



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.

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**THE  
 Canadian Architect and Builder**

A JOURNAL OF MODERN CONSTRUCTION METHODS,  
 PUBLISHED MONTHLY IN THE INTERESTS OF  
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 MATERIALS AND APPLIANCES.

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FROM time to time the daily newspapers report the case of some unfortunate workman who has been buried alive or fatally injured by the caving in of the drain or sewer in which he was working. The frequency of such accidents would seem to indicate that some contractors do not take the precautions that are necessary to protect workmen in their employment from injury. City engineers and others whose duty it is to supervise the work of contractors, should see to it that the latter are not allowed to shirk their duty in this important particular.

THE average house owner is not deeply interested in the health of his tenants, and goes no farther in the direction of sanitary improvements than the law or self interest compels him. Canadian tenants should take a leaf out of the book of the Chicago people, who are just now using the house owners' self-interest as a lever to keep their buildings in a sanitary condition. A Chicago journal states that "the public is getting more sensitive to sewer air every year, and to recognize its effects when it is not perceptible by its odor; and that whole blocks of nice-looking residences stand empty in some localities because when inhabited funerals were so numerous as to make them notorious." Canadian house owners who are seeking only to reap large profits from their investments, and have given no thought or care to the sanitary condition of their premises, will do well to take warning.

COMMUNITIES, like individuals, often fail to appreciate their advantages until dispossessed of them. Through neglect on the part of its official representatives, the city of Toronto has forfeited control of the Queen's Park and Avenue. The property, unless some new arrangement can be made, will revert to the University. Seeing that no land for park purposes is obtainable near the centre of the city, it is very desirable that negotiations should be commenced on the part of the city with a view to obtaining a new lease of the property. Toronto is sadly deficient in the matter of public parks and squares, which conduce so greatly to

the pleasure and comfort of residents in large cities, and form centres of attraction for visitors. In this park transaction the city is certain to be the loser, even though it should again secure control of the property, as the University will refuse to forego the advantage it has gained unless liberally compensated.

AN outcome of the recent difficulty between the master builders and their employees at Hamilton is the formation of an Independent Workingmen's Association. The members of this new organization state that they are not in sympathy with the methods of the unions or with their attitude towards the employers. They will endeavor to bring about a more friendly feeling between employers and employees, and favor a graded scale of wages in comparison with the skill of individual workmen. This organization is the natural outgrowth of the tyrannical conduct of the unions, whose members are expected, and indeed compelled, to sacrifice their individual opinions and desires, and follow the dictates of their leaders. If the unions hope to hold the allegiance of men of independent minds, they will find it necessary to allow their members greater individual liberty; and also they will need to recognize the justice of paying workmen in proportion to the amount and quality of the work they are able to perform.

SEVERAL contributors to this journal have recently pointed to the necessity for a standard of qualification which every person aspiring to practice architecture should be required to measure up to. The subject is a timely one, involving not only the interests of architects, but of the public as well. We have wisely decided that no person should be allowed to carry on the business of a plumber without first having passed an examination showing himself to be possessed of the necessary knowledge. He is even required to give a bond for the proper performance of his duties. Does not as much responsibility rest upon the architect as the guardian of human health and life, as upon the plumber? If so, why should not the one be required to prove his qualifications as well as the other? The time is surely coming when architecture will be placed on equal footing with the other professions, when only those who have fitted themselves by a proper course of study will be allowed to practice it. The duly qualified architects of the present day should unite as a body and seek to obtain the passing of the legislation necessary to place the profession upon the higher level where it properly belongs.

A FEW summers ago the Toronto City Council tried the experiment of planting flowers along the boulevards in Queen's Park Avenue. The result was most discouraging. Before the season was half gone scarcely a flower was to be seen. They were plucked by cruel passers-by almost as soon as their petals opened. Many of the plants were torn up by the roots, and either carried away or trampled under foot. The Council naturally enough concluded that it was useless to spend money in attempting to beautify the public thoroughfares and render the city attractive, so long as a portion of the population at least were so unappreciative as to wilfully destroy instead of seeking to protect and preserve what was designed to increase their pleasure and happiness. We observe that the City Council, into whose hands has recently passed the management of the Horticultural Gardens, will again test

public appreciation in this direction, by removing the wooden fence and allowing everybody to have free ingress to this delightful spot. We trust the result will prove that refining and civilizing influences have been at work among all classes of our citizens, and that all will unite in showing their appreciation of every effort put forth to make the city of Toronto as attractive as it is substantially prosperous.

THE City Council of Peterborough, Ont., are considering the introduction of a system of sewerage under the terms of a public competition. The proposal is to submit the plans to a committee of three engineers as arbiters—one to be selected by the city, one by the competitors, and the third by the other two; the successful competitor to have the commission of the execution of the work. This commends itself as the fairest tribunal before which any competitive plans can be laid; still, in view of the unsatisfactory nature of all competitors, we cannot endorse the scheme as heartily as we could desire. The questions at stake in the planning and laying out of a system of sewerage are very weighty, and require a great deal of thought. Few competitors can afford the time and money to visit a city and take in all the points, on the mere chance of gaining a prize, which will not compensate them for their time, unless they obtain the first prize. We have now several engineers of eminent in sanitary science in this province, and if gratuitous advice is ever of any value, we offer it to the City Council of Peterborough, and advise them to seek out and employ a consulting engineer. Let him have the surveys made by some one conversant with the needs of the city; inform him of any special points as to discharge of sewerage and areas to be specially sewered at once, and leave him from his experience to propound the most satisfactory system he can devise.

