemy is the land slide on the river banks (as stated before), thus making it very difficult to erect permanent warehouses, etc., near the water's edge. In fact, the only support for such to be relied on is, of course, the pile, which has also been generally used here in the early history of the city in the erection of heavy buildings anywhere.

As to piles, the favorite support here for a number of years, it may be said that they are no doubt very reliable, when long enough and driven according to a proper specification. This is now known to be very necessary; as the men in charge of the work having been hitherto required to drive piles merely of a certain length, they have often driven a pile through a yielding clay no further than its neighbor, which happened to pass through a tougher medium alongside. This latter should not occur with timber of sufficient length, and required to sink but a certain depth on the last strokes of the hammer. An objection, also, which applies to piles here as elsewhere is, that sometimes the resistance to sinkage is almost wholly owing to friction of the clay on the sides of the pile. Now, the trickling of water down its sides, especially in a wet season, may so far loosen it as to render it unfit to bear its due pressure.

For the reasons given, and on account of their cost as compared with other supports, piles have been very much left out of use of late years, and plank foundations preferred. They are found to do their work well where the boring mentioned above has been used, the plank of sufficient thickness, and laid at least twice transversely, and masonry containing large flat stones built upon to a secure height.

(TO BE CONTINUED.)

### HAMILTON.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

SINCE last month's report of the building progress of the Ambitious City and its environs, which was certainly meagre enough, consequent upon the conduct of the unions, I have observed that a better state of things will in all probability prevail during the remainder of the season. It is to be fervently hoped that working men will in future "let caution mark the guarded way," and profit by the experience they have learned within the last few months. Gradually the work is coming on, but very gradually. So far the Hamilton Building Inspector's books record the following buildings to be erected for the month of May—

—That is to say it gives the number of buildings, where to be built, but not the cost of erection, nor the proprietor's name, for which contractors who enter the report should be responsible. I understand the building record is better and more creditably kept in Toronto, and perhaps in future it will be so here.—J. McDonald, 1 a storey brick dwelling, York street, between Queen and Locomotive street, value, say \$1,200; S. S. Ryckman, two a storey houses, Heyburn street, near Mauld, cost \$2,000; Chas. Bolton, 2 a storey houses, Murray and Catharine streets; C. Peebles, two a storey houses, Magill street; Mr. Mince, two a storey houses, James, near Hunter street; W. James, two a storey houses, West Avenue; Mr. Tyson, two a storey houses, Florence street, between

York and Pearl streets; Mr. Sullivan, brick house on Hunter street, between Cherry and Wellington streets; Mr. James, brick a storey house on West Avenue; Adolph Farewell, block of rough cast dwellings on Napier street; W. Richards, a storey brick house on Spring street, between James and Heyburn streets; Mr. O'Brien, a storey brick house 20x28, corner of Victoria Avenue and Evans street; Mr. Noxon, hotel on King William street; Mr. Howell, a brick house on Queen street south.

In addition to the above some very fine villa residences are being erected on James street South and East Avenue, besides which many more are in contemplation, to be erected on selected lots in the extreme limits east and west, which can now be reached by the street railways. In most of the new residences provision is being made for either hot air or steam heating instead of the ordinary heating by stoves. Nearly all of the stove manufacturers here are perfecting new and improved mantling furnaces for dwelling houses.

### MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

The building trade is very brisk this month, and all the larger works are being pushed forward while the fine weather lasts.

A large extension is about to be added to the Windsor Hotel. The management have secured a large vacant lot adjoining, on which the addition will be built; it will consist of a large hall and concert room 140 feet by 60 feet, with galleries at each end.

The Montreal Gas Co. have ordered a new gasometer from Messrs. Landlaw of Glasgow, to replace the one recently blown up at Hochelaga.

The residents of Verdun are vigorously opposing the erection of the new Protestant Insane Asylum, being persuaded the serious unsanitary results would ensue to the Verdun municipality as well as to the city of Montreal.

Two new elevators have been placed in the court house by a New

York firm, of the fire brigade, has been appointed assistant Building Inspector, and will no doubt make a competent one, as he was engaged in the building trade prior to joining the fire department.

### OWEN SOUND.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE North American Chemical Mining and Manufacturing Company, of this town, have discovered a large deposit of marl with clay underlying, covering several hundred acres, which they have secured, and are now organized with the intention to turn out on a large scale Portland cement. They have had the material analyzed, and it proves to contain all the ingredients for the production of a high grade Portland cement. The Company have erected "test-kilns" recently, and have succeeded in turning out a cement that cannot be excelled by any of the leading Portland cement makers in Germany or England. The directors of this company are Messrs. H. J. Doyle, Wm. Robinson, John Corbett and R. P. Buchart, of Owen Sound, and Wm. Heard, contractor of Chatham, Ont.

Architect J. C. Foster reports the following work laid this month: Brick residence for Mrs. J. W. Layton, cost \$1,895, contractor, Chas. Crothers; additions to Brockton school, cost \$830, contractors, Gordon & Sinclair; pair of semi-detached brick residences for Mr. Jno. Stephens, cost \$2,800, contractor, D. L. Binns. Plans are prepared for additions to American Hotel, and J. M. Kilborn's stores; also for a residence, brick, with stone trimmings, for W. S. Wolfe.

Contracts have also been let for Mr. Jos. Robinson's block of stores and music hall, Warton, Ont., to R. Washburn and Simons & Hill, contractors, cost about \$5,000.

400 yards of asphalt walk will be laid in Galt this season.

Work has been commenced on the building for the new Methodist book room and publishing establishment on Richmond street, Toronto. The site cost \$30,000 and the estimated cost of the building is \$70,000.

Messrs. Harris & Walton have been instructed to prepare plans and specifications for the improvement of Albert College, Belleville, towards which Prof. Dyer has raised \$2,400 by subscriptions.

Mr. Baker, engineer of the Forth bridge, and Mr. J. S. Ross, of Quebec, after investigation, have pronounced the tunneling of the Detroit river as being feasible, and a syndicate known as the Michigan and Canada Tunnel Company representing, it is said, more than \$100,000,000 of capital, has been formed to carry out the work.

We hope, says the *American Architect*, that some one is keeping notes of all the building accidents in which Portland cement plays a part. As used by inexperienced persons, it is certainly a dangerous material. Our professional brethren abroad have learned to take various precautions against over-arming, under-burning and other defects, of which we know little, and as we, presumably, often get the cement shipped to us which the foreign engineers have rejected, it is all the more important to be on our guard.

When a succession of door entrances are in line with each other says the *Builder and Woodworker*, a far better effect is produced by their being low arched instead of being cut off abruptly by horizontal lines. Arches springing directly from the jambs have not the meagre look of those resting on pillars; the curve, too, contrasts well with the straight rods of portieres, and may be fitted with elegant metal open work protected by glass.

The method of sinking a shaft through sand by freezing the sand and excavating it like rock has recently been carried out in Belgium. Large iron tubes are sunk in the sand about three feet apart, and in these tubes smaller tubes are inserted, through which circulates a solution of chloride of magnesium. The sand is frozen for a distance of three feet around. It remembers rock, is hard and compact, and can be excavated in the same manner as rock. It is probable that the process can also be used to great advantage in the digging of foundations where water and sand often make trouble.



**EXAMINATION QUESTIONS FOR PLUMBERS.**

**I**n view of the examinations now being held in this city for applicants for plumbers' licenses, the publication of the following list of questions propounded by the examiners last year will doubtless prove interesting; and although the questions this year are not likely to be the same as appear on this list, the plumber who familiarizes himself with the subjects referred to in this question list, will without doubt stand a better chance of passing the present examination:

1. State in general terms the drainage and plumbing requirements of a city dwelling.
2. Give a short description of the principal materials and fixtures used in drainage and plumbing.
3. Describe the different classes of water-closets, slop sinks and scullery sinks in use in this city, and state the advantages and defects of each.
4. Write a concise specification of materials and workmanship required in the plumbing of a house, as shown on the accompanying plans.
5. Give a description of the different makes of traps, stating the advantage and defects of each.
6. Describe the arrangements necessary for the proper disposal of subsoil water, rain water and sewage.
7. Describe the manner in which the following joints should be made: (a) connection of soil pipe with street drain; (b) of lead with iron pipe; (c) of iron pipes with each other, and (d) of a water closet with a soil pipe.
8. What purposes do ventilation or anti-siphon pipes serve, and how should they be run?
9. Where should traps in fixtures be placed, and how should connections from overflows be made?
10. What is the benefit of foot ventilation, and where should it be placed?
11. Why should a soil pipe be carried out through the roof, and what circumstances should govern its position and height?
12. How should the main trap of a house drain be set, and what should govern its position?
13. What are safes under fixtures for, and where should water from same be discharged?
14. How should the waste water from a refrigerator be disposed of?
15. How should overflows from supply cisterns be put in, and where should the waste from same be discharged?
16. How would you dispose of a safe waste from urinal?
17. Describe the construction of a grease trap, and under what circumstances should one be used?
18. How should the water pipes in an ordinary house heated by stoves be run to prevent freezing?
19. In what manner should water and waste pipes be run and fixtures set to meet the requirements of first-class work?
20. Describe the different methods of testing soil-pipes, drains, etc.
21. Describe the methods you would follow to discover any sanitary defects in a house. Plumbing and drainage defects are not alone referred to in this connection.
22. What conditions cause the movement of air in ventilation ducts or pipes, and what are the principal retarding influences?

**THE ACTION OF WATER UPON LEAD PIPES.**

**D**R W. R. THOMAS, senior physician to the Sheffield Public Hospital, in the course of a clinical lecture on "Lead Poisoning from Drinking Water," reported in the *Lancet* for April 7th, said: "Water generally contains a certain amount of carbonic acid. This acid acts upon the inner surface of the pipe, forming an insoluble internal coat of oxy-carbonate of lead, which effectually prevents the water from further acting upon the pipe. Hence old pipes which have been down for years are far less dangerous than new ones. Water which contains lime salts, as the carbonates and sulphates, also assist in forming an internal insulation coat, as the carbonates and sulphates unite with the lead. New pipes are apt to be acted upon by the oxygen which the water contains; a soluble oxide is formed, which contaminates the water. The nitrates, nitrites and chlorides found in water contaminated by sewage are very injurious, as they dissolve the lead; so also peat and other vegetable matter have a similar deleterious effect. The Sheffield water from a certain source is acid, and most certainly dissolves the lead.