IT is probable that the eastern gap of the Toronto harbor will be dredged to allow of the passage being used by large vessels. If such should be done, some provision should be made which will allow of the erection of a swing bridge. We must have the means of reaching the Island by other ways than by the Island ferries. A street car line laid along the lake edge of the Island, and connected with the street car service of this city would meet the wants of a large number of our citizens. This line could be connected with the east and west end of the King street lines, and a belt line of cars run, with which all the other lines in the city could connect. Another belt line could be run by laying a line of rails up Bathurst street to College street, and running a line of cars along this route to the Island by way of Parliament street. A third belt line could be run by way of Bathurst street to Bloor street, along Bloor to Sherbourne street, and by way of Howard street to Parliament street, and thence to the Island. With these systems of street car lines in operation, ready access to the Island could be gained from all parts of the city. Arrangements could be made to use these tracks for the conveying of street sweepings and other refuse suitable for the purpose to the Island on cars or waggon. This work should be done in the early morning or at night. By this means the Island could be built up by the addition of material which would be most valuable when placed thereon, but which is of no value in the city. The distribution of material on the Island would turn it into a fertile garden, and make it possible to lay out a beautiful park which would be the resort of our citizens during the

heated term. It would also remove the necessity of dumping this material in the low lying parts of the city or along the bay front, where it must eventually cause trouble. That the Island will some day be turned into a most beautiful park, resorted to by many thousands of our citizens no one can doubt. The question is, how may it be done in the shortest time and in the most economical manner? If some definite line of action is adopted, and year by year it is worked upon, it will not be very long before a very decided improvement is noticeable.

WE gave a word of caution to builders recently against yielding up their hard-earned dollars to the persuasiveness of smooth-tongued representatives of Co-operative Building Plan Associations, or publishers of what are called in the United States "ready-made misfit building plans." The warning, as we have since learned, was a timely one, although we regret that it came too late to save some. A builder in this city sadly confessed the other day that he was unable at present to subscribe for the CANADIAN ARCHITECT AND BUILDER as he had recently thrown away fifteen dollars on a book of "misfit plans." He frankly confessed that he had been badly "sold," but seemed to find comfort in the fact that the owner of a neighboring shop had been "taken in" also. The latter on being spoken to, showed plainly by his manner that the subject was not a pleasant one to him. Both men admitted that, while they had each got a very nice picture book, every attempt to apply the information printed therein to practical purposes had resulted in utter failure.

THERE is much need of reform in the operation of the by-law which is supposed to govern the issuing of building permits in the city of Toronto. We do not at present know all the provisions of the existing by-law, but we do know that some of the most important are scarcely if ever complied with. Persons intending to build within the fire limits are supposed under this by-law to submit plans of the proposed building for the approval of the Building Inspector, and to obtain a permit before the work is commenced. Instead of this being done, buildings are in the majority of cases commenced and partially or wholly erected before a permit authorizing the work to be done is granted. The Building Inspector has the power in such cases, if the provisions of the by-law have been disregarded, to compel the pulling down of the work and its reconstruction in proper form, but how often is this power exercised? Not very often, if in any case, as the continued non-compliance with the by-law plainly shows. The by-law as it stands at present is a farce, and entirely fails of its object. Every person intending to put up a structure within the city limits should be compelled to obtain a building permit from the building inspector before commencing the work. This would insure the proper erection of buildings, and would furnish a reliable record of the number and value of new buildings put up each year. We hope to see this reform carried out.

WITH this issue we present the fifth number of the CANADIAN ARCHITECT AND BUILDER to the public. The four numbers that have already been published, we believe have not been wanting in merit. That we have not done all that we could wish, we are free to admit; but we hope that our shortcomings will be forgiven. It is our desire to make this journal as valuable as possible to all interested in architecture or any of the kindred branches. To that end we will be very much obliged for any suggestions with which we may be furnished. We may not be able to follow all the suggestions which we may receive, but they will at least give us some idea of the lines along which we should proceed to satisfy the largest number. There are many who will grumble and find fault for the pleasure it gives them. From these people we are not at all likely to receive much advice that will be of service. There are others, however, whose opinions we would value if they would only favor us with them. We will be exceedingly thankful if they will take sufficient interest in us to forward their views. The position of this journal is now assured, and all that remains to be done is to increase its usefulness to such extent as we may be able to do by the experience we are gaining. Our advertising patronage is extending, and before long we will have a very complete and representative list of all the important manufacturers and dealers in building materials. As this paper is being taken by nearly all the architects and contractors of this country, its value as an advertising medium is beyond dispute. We will not at present speak of the improvements which it is intended to make with the commencement of the second year. They will not be few, and we believe that in all cases they will be

along lines satisfactory to our subscribers and advertisers. If those persons who take an interest in this journal would advance its welfare whenever the opportunity offered by increasing its subscription lists and gaining for it advertisements, we should feel very grateful. As this is the only Canadian journal devoted to the interests of architecture and its sister arts, we would ask for the cordial support of all Canadians who love their country and hope to see it as rapidly advance in the love of art as it has already done in more material interests.

AT the corner of King and Yonge streets in this city there was a very serious blockade of vehicles the other day. At the time there did not seem to be any unusual amount of traffic, but it so happened that a number of large drays and street cars met and caused a serious stoppage. If such stoppages occur frequently with the present amount of traffic, what may be expected when it is doubled or trebled, as no doubt it will be in a few years? An effort should be made to have the intersection of all important streets enlarged. With the present amount of space very little traffic will cause a blockade, because only one vehicle can pass through at a time, and if the right of way is held by teams passing along one of the streets, those on the other must wait until they have passed. The two north corners of King and Yonge streets are now occupied by old buildings, which must in a very short time be taken down and new buildings erected. If improvements are made on these corners before the intersection is enlarged by the expropriation of the angles, it will be made more difficult and expensive to effect this most necessary object. There are a number of places in this city where the traffic will be so great in the near future that there must be continual trouble, and some effort should be made to provide a remedy, before almost insurmountable impediments are placed in the way by the erection of costly improvements. There has not been in the past very much belief in the future greatness of this city, and consequently very little has been done to make provision for the requirements of the future. Where everything has been so carelessly done, and we are now suffering the consequences, one would think that some attempt would be made to show our belief in the future of the city and our desire to remove obstacles from the path of our descendants. As is well known, the intersections of streets in London have been enlarged with what they call *circuses*, which allow of the free passage of vehicles into the different streets leading into these *circuses*. The traffic in some of the streets in London is tremendous, and yet there is comparatively little stoppage in those streets. Nearly all the blockades in New York are caused by the blocking of traffic at the intersection of narrow but important streets. Having this knowledge of what has occurred in large cities, and the methods adopted to correct the evil, we should make some use of their experience, and make wise provisions for the future. If we do not, our descendants will not thank us for our lack of foresight or indifference to their interests.

THE Royal Canadian Academy Exhibition was formally opened by His Excellency the Governor General on Monday evening, May 7th. At nine o'clock His Excellency, accompanied by the Marchioness, Lady Macdonald, the Lieut.-Governor of Ontario, Col. Goroski and aide de camp Sheatfield and Anson, arrived at the Granite rink where the Exhibition is being held. They were received by Mr. L. R. O'Brien, president of the Academy, Mr. A. C. Hutchinson and Mr. A. Patterson, and conducted to the platform, when the proceedings were commenced. The President welcomed the distinguished visitors in a few well chosen sentences, and then proceeded to speak on the progress of art in this country. He regretted deeply the difficulty of arousing in the people any sentiment in favor of art; but hoped that the time was not distant when the influence of the Academy and of its members would be apparent in a higher appreciation and knowledge of art by our people. The Hon. G.W. Ross welcomed the Governor-General on behalf of the Ontario Government. He acknowledged the debt of gratitude he was under to His Excellency for the advice and assistance he had given him in the making of the necessary arrangements to teach art in the schools, the result being that where a few years ago art was not taught in the schools, it is now taught to many thousands, and "advanced" and "still further advanced" art at that. The Hon. Mr. Ross also congratulated the members of the Academy on the great excellence of the Exhibition.

Lord Lansdowne, in a few words, thanked the speakers for their kind expressions of esteem for himself and Lady Lansdowne. He also spoke many encouraging words to the members of the Academy and advised

them to strive manfully for the advancement of art in this country. He likewise made a suggestion which it is hoped many of those present will not allow to pass their memory, viz., that there are many wealthy men in the community who could afford to buy one or two good pictures in a year to beautify their costly homes. In so doing they would receive large returns in the education in art which they and their families would derive, and they would at the same time be giving great assistance to Canadian artists. If a man could not sell his pictures in his native land there was no encouragement for him to remain, and we would lose men which our country could ill afford to part with.

The east end of the curling rink has been partitioned off and set apart for the exhibition of the pictures. The space has been divided into three rooms—a large one in the center, with smaller ones on each side. The large room is spacious, and gives every opportunity for viewing the pictures from different positions. In the center of the room has been placed a number of buses of well-known men by Mr. Hamilton McCarthy. Three pictures belonging to the Marquis of Lansdowne, which he kindly lent to the Academy for this Exhibition, have also been placed near the center of the room. The arrangements, taken altogether, are good for the exhibition of the pictures. The entrance to the Exhibition could not be worse, and until lately no attempt was made to inform people of its location. When residents of the city are unable to find the exhibition, how are strangers to discover its whereabouts? Some effort should be made to make the way more convenient.

A very decided improvement in the pictures exhibited is noticeable over those of the last Exhibition held here. It is very gratifying to Canadians to observe the marked advancement which has been made by Canadian artists in the past few years. It is to be hoped that equal, if not greater progress, will be made in the future. This much to be hoped improvement of art in this country can be very materially advanced if our wealthy classes will spend some of their accumulations in purchasing pictures by our Canadian artists. The pictures are well worth a place in any house, and there is no necessity of buying an inferior picture with the object of rendering assistance to artists. It is more than probable that the purchaser will have received the greater benefit in the higher ideas of life which will be acquired by his surrounding himself and family with work of art, not only beautiful in themselves, but also in the ideas which they suggest. There are very many costly homes in this city which have not upon their walls one single picture worthy of a place in the humblest cottage. Let us hope that this number will be reduced. The influence of an exhibition of good paintings must be very great. People who even for a few moments view a good work must see the great difference between it and that which meets their eyes every day within their houses. If they have any higher feelings it must cause them to strive to obtain that which they admire most. And in this is the great benefit of art exhibitions to the people. They are given opportunities to see good work, and the effect must be more than temporary.