The water in other towns has had a similar effect upon the lead. For some time the inhabitants of Keighley suffered from plumbism, as we do now, from drinking water. Mr. Jarmaine, of Huddersfield, recommended the authorities of Keighley to use limestone, to counteract the acidity of the water. This was placed in conduits, and the water was allowed to pass over it. They have found at Keighley that it has been necessary occasionally to add quicklime to aid the limestone, especially in summer, when the water is scarce. This plan, which has been adopted at Keighley and found to succeed, is now being tried in Sheffield, and I trust it will be equally successful here. It is a matter of vast importance to the town of Sheffield, as the drinking-water containing lead is now giving rise to a great amount of disease and suffering."

**DETECTING GAS LEAKAGE.**

**T**O detect a leakage of gas, Dr. Bunte, in the *Canadian Magazine of Science*, suggests the use of paper dipped in palladium chloride solution. Such paper changes its color in the presence of gas coming from leaks imperceptible by the odor, and which produce no effect upon the earth covering the pipes. Dr. Bunte suggests the following method of practically applying the test to street mains: Above the pipes are excavated, at intervals of two or three yards, holes twelve to sixteen inches deep, corresponding to the joints and sleeves. In each opening is placed an iron tube, half an inch in diameter, within which is a glass tube containing a roll of the test paper. The air from about the main enters the iron tube, and the trace of gas which may be present reveals itself by coloring the paper brown or black, according to its quantity. If, after ten or twenty minutes, the paper is still white, it may be certainly concluded that at the point tested there is not the smallest escape of gas. Various authorities who have experimented with Bunte's method certify to its efficacy.

**I**l Deseronto *Tribune* is waging war in a commendable fashion on the piggeries which abound within the thickly populated portion of that town.

A lump of soda laid upon the drain-pipe down which waste water passes will prevent the clogging of the pipe with grease, especially if the pipe is flooded every week with boiling water.

The Suburban Water and Light Co. has been organized to provide an efficient water and light supply to residents on Yonge street, between York mills and the Toronto city limits.

A company has been formed in Toronto to manufacture pure ice. We observe that at a recent meeting of the Local Board of Health the Medical Health Officer recommended the use on sanitary grounds of ice thus manufactured.

We are indebted to the town clerk of Brockville, Ont., for a copy of a by-law to license and regulate plumbers passed March 5th of the present year. The ordinance seems to have been fashioned after the Toronto by-law. We hope to see similar action taken by all the larger towns and cities throughout Canada.

At Buda-Pesth a well has been bored which yields daily 176,000 gallons of water at 139° F. The attempt will be made to bore until the temperature of the water reached shall be 176°, which will be hot enough for heating purposes.

The Belleville Gas Company have signed a contract with the National Gas Light and Fuel Company, of Chicago, looking to the introduction of a process for the manufacture of gas from crude oil, steam and hard coal, with a capacity for 120,000 cubic feet of gas per day.

An experiment is being made in New Albany, Ky., for the purpose of ascertaining the feasibility of operating an electric light machine by the power afforded by the water works system. Should this experiment prove successful, it may be expected to result in cheapening the cost of electric lighting.

Two smoke testing machines have just been imported from Scotland by a firm of Toronto architects and one of our leading city plumbers. We believe these are the only machines of the kind in this city. The machine consists of a smoke reservoir, from which the smoke is propelled by means of a bellows through a rubber tube into the plumbing system, and any leaks in the pipes are quickly discovered.

A contemporary states that the presence of sewer-gas in a room may be detected by the following method: Unglazed paper is saturated with a solution of acetate of lead in rain water, one ounce of lead salt being dissolved in eight ounces of the liquid. Allow the paper to partially dry and then expose it in the room which is suspected of entertaining the deleterious gas. Any considerable quantity of the gas turns the paper black.



**BRICKS OF BLOWN GLASS.**



**W**E have already mentioned, say a writer in *La Construction Moderne*, the many applications of glass for building purposes, as exhibited at the last exhibition of decorative arts. Thanks to the decrease in price of coal, and to the recent improvements in glass

manufacture, the product is classed at the present time among the usual material the architect employs. It is well known that the process of glass making is by melting or blowing. Sheets of polished glass from 14 to 30 millimeters in thickness are chiefly used for casings of walls in dining rooms, linings of bath-rooms, water-closets or recesses requiring frequent cleaning. They answer the same purpose as pottery tiles or enamelled bricks. Rough glass of greater thickness is employed as flagging for pavements for the purpose of forming a luminous flooring. It is then set by means of putty for cement in iron settings. Blown, in place of melted, glass can be advantageously used when lightness and transparency is preferred to strength, when, for instance, it is desired to use glass in vertical walls or ceilings with the object of lighting lower stories or basements. As applications of the kind have been rare, we are pleased when we have the opportunity of recording them. One of the latest instances of the employment of glass in this manner has been made by M. Falconnier, architect of Nyon, Switzerland, who has used glass in the form of hollow bricks. These bricks are cubes of 10 or 15 centimetres on the side, set in grooved iron casings. The joints in cement or plaster are retained in a grooving hollow around the circumference of each piece, and held by putty. The metallic lattice work, very useful in a wall where strength is required, may be discarded where the object is strictly decorative. One of the principal qualities of these hollow brick is the isolation by the enclosed air which can be replaced by other matter less conductive of heat and sound. Besides, with the hollow glass various decorative effects can be obtained without the necessity of resorting to grinding or enamelling, as it is very easy to coat the inner faces with oil colors. M. Falconnier has also applied these hollow bricks at Lausanne, in attic decorations, and in the construction of balusters and verandas.