We think it would be a very good thing if the exhibition of paintings were thrown open to the public on one or two evenings. We do not believe that this would result in any loss, but rather the opposite. Even presuming that there should be a small loss, it would be more than counterbalanced by the instruction gained by the public. It is true that these Exhibitions must be managed in such a way as to obtain money, but at the same time they should be made to serve educational purposes. The higher our people as a body are educated in the knowledge of art, the greater will be the progress of art. We certainly are not too highly educated in aesthetics; a little more or even a large amount of instruction in this direction will not advance us beyond safe bounds. Then let everything in reason be done which will advance us as a people in the love of the beautiful. That this Exhibition and Art Fair may result in educating the people as well as in a large financial balance is the hope of everyone.

To secure facility of adaptation in production and design in art workmanship, quick execution should be practised by students. Free-hand drawing and clay sketches should be simply the result of rapid observation, representing what the memory retains of an object after viewing it a certain time. With a definite conception of an example, and without further reference to it, a space should be filled with appropriate decoration in a given time. The Japanese, who have advanced all arts they have adopted, have adopted this plan, which is the education of the eye.



### CANADIAN ARCHITECT AND BUILDER COMPETITION.

WE are exceedingly pleased with the result of this competition; eight designs of more than average excellence have been submitted. It was with some doubt that we determined to hold a competition, fearing that there might not be any response on the part of Canadian draughtsmen. The amount of the prizes was not by any means large, and we were somewhat afraid that draughtsmen might not enter a competition for the sake of improvement. That they have done so is very gratifying, and shows that there are among the draughtsmen a few who are desirous of being more than servant preparers of designs at the dictation of ignorant clients. The greater number of clients value an architect in the degree that he will carry out their ideas without protest. An architect who has studied his profession as he should, will have derived much information useful to his client if he will but receive it, and when he refuses, the architect must, if he values his reputation, do his utmost to convince the client of his error.

The designs sent in would meet the requirements of nearly every description of client, and there are others which have been prepared with no little study that would exactly meet the wants of the many. It is our intention to criticize all the plans to the best of our ability, pointing out what we consider defects, and suggesting improvements. We hope by this means to assist draughtsmen who are desirous of learning, by giving them hints on the points to be considered in the planning of houses. In another column will be found a criticism of the design placed first by the experts.

We believe that a large number of the designs came from a single office in this city, and that six out of the eight prizes were taken by students of that office. This speaks very highly of the *esprit de corps*, among those students, and where there is so much rivalry there must necessarily be progress.

Those who sent in designs and did not get a position, or who only received a low one, must not become discouraged. They have now some knowledge of where they stand in competition with others, and will be able to study with some knowledge of their deficiencies.

We will illustrate a number of the designs sent in, so that the defeated may see wherein they failed, and also what secured success.

It is our intention to hold another competition later on, when the work in the different offices is not so pressing as at the present time. Ample notice will be given to allow of careful study, and we expect to have a more thorough and instructive competition than the one just held, successful as it has been.

Another pleasing feature of the competition, and one which we were nearly forgetting, was that designs were sent in from long distances, one coming from Prince Edward Island. We hope to welcome in our next competition designs from all parts of Canada.

The Committee appointed by the Architectural Guild of Toronto to adjudge the prizes offered by the CANADIAN ARCHITECT AND BUILDER for the best design for a town house costing \$2,500, beg to submit the following report:—

We find for excellence of plan and elevation, and for due regard to the limitation of price, the following five names most successful in order of merit, as follows:

1. "Dessir a Teur," (John C. B. Howard, Toronto).
2. "Nevis," (E. Wilby, Toronto).
3. "Solaria," (C. B. Chappel, Charlottetown, P. E. I.).
4. "Gamut," (C. H. Acion Bond, Toronto).
5. "Deux Mille Cinq Cent," (Chas. E. Langley, Toronto).

For skill in rendering the perspective drawing, we consider the four most excellent to be the following, placed in order of merit:

1. "Dessir a Teur."
2. "D. R. B." (David R. Brown, Montreal).
3. "Nevis."
4. "Gamut."

WILLIAM G. STORM.  
EDMUND BURKE.  
W. A. LANGTON.

Toronto, 1st May, 1888.

### SHORT DESCRIPTION OF DESIGN FOR A \$2,500 TOWN HOUSE BY "DESSIR A TEUR."

This design has for its first object, simplicity in both plan and elevations. The rooms have been planned with the view of obtaining the mellow rays of the morning sun. The entrances are so arranged as to be free from the effects of snow slides, &c., from the roof, which to "Dessir a Teur" is a very important point in this climate. By combining the stair-cases—which seems permissible in a house of this cost, for generally a client of such means expects a house half as large again as can be built for his expenditure—a saving of both space and money is effected. The convenience of a wide stair from laundry, &c., to the garden is also to be noted.

**Materials.**—Outside cellar walls to be of stone, interior walls of 9 inch brick. Timber of good dry and clear white pine. The structure above the cellar walls will be of frame; the exterior walls to be covered, both sides, with matched sheathing and felt; battened and lathed and plastered inside, and first storey outside covered with clapboards, and second storey and gables with cut shingles; roof to be laid with shingles on mortar. All of work is to be painted excepting the two ground floor rooms, which will be of best varnished pine. All shingle work to be untouched to turn grey with the weather. This design cubes at 8c., the amount stated.

### CONSTRUCTION OF ROOFS.

ARCHITECT S. G. Curry gave a very instructive address on the "Construction of Roofs," before the Toronto Architectural Draughtsmen's Association on Tuesday evening, April 17th. The subject of roof coverings, the merits of various kinds, and how some of the difficulties are to be met in obtaining a weather-tight roof, particularly where ice and snow have to be contended with, was first taken up, after which Mr. Curry dealt with the construction of trusses, dwelling on the importance of having the main points "fixed" to secure perfect rigidity. The address was concluded by an explanation of Ricker's system of graphic statics for the calculation of strains, illustrated by diagrams. Mr. Curry, who has always shown a practical interest in the Association, was accorded a hearty vote of thanks at the close for his able and instructive address.

### OUR ILLUSTRATIONS.

ONE of the illustrations in this number is the design sent in in the CANADIAN ARCHITECT AND BUILDER competition by "Dessir a Teur." The design was placed first by the committee of experts appointed by the Architectural Guild, a position to which it most deservedly is entitled. The author has given time and study without stint, and has conceived a plan which is almost without a fault. He has placed the dining room in its proper position, having an eastern exposure, which will allow of the breakfast hour being brightened by the rays of the morning sun. Again, the dinner has not to be partaken of in the summer months in a room heated to a most uncomfortable temperature by the afternoon sun. The serving pantry is not large, but it is ample for the size of the house, and the store closet is a very valuable addition. The kitchen is well placed, and is not rendered useless by the number or positions of the doors. A kitchen closet would have been a decided advantage, and would have improved this design, but everything is not attainable with a limited expenditure. The open porch to kitchen is a clever arrangement, which in winter could be taken advantage of by placing an outside door with a glass sash above it across the opening, thus shutting out a large amount of cold. The parlor is very satisfactory, and has a pleasant bay window with a southern exposure. The entrance is well managed, with a fair-sized vestibule and open porch. The staircase hall is small, but sufficient, and well proportioned. The sliding doors allow of the space being made the most of in the hall and rooms. The main staircase and servants' stairs have been most cleverly managed.

The ground floor is practically perfect; we cannot see how it could be improved in a single respect. The first floor is also well planned, the rooms being of good size, well placed, and with sufficient closet accommodation. A linen room has been supplied which is complete in all respects. This room is a very necessary one, but is not often provided in small houses. We prefer a bath room with an east or south exposure; but as this plan is so perfect we cannot find fault with its position, as to have given it any other place would have ruined a very superior plan without sufficient reason.

The elevations are all that could be desired; they are artistic, simple and pleasing. The broad and simple roof assists the design immensely, and gives it a simple

dignity which is highly satisfactory. The elevations are carefully drawn, and the perspective is artistically treated.

We must compliment the author on his design. We do not remember ever seeing one which has pleased us more, or with which it was possible to find so little fault. If we were building a house of this size, we should instruct the architect to proceed on the plans without an alteration either in plan or elevation. If the author in the future does work equal to what he has shown himself capable of doing at the present time, his success as an architect is assured. He may occasionally find it difficult to convince his clients, through their inability to appreciate good planning and artistic work.

### CHURCH OF ST. SIMONS, ROSEDALE, TORONTO.

The exterior of the building is of red brick, with Credit Valley stone coursing and dressings; the upper part of half timbered work filled in with Credit Valley broken stone fillings; the gables and exterior work of choir is finished in tiling, and the entire work finished in deep tones of reds and greens.

The interior of nave is furnished with a brick dado, the walls and ceilings being of trowelled stucco, decorated. The ceilings and walls of choir, baptistry and chancel are elaborately decorated in colors and bronzes. The furniture of the nave and church is of ash brought to a dark rich color.

Cost of the entire building, including heating and furnishing, \$10,000.

Messrs. Strickland & Symons designed and superintended the construction of the building. Davidson & Kelly executed the carpenter work, and Elliott & Son the decorative work.

### TORONTO ARCHITECTURAL GUILD.

THE regular monthly dinner of the Architectural Guild took place on Thursday evening last. The attendance, though not large, was more than made up by the enthusiasm of the members present.

A vote of thanks was unanimously passed to Mr. Bain, of the public library, for his kindness in receiving the members of the Guild on April 12th, for the arrangements he had made to show the valuable collection of works on architecture which the library contains, for his special invitation to the members to make use of the library for reference purposes to the freest possible extent.

It was decided to institute a series of competitions on architectural subjects, for competition among the students in the offices of members of the Guild—the first competition to be measured drawings of a public doorway to be selected by the Executive Committee. Other competitions will follow.

A committee was appointed to report on the question of some regular method of articling students in architecture, and also to determine if it is possible to enforce some standard of educational qualification.