**HOW TO MEASURE A ROOM FOR WALL PAPER.**

**I**T often happens that a person living at a distance from a city is thrown upon his own resources to determine the amount of wall paper requisite to paper a room. The following rule, says the *Painter's Magazine*, will meet the case, which, however, is only approximately correct, but sufficiently accurate for all practical purposes. It is better to order a little in excess than otherwise, as the extra portion may be used to replace damp or defaced portions or for other purposes.

To determine the number of rolls of wall paper to cover the walls of a room, measure the circumference, from which deduct the widths of doors and windows, and divide the remainder by three.

*Example.*—Let us suppose a room 12 ft. x 16 ft., which has two doors and two windows, which average 14 ft. wide

$$\begin{array}{r}
 12 + 12 + 16 + 16 = 56 \text{ circumference.} \\
 4 \times 4 = 16 \text{ doors and windows.} \\
 \hline
 56 \\
 - 16 \\
 \hline
 40 \\
 \hline
 13\frac{1}{3} \text{ or say } 14 \text{ rolls.}
 \end{array}$$

This rule is calculated for room of not less than 10 or more than 12 feet in height.

For a room under 10 feet high, having a frieze say of 6 inches required, proceed as before with the measurement of the room, deducting the width of doors and windows. But in this case multiply the remainder by 2 and divide by 15, for this reason, that we can cut 5 lengths out of a double roll, which placed side by side on the wall, covers a space 7 ft. 6 in. from floor to ceiling, and instead of multiplying by 7 ft. 6, we multiply both by 2.

*Example.*—Take a room 14 x 14, with 2 doors and windows.

### PERVERTING FACTS.

WERE the following assertions of Mr. J. R. Hovenden in his address on painting, recently delivered before the Architectural Draughtsmen's Association of Toronto, Canada, to be accepted, the painters and decorators of the Dominion would be certainly entitled to our commiseration. The lecturer, as reported by the CANADIAN ARCHITECT AND BUILDER of that city, observed:

"I have avoided recommending the use of boiled linseed oil in mixing color or brown japan as a dryer, from the fact that nineteen out of every twenty barrels of boiled oil is what is known in the trade as 'bung hole' boiled oil, viz., so many gallons of raw oil is taken out of a barrel and a corresponding number of gallons of a cheap liquid dryer is put back in its stead; the barrel is then lugged up and rolled round, and you have your boiled oil complete. The average brown japan is very little better as to quality, being made from a very small quantity of cheap varnish gum and a very large quantity of resin (for North Carolina gum), with a little shellac. The use therefore of either or both in painting wood work inside or outside is somewhat dangerous, and when used the work is certain to crack, honeycomb and blister. Of such work there are thousands of specimens to be met with in this city to-day.

Assertion is not proof. The assumed positiveness in giving the actual proportion of sophisticated barrels to the entire bulk supplied excites incredulity in the speaker's honesty and sincerity. It is always easy to denounce and to exaggerate. Had the speaker contented himself with mentioning the fact of adulteration, his statement would no doubt go unchallenged; in the architectural draughtsmen he appears to have thought he had a lot of gullible listeners. Those painters in Canada who want pure linseed oils and good japans can doubtless get those articles if ready to pay the price and possessing sense enough to buy from reputable houses. The allegation appears to have been an attack on painters themselves, who are by no means helpless sheep whose fleece are being torn by ravenous wolves. So of the following:

"A mode of procedure to be avoided is that of priming wood work with a color composed of all the odds and ends of a paint shop. It is usually 'fat,' and will not dry hard no matter what pains are taken to make it do so, and the result is, in all cases where used, cracks, blisters, &c."

No one of course compels a painter to make up such a priming. We advise Mr. Hovenden, whose remarks to the draughtsmen show him to possess some knowledge of painting, indeed to be a house painter himself, to keep within the limits of his own knowledge in his future public assertions. After all it is well to learn of embryo architects getting a lecture on how to prime and lay on coats of paint. Were our own architects so far instructed in the art of painting as better to appreciate good work, the lot of the qualified house painter and decorator would certainly be happier.—*Painters' Magazine and Coach Painter*, New York.