An informal discussion took place on the proposed conditions of the Board of Trade competition. General satisfaction was expressed at the possibility of having a first-class competition, conducted on principles which must result beneficially to the Board of Trade and also to the architectural profession.

Notice was given that at the annual meeting in January a motion to amend the constitution would be made as follows: "That the membership of any member of this Guild shall lapse, 1st, when he does not pay his annual fee on or before the 1st day of April in each year, and 2nd, when he has not attended 60 per cent. of the regular meetings of the Guild without good and sufficient cause, viz., illness, or prolonged absence from the city."

### THE PROPOSED NEW TORONTO EXCHANGE BUILDING.

WE are pleased to learn that the Building Committee of the Board of Trade have determined to have an open competition of designs for their proposed new building. They very wisely asked the assistance of the Architectural Guild in the preparation of the conditions of the competition. The conditions are now under consideration, and will, from present appearance, be very liberal and fair in their construction. In the past, very few of our best architects have entered competitions, because the conditions were such that few men could afford to risk their time, money and reputation on what to a certainty would be decided by favoritism. Nearly all the best architects have signified their intention to enter this competition, and we feel confident that they will not run far behind in the race, even though they should have strong foreign competition.

We are also pleased to find that there are men in this

community who believe that it is only right to give local talent a fair opportunity to show what it can do. That such opportunity has been given in the last few years, no one who knows the facts will affirm. The erection of the Ontario Parliament Buildings was taken out of the hands of capable local talent, which was first placed in competition with firms from the United States, and given into the hands of the expert, who condemned the plans of Canadians without just or sufficient reasons.

Canadian talent has succeeded in competition with the local element in the United States; why cannot it do the same at home? Is it that a "prophet is not without honor save in his own country?" We are afraid that it must be so. We hear a great deal said about building up a "national spirit." How is this to be done when it is impossible for young men of talent to receive the reward to which they are entitled in their native country?

We would advise our architects to "put their best foot forward," and show that they have the ability to reach the top rung in the ladder of fame at home, as well as in a foreign country.

A model of the memorial statue to be erected at Port Hope to the memory of the late Col. Williams, has been prepared by Mr. Hamilton McCarthy, of this city, and has been approved of by a committee appointed by the Williams Memorial Association. The statue will be in bronze, of heroic size, mounted on a grey granite pedestal twelve feet high. It represents the Colonel with upraised sword giving the word of command.

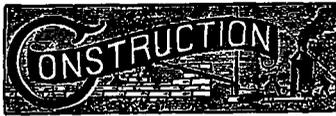
The London *Free Press* is of opinion that Canadian architects should turn their attention to designing houses in such a manner that the roofs could be utilized for recreation resorts by the occupants. Canada is a very large country, with a comparatively small population. There is as yet—nor is there likely to be for a century hence—no scarcity of fresh air or means of recreation for all requirements. Our contemporary could easily find some subject of more practical interest to discourse upon.

#### FLOWER-BEDS ON THE LAWN.

THE house is not wanted to stand in a flower-garden where everything else is sacrificed for the sake of a gorgeous display of gay colors. Besides, says the *Building Budget*, a bed of choice flowers look far more beautiful when standing well separated from other similar objects, either near the border of the walk or on the well-trimmed lawn where a group of dark foliage as a background gives relief to the bright and gay colors. Here they attract attention, while in the masses, the singles are lost. Too many flower-beds interfere with the effect of what is a more important feature on the limited surrounding of a suburban home, and that is the lawn, which should predominate. We introduce flowers not only for their individual beauty and enjoyment, but also for picturesque effects in connection with the house, and an adjunct to the lawn scenery, and effect. Such arrangements, beside producing great satisfaction to the occupants of a country home, add much to the cultivation of good taste; for few will pass by such a homestead without a pleasing reflection, and perhaps a desire to imitate similar effects on their own grounds. At a small outlay of money we can procure from most every nursery what is needed for such purposes. In fact, we can always find a desirable place for an evergreen or a shade tree near a dwelling.

#### TESTING FOR FOUNDATIONS.

IN connection with the building for the Paris Exhibition, a series of experiments have recently been carried out at the Champ de Mars, with a view to determine the resistance of the soil to concentrated loads, and in this way check the dimensions to be given to the foundations in different cases. A perfectly level surface in the form of a square of 113 feet side was first prepared, on which were placed four rectangular cast-iron blocks 1 foot 8 inches square, disposed so as to occupy the corner of a square, the distance apart being 11 feet 8 inches centre to centre, and these spaces were bridged by girders constructed of 7 in. These girders were next loaded with T-irons, the number and weight of which were carefully noted. At the end of 11 hours the weight on the girders had reached a total of 143,923 pounds, and indications of settlement became visible, the stress on the surface of the ground being at this moment 7,311 tons per square foot, in which is included the weight of the blocks and girders in addition to the above load. The experiment was then abandoned till the following day, when it was found that the settlement had increased during the night to an amount varying between 10 1/2 inches and 12 inches. The experiment was now resumed and the load increased up to 202,776 pounds, at which the experiment was abandoned, as some of the blocks had then sunk completely out of sight, leaving the girders to be supported directly on the surface of the soil. The conclusions arrived at were that the ground at this spot is capable of resisting a load equivalent to 5.43 tons per square foot, that a certain amount of settlement may be expected when the stress reaches 7,311 tons per square foot, and that it is totally incapable of bearing a load amounting to 8.14 tons per square foot



#### MADISON AVENUE SEWER.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR.—I wish you could stir up the authorities who are responsible for the tardy progress of Madison Avenue sewer, Toronto. The tenders for the work have been let long enough ago, and other streets that did not require sewers as badly have since then been accommodated. I am building there now, and would have built there a year ago, as would many others, if sewer, &c., had been in. I do not now suppose the block pavement will be down for another year.

Yours truly,

ONE INTERESTED.

#### ROBURITE.

UNDER the heading of "Hydro Carbon Explosives," the Midland Institute of Mining Engineers, in Great Britain have had presented to them valuable information and research into this new explosive. It is one of the group of explosives invented by Sprengel, a German, who claims for it less light in explosion, and greater force than any of the other explosives. Its composition is given, thus: Roburite—chloro-dinitro—benzol—C<sub>6</sub>H<sub>5</sub>Cl (No. 2) in which 3 atoms of hydrogen have been replaced by 7 atoms of chlorine and 2 molecules of nitric peroxide (No. 2). It has theoretically nine times the force of gunpowder, but practically it may be taken at 4:1 compared with powder.

The research carried out by several members, was with a view to ascertain how much flame was developed during explosion, a point of the highest importance in underground and mining work, where so much explosive matter is always present. In one series of experiments, coal gas was passed into a receiver containing 7 cubic feet, and contained an explosive mixture of 8 per cent. of gas to 92 of air. Roburite was fired in this apparatus several times without igniting the gas. With powder a violent explosion accompanied by large quantities of flame occurred. In a series of surface experiments, the most valuable was firing roburite in an old boiler shell, in which coal dust was kept in suspension by means of a fan. No ignition of the coal dust took place. In pit experiments, like results were obtained, and in one special case, a 1 in. hole 4 ft. 6 in. deep, charged with 105 grammes, a space of 2 feet was left between the charge and the tamping. A loud report was heard, the explosion was successful, no flame or spark could be perceived, nor was any inconvenience caused by the flames, even instantly after the explosion. The most surprising experiments were perhaps those made by a member of the Institute, who fired roburite (1) in an atmosphere of 100 per cent. of coal gas, 80 per cent. air, (2) under a layer of gunpowder, (3) under a layer of gunpowder and fine coal dust mixed together, without an explosion taking place. Gunpowder fired under the conditions of No. 3 gave violent explosions and long tongue of flame.

As to the cost, from its increased power it appears to be as cheap as powder. It does not seem to suffer in strength from being damped, its affinity for moisture is not stated beyond the expression that it ought to be kept in a dry place the same as gunpowder. If it succeeds in the English coal pits, we shall probably hear of it before long on this continent.

#### STEEL VERSUS WROUGHT IRON FOR BUILDING PURPOSES.

M. R. C. L. STROBEL, Member of the American Society of Civil Engineers, gives the following opinion on the above subject which we find printed in the *Engineering & Building Record*: "I have read the article 'Steel versus Wrought Iron for Building Purposes' in the issue of March 17, and you are undoubtedly correct in the position you have taken. There is one element of economy, however, in favor of steel beams which was not mentioned. The lightest weight of 15-inch iron beams is 50 pounds per foot; whereas 15-inch steel beams are furnished weighing 39 pounds. The lightest weight of 12-inch iron beams is 42 pounds per foot; whereas 12-inch steel beams are furnished weighing 32 pounds, etc. If, therefore, a 15-inch 42-pound iron beam is required to carry a certain load, a 15-inch 41-pound steel beam can be substituted for it, giving not only greater strength, but much less deflection as well.

"The rolling of these light sections in iron is difficult and not very satisfactory.

"In connection with the question of safety of metal constructions for buildings, I wish to call your attention to the general use of cast iron for columns. Formerly loads carried by columns were generally light, and the section provided much in excess of the requirements. Of late, however, columns have assumed a much more important function in buildings. For high office buildings, warehouses, apartment houses, etc., the columns practically carry all the weight of the different floors in the building. The walls serve in many cases simply to fill in and form the outer shell for the building. The factor of safety used is sometimes as low as 6. Practically no tests are made on cast-iron as to quality. The columns are cast on their side, not on end as is usually called for in the case of water-pipe. The result is that in many cases the columns are very thin on one side and excessively thick on the other. Cast-iron struts taken out of old bridges show plainly how very unreliable castings are when made in this way. It is true that in buildings the loads are quiescent, but this does not improve matters much. A further consideration that should not be lost sight of is that the loads carried by the columns are almost invariably eccentric, so that cross strains are added to the direct compressive strains, thereby largely reducing the factor of safety."