It is recommended that muriatic acid and arsenic, in the proportion of one ounce of acid to two ounces of arsenic, that is arsenious acid, be employed to blacken brass in order to insure the finest result. Lacquers of all kinds are prepared by dissolving shellac in alcohol or wood spirit, as good a method for beginning being found to be that of continually adding shellac to a sufficient quantity of alcohol until the varnish is as thick as will probably be needed, the fact being that as a rule the lacquer is made too thick, about one ounce of shellac to ten or twelve of alcohol usually answering the purpose. To this shellac-varnish is added various coloring matter soluble in alcohol to impart to the lacquer a golden color; these colors were formerly obtained with dragon's blood, aloes and gamboge, a substitute for these, however, being now the aniline colors which afford all shades of yellow and red that are desired, and which with the plain shellac varnish, furnish all the red, red gold and copper hues that can possibly be required. All work to be lacquered should, of course, be warmed, and the lacquer be applied with a soft camel's hair brush.



### CEMENT FROM IRON SLAG.

THE subject of the manufacture of cement from iron slag has become an important matter. Not long ago ground slag was added to Portland cement, but was virtually a mere adulteration, injuring the quality of the cement, and useful merely as a means of defrauding customers, under color of a theoretical similarity in chemical composition between the cement and slag, which might be quoted with good effect by a plausible salesman; and a few years ago a convention of German cement manufacturers denounced the addition of slag as dishonest and useless. Now, however, by persevering effort, the art of making good cement from slag has been greatly developed, and it seems quite probable that the next decade will see the completion of two great industrial achievements, the production of a cheap and excellent cement from materials almost everywhere available, and the profitable utilization of one of the most cumbersome waste-products known to the arts. The extent of the resources which the manufacturers of the new cement have to draw upon may be judged from the fact that, in addition to the mountains of iron slag which already cover the smelting districts of Great Britain, the English furnaces now in blast furnish nine million tons of fresh slag every year, while those of the United States are not far behind their British rivals, and the French and German furnaces turn out nearly as much more. As a barrel of cement weighs on an average about four hundred pounds, the annual British product of slag alone, if it could all be utilized, would afford forty-five million barrels of cement—enough, if made into concrete, to build a dike fifty feet wide, and a hundred feet high, across the English channel.

Within certain limits, the chemical composition of iron slag is nearly the same as that of cement, both being composed of lime and clay, with a little magnesia and alkali. An important difference, however, consists in the relative proportions of lime and clay, the foreign Portland, like our Rosendale cements, containing about two-thirds lime to one-third clay, while the iron slag varies from equal parts of clay and lime, in that from hematite ore, to one-third lime to nearly two-thirds clay, in the Cleveland area. As it is well understood that cement, either natural or artificial, containing more than one part clay to two parts lime is inert, and incapable of setting, either in water or in air, the solution of the problem of making slags into good cement must obviously lie in the direction of adding lime to it in sufficient quantity to give the proper proportion between the two principal ingredients. The history of the manufacture of Portland cement has already shown that in order to do this efficiently an extremely thorough grinding and mixing is necessary; and the successful modern processes for the manufacture of slag cement secure this in various ways. The process now in most extensive operation appears to be that invented by Messrs. Bosse & Walters, of Brunswick, in which the slag, hot from the furnace, is run directly into cold water. This has the effect of granulating it; and after cooling, and drying thoroughly, the mass is coarsely ground and sifted. Meanwhile one part of lime to every three parts of slag has been slaked, by immersion in water, dried, and separated by a fan from the heavy and unburnt articles which may have been contained in it. The proper quantities of sifted slag and lime powder are then introduced into a corrugated cylinder, together with a number of small cannon-balls, an inch or more in diameter. After turning slowly for two hours, the cylinder is found to be filled with a very intimate admixture of the slag and lime, in powder so fine that it will pass through a sieve containing forty thousand meshes to the square inch. This is the slag cement, ready for use. In rapidity of setting, the new cement resembles our Rosendales more than our Portlands, the time to the first induration varying from two to eight hours, while Portland cement often sets in half an hour. In use, the slag cement resists the action of water better than Portland, and it is certainly free from disposition to swell in setting. In tensile strength the Portland cement is superior for the first month or so after setting, but the slag cement then begins to gain; and a few months later the strength of the slag cement, either pure or mixed with sand, is in some cases nearly double that of Portland cement. In other respects, the two sorts of cement closely resemble each other, so that the slag compound seems quite as desirable for use as the rather uncertain Portland, while the price is much less, mortar made with three parts sand costing now only two-thirds as much with slag cement as with Portland, while the manufacturers assert that with a little more experience the slag cement can be made and sold at a profit for ten shillings a ton, or less than fifty cents a barrel. This is little more than one-half the price of our native Rosendale cements; and if the iron furnaces of

Pennsylvania, Ohio, Tennessee and Alabama could produce a first-class article, at anything like the same price, they ought to find the profits of their business materially increased, while the people of the country would be benefited by having one of the best and most useful of building materials put within reach of the slenderest purse.—*American Architect*.