#### BUILDING CONTRACTS.

A GOOD deal of discussion is going on just now about forms of building contract. The National Association of Master Builders seems to have opened the discussion, a year ago or more, by the appointment of a committee to consider the subject of drawing up a model building contract to be officially adopted by the Association, but the matter has occupied the attention of various bodies of architects as well as builders, and as the Committee of the Builders' Association was sensible enough to invite a few architects to join in its deliberations the subject may fairly be said to be formally before the two professions. For our own part, we are inclined to think that the proper position for architects to maintain, unless applied to for advice by the builders, is that of critics, rather than promoters of any particular form. After all, the contract is between the owner and builder, not between the builder and the architect. It is the duty of architects to guard the interest of owners in contracts, so far as they can fairly do so, and they should, both individually and collectively, carefully avoid the appearance of going out of their way to invent forms of contract which may be more acceptable to builders than those now in use. If the builders object to the current forms and they are at liberty to say what changes they wish to have made, and if they unanimously resolve to insist upon any stipulation whatever, the owners must submit, and the architects their power of persuasion prove unavailing, have no further responsibility on that particular point. So far as the architect's own comfort is concerned, most of them would be glad to see an unchangeable form of contract adopted, covering all conceivable points, which would relieve them of the anxiety of drawing up contracts in their own way, but until the matter has gone beyond discussion, they should, as a class, fee themselves, to some extent, enmeshed with the duty of defending the rights of owners in general. At the last convention of the Association of Master Builders, certain rules were drawn up, and recommended to local societies for adoption, which have already been printed at length in these columns; and the Canadian builders have recently adopted a form of contract prepared for them, and, it is said, will now refuse to sign any other.

In some respects the Canadian form is more favorable to the owner than the rules of the American Association. The Canadian contract, for example, provides as do most existing contracts on this side the line, that specifications and drawings shall be regarded as co-operating, so that work shown on one and not on the other shall be included as if mentioned in both, while the American rule provides that drawings made by the plans, and not referred to in the specification, shall not be considered in the estimate offered. In our opinion the Canadian form is in this respect the only fair one. No architect in this or any other country can describe a building completely either by specifications or plans alone. Both sorts of documents together are rarely enough to enable the most careful architect to show all the items which he wishes to include in the contract, as so long as both plans and specifications are open to the builder to study in making his estimate, there is no more reason for his leaving out anything shown on one because it is not mentioned in the other than there would be for omitting the items on certain pages of the specification. If the plans and specifications do not agree, the architect is ready to decide which shall be followed in estimating, and to make a note of his decision, so that with reasonable care on the part of the builder, such as contractors' associations should endeavor to inculcate, there is no chance of misunderstanding under the Canadian form, while the American rule opens the door to all sorts of extras, quarrels and dissensions. Again, by the Canadian contract the builder is not allowed to sub-let the whole or any portion of the contract without the written consent of the architect, while the Americans stipulate that the contractor shall not be restricted as to whom he employs as sub-contractor unless previously notified. It is not quite clear whether the American rule requires that the architect shall notify the contractor not to employ certain persons, or to obtain his consent to sub-contractors. It means the latter, the stipulation does not change the ordinary form; if the former, every architect is to be obliged to lay himself open to a dozen illegal suits, if he wishes to protect his client against the transfer of his contract from a good builder to a bad one, and is even then liable to see some strange rascal from a neighboring town substituted for a careful and responsible builder whom he had persuaded the owner to contract with at an extra price, for the sake of getting his work well done. In regard to forfeiture for delay, the Canadian contract provides that where delay occurs by reason of indolence of weather, or strikes of particular trades, the architect shall extend the time of completion to a reasonable amount. The American rules say nothing about allowance of extra time for completion in case of special circumstances, but content themselves with the rather childish demand that where a penalty is to be exacted from the builder for delay beyond a certain date, a premium of like amount shall be paid to the builder if he completes his work before the given date. It ought to be obvious enough that if an owner has, for example, given a lease of the house he proposes to build from a certain date, an case happens, or if he has arranged to give up his present residence on a fixed day, and move into his new one, he has a right to be compensated for any damage he may suffer through the failure of the builder to keep the promise he has voluntarily made; while, as it is of no advantage to him to have the house on his hands before the time at which he or his tenant is ready to move into it, but rather an injury, since the house hurried in building is never so good as one constructed deliberately, there is no reason whatever why he should pay a builder a premium for remembering him, before the stipulated time, with a building that he has no use for, and is, through the haste with which it was built, of less value than he intended and agreed to have it. Moreover, it should be remembered that the contract in present use, by which an allowance of time is made to the contractor in case of strikes or unusually bad weather, protects the interest of the contractor against the workmen at the cost, and often to the very great inconvenience, of the owner, who makes perfectly definite promises, in return for very elastic ones on the part of the builder. In addition to this concession, all builders and architects can testify that the penalty for delay stipulated in the contract is very rarely enforced. If the fear of it serves its pur-

pose in keeping the contractor till the time of completion to which he has agreed, this is clearly to be a disadvantage of it, and cases where a builder who has honestly tried to keep his promise has been obliged to suffer for a few days' or even weeks' delay beyond the contract time of completion of his work, in an experience quite unknown. We think that the rights of both parties are better guarded by providing that forfeiture shall not be exacted for delay from lateness which in the opinion of the architect could not have been reasonably foreseen or avoided by the contractor than by the Canadian clause, requiring the architect to extend the time of completion in case of strikes or inclement weather but either is better than to set up, as the American rule will do, a struggle between the owner and the builder, to see who can exert, at the end of the life work, most money that he has not earned, and is not justly entitled to, from the other.

One more point that should be carefully considered