### TERRA COTTA LUMBER.

A REPRESENTATIVE of the CANADIAN ARCHITECT AND BUILDER recently had an interesting visit to the works of the Canadian Agency of the Chicago Terra Cotta Lumber Co., situated in Montreal, and managed by Mr. W. C. Evans. From the latter gentleman it was learned that terra cotta lumber is composed of fireless kaolinic clays and sandstone in such portions as to afford a degree of porosity to the burned product sufficient to allow of its easy working with tools commonly used in carpentry. Its experimental manufacture, and its application as "fire proofing" was introduced in 1882, and has ever since found increasing favor at the hands of architects and builders. Other inventions of later origin are "Driekwood" a composition of clays, or clay loams, and sandstone so intimately mixed and worked into form by heavy steam or hydraulic power as to render its burned product one-third the weight of common building bricks; "Cellular pottery," a mixture of surface clays, with fibrous vegetable matter, as straw, or its equivalent, in such proportions as to enable the safe drying and burning of hollow blocks pressed into the shape of joists and timber in lengths as great as ten or twelve feet; "Holstein," or woodstone, so called because composed of clay and sawdust, with sufficient straw added to furnish the required amount of fiber in their green pressed state to overcome the tendency of the wares to crack, while drying, will safely yield large hollow blocks, for the outside walls of houses, in the place and imitation of stone weighing as much as two or three hundred pounds.

All of these wares are incombustible and offer no such resistance to the action of fire as bricks, for the final process of their being is indelicate. Unlike brick, however, their great porosity confers remarkable non-ductile properties of heat, cold, and sound. It is claimed that their production can be had of any sort of clay or loams; that their first cost is cheaper than "stopped" bricks; that wooden framed buildings, at no enhanced cost, may be so sheathed and protected by their application as to be as secure against incipient fires, as the usual fire-proofed structure of brick; and that such construction affords the comfort of houses of brick in northern countries and of woods in hot climates.

### COMPOSITION OF ANCIENT MORTAR.

MR. JOHN HUGHES, F. C. S., in the London *Builder*, after an analysis of some pieces of ancient mortar draws the following general conclusions therefrom:

1. That in ancient mortar a much larger proportion of lime was always used than at present is the practice.
2. That a superior quality of lime was employed, and that the proximity of good limestone for burning purposes was as important as the presence of good stone for building purposes.
3. That sand of an angular character, with sharp edges, is much more effective than sea or river sand, which possesses a rounded surface, and is, therefore less binding.
4. That if more attention were paid to the quality and composition of mortar and its freedom from rubbish, such as earth of a clayey nature, new buildings would be more durable and require repairs less often.

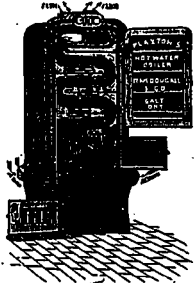
A Saratoga Springs, N. Y., inventor has devised a radiator with a swivel joint at one end, to which the steam and return pipes are connected, and around which the radiator can be swung, if desired to change its position or to clean under it.

We are pleased to learn that the Barnum Wire and Iron Co., Windsor, Ont., has been awarded the contract by the Dominion Government for all the interior iron work for the new Departmental buildings at present in course of construction at Ottawa.

Messrs. Clare Bros., Preston, Ont., manufacturers of heating furnaces, are adding to their works a three storey stone addition 195x75 feet. Mr. John Wisching has the contract for the mason work, and Mr. L. Eyers for the carpenter work, Mr. George Winterhalt supplying the lumber.

On June 5th the J. F. Pease Furnace Co.'s factory on Queen street, in this city, took fire from a box factory in the rear. Before it could be extinguished \$10,000 worth of stock had been destroyed. The building was also damaged to the extent of \$2,000. The entire loss is covered by insurance.

The Napanee Cement Co. have recently removed from Napanee and have taken possession of the new buildings erected for them at Napanee Mills on the Napanee railway, five miles from the town of Napanee. It is the intention of the manager, Mr. Brexvender, to put in operation shortly a second pair of stones.



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**DRETON, ONT.**—A new Presbyterian church is talked of.

**STELLA, ONT.**—A new English church is in contemplation.

**PICKERING, ONT.**—Tenders are asked for a new school house.

**WESTMEATH, ONT.**—A new Methodist church is to be erected here.

**ANNFORTH, ONT.**—A handsome new town hall is to be erected here.

**BRANDON, MAN.**—A movement is on foot to establish an hospital.

**CANIMPELLVILLE, ONT.**—A new Presbyterian church is being talked of.

**RAT PORTAGE, ONT.**—A system of waterworks is being discussed here.

**STRATHROY, ONT.**—The Baptists intend erecting a new church this summer.

**SUDBURY, ONT.**—A new Presbyterian church will shortly be erected here.

**OTTAWA, ONT.**—A new \$70,000 church for Irish Catholics is to be built here.

**MITCHELL, ONT.**—Mr. Walter Thompson will erect a large grain elevator.

**LONDON SOUTH, ONT.**—Plans are being prepared for a new Baptist church.

**BRAMPTON, ONT.**—The citizens have voted \$9,000 for water-works extension.

**WOODSTOCK, ONT.**—Plans of an opera house to cost \$40,000 have been prepared.

**STREETSVILLE, ONT.**—The Presbyterians of this place intend enlarging their church.

**HAMILTON, ONT.**—The Y. M. C. A. have purchased a \$7,300 site on which to erect their hall.

**GALT, ONT.**—The by-law granting \$8,000 toward the erection of an hospital, has been carried.

**DORCHESTER, ONT.**—The Methodist congregation of this place have decided to erect a new church.

**LITOWELL, ONT.**—The Baptist congregation are taking steps toward the erection of a new church.

**VANDOVER, B. C.**—Parliament has voted \$10,000 for a new post office and custom house building.

**WALKERTOWN, ONT.**—The Town Council has granted the Board of Education \$4,000 for a new school.

**PEMBROKE, ONT.**—Mr. Willis Chapman, C. D., is preparing a report upon a proposed system of waterworks.

**WELLAND, ONT.**—The Waterworks Committee ask tenders for 500 feet of flexible joint pipes 8 inches diameter.

**WINDSOR, ONT.**—A by-law appropriating \$22,000 for the erection of a Collegiate Institute building has been passed.

**AMHERSTBURG, ONT.**—The Essex County Council is considering the question of erecting an Industrial Home near this town.

**SHATFORD, ONT.**—A syndicate is being formed with a view to the erection of a first class hotel.—It is proposed to erect an opera house.

**GULFVIEW, ONT.**—The citizens are considering a proposal to erect a new building for the fire brigade and extend the water mains.

**CALGARY, N. W. T.**—The Council will ask tenders for the construction of a system of waterworks. Address the Mayor for particulars.

**ORILLIA, ONT.**—The Presbyterians of this town have decided to erect a new church modelled after the one at Parkdale, at a cost of \$16,000.

**KIRWATIN, ONT.**—A new Presbyterian church is to be erected to cost \$3,000.—Funds are being raised for the erection of a new Presbyterian church.

**SARNIA, ONT.**—A school house to cost \$3,500 is to be built for St. George's church.—Proposed alterations to the High School building are being considered.

**SAULT STE MARIE.**—It is expected that tenders will soon be invited for work on the Sault canal, for which one million dollars was appropriated last session.

**DESERONTO, ONT.**—Ald. Hanley, of Belleville, Ont., has prepared plans for a new high school at this place, to cost about \$2,000.—The impossibility of getting pure water has led to consideration of the question of putting in waterworks.

**VICTORIA, B. C.**—The Dominion Parliament has placed in the supplementary estimates the following sums to be expended on public works in this province: Improvements on Columbia River above Golden, \$50,000; Penitentiary, including re-late for wardens and visitors, \$25,000; Telegraphic service between Beaulieu Point and Victoria, \$15,000; river channel, Cession, with new dredging plant, \$15,000; Fraser river additional grant, \$10,000; Biggs' Forging channel, \$10,000; building Indian Industrial School at Kootenay, maintenance of thirty-five pupils, \$9,000.

**WINNIPEG, MAN.**—The following appropriations for public works in the Northwest have been placed in the supplementary estimates:—Battleford Land and Registry Office to complete wall, &c., \$2,500; residence of the Lieut.-Governor of the Northwest Territories at Regina, \$18,000; Lieut.-Governor's residence repairs, \$2,000; Calgary court house, jail, registry office, &c., \$10,000; crown lands and timber agents' offices at Regina, Prince Albert and Edmonton, \$15,000; Northwest mounted police buildings, \$10,000; court house, lock-up and police accommodation at Moosomin, Maple Creek and Medicine Hat, \$10,000; Fort

Macdon, storehouse for use of collector of customs and Inspector of cattle ranches, \$1,000; general repairs and improvements to harbors and rivers in the Northwest Territories, \$4,000; new stations at Saddle Lake on the Qu'Appelle and Edmonton line, vit Port Pitt, \$600; telephone line to connect the police headquarters, &c., with the Bank telephone exchange, \$6,000.—It is proposed to lay ten miles of new water mains during the present year.

**TORONTO, ONT.**—It is proposed to make extensive improvements in the interior of St. James' Cathedral, to include removal of galleries, repairing floor, erection of choir stalls and choir vestry. The outlay will amount to about \$40,000.—The residence of the late Senator McMaster on Bloor street, is to be converted into a Ladies College for the Baptist denomination.—The following permits for new buildings have been issued during the past month: Geo. Rudean, pair s. d. 2 storey and attic bk. dwelling, cor. Bismark and Gwynne Aves., cost \$7,500; Prospect Park Stabling Co., one storey r. c. slating and cutting rick, Papeziet st., cost \$6,000; Methodist Book Room, a four storey bk. warehouses, Richmond st., west, cost \$50,000; Mr. Milligan, pair attached 2 storey r. c. dwellings, Baldwin street, cost \$3,000; W. Wanz, 2 storey bk. dwelling, D'Arcy street, cost \$3,500; J. Wardell, pair 3 storey attached stores, Spadina Ave., cost \$4,500; Mr. Stewart, 2 storey and attic bk. dwelling, Wilcox street, cost \$5,000; R. Black, 2 storey and attic bk. dwelling, Richmond street east, cost \$2,000; W. Christie, pair attached 2 storey and attic bk. dwellings, Classic Ave., cost \$5,000; J. C. Clark, 2 storey and attic bk. dwelling, Avenue Road, cost \$4,500; Water Works Dept., bk. addition City Hall, cost \$3,000, and a storey bk. press house, Soho street, cost \$13,000; Thos. Ryde, 3 attached 2 storey and mansard bk. stores, 280 Queen street west, cost \$6,500; W. Layton, 1 storey and mansard add. to Caer Howell hotel, Queen's Ave., cost \$1,500; Stierhood St. John the Divine, 2 storey and attic bk. hospital, Major street, cost \$21,000; R. H. Reithune, 2 storey bk. add. to dwelling, College Ave., cost \$7,000; R. Jeffrey, 1 storey and mansard bk. stable, 78 Givens street, cost \$5,000; Chas. Taylor, 2 storey and attic bk. dwelling, Sussex Ave., cost \$3,500; W. H. C. Kerr, add. to Canadian Pacific Hotel, King and John st., cost \$4,500; A. J. Henderson, pair 2 storey and mansard bk. dwellings, 77 St. Patrick street, cost \$5,000; Mrs. Slater, pair 3 storey and attic r. c. stores, McCaul street, cost \$3,000; Peffer Mfg. Co., 1 storey bk. add. to factory, Johnson St., cost \$2,500; Jno. Trnlor, pair s. d. 2 storey r. c. dwellings, 130 Parliament street, cost \$2,500; G. Carry, pair s. d. 2 storey and attic bk. dwellings, North street, cost \$6,000; H. I. Gray, pair s. d. 2 storey and attic bk. dwellings, 166 Rose Ave., cost \$6,500; John Smiley, pair s. d. 2 storey r. c. dwellings, Price street, cost \$1,750; Jas. Progly, pair attached 3 storey bk. stores, Yonge street, near Marlborough Ave., cost \$5,000; J. Wilson, 3 s. d. 2 storey and attic bk. dwellings, Wilson Ave., near Bond street, cost \$10,000; Chas. Werner, 2 storey and attic r. c. dwelling, Louis street, cost \$1,500.—The A. O. U. W. have decided to erect a new lodge building on Brunswick Ave., and the Sons of England will probably put up a new building on Barbours street.—The Public School Board has decided to spend \$10,000 on repairs to school buildings.

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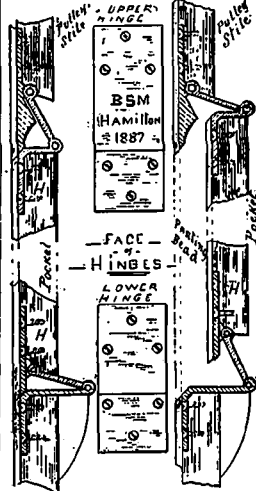


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mitre, and slide in with the pocket H, to clean the check of sand.—If the check recedes at an odd side, and cleaning the opposite parting head is taken on, the pulley loose are in the pocket H, and the line see held in a lock place on inside of each by means of a knot on the end of the line, which is released and run up to the pulley in taking the sand. The attention of architects and builders is called to these hinges. For further information and price apply to the inventor,

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The purchaser can have ample time to test them in his own shop and on the work he wishes them to do. Descriptive Catalogue and Price List Free.

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Block Stone.	Sewer Pipe,	Portland Cement,
Out Stone,	Drain Tile,	Canadian Cement,
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Paving Stone,	Lake Gravel,	Plaster Paris,
Floor and P. Stone,	Fire Brick,	Venetian Red,
Grindstones,	Fire Clay,	Chimney Tops,

Lime, etc., etc.

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### Porous Terra Cotta Building Material FOR FIREPROOF BUILDING PURPOSES.

IT is not excelled by any other material and does not crack or fall to pieces on the application of cold water when red hot. It is also proof against damp, rust, and vermin, and can be sawn, nailed and worked with carpenters' tools. Mortar adheres to it without either furring or lathing, and makes the house built of it cooler in summer and warmer in winter, and weighs less than half what brick does. It is much better in every way than either wood or brick for inside walls, partitions, floors, ceilings, furring and roofs, and on the average cheaper than either. It has the recommendation of architects and is certain to reduce the cost of fire insurance.

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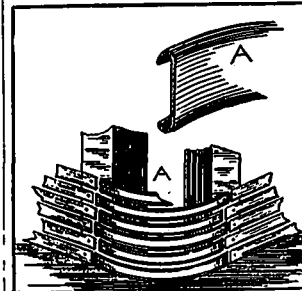
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THE object of this invention is to form circular corners on stud partitions, both outside and inside, when required, or only on the outside. This has hitherto been done by making the grounds with coopers' laths, which, owing to shrinkage, caused the plaster to crack—but curves of any required radius may be made with these Metallic Laths, and which will form a strong and firm ground in line with the wooden lathing for plastering on, and as shown in cut A, the laths are keyed top and bottom, thus forming a double key.

The attention of Architects and Plasterers is called to this invention.

Give them a trial and be convinced. Send for Circulars and Price List.

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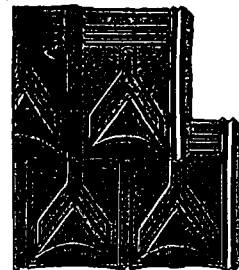
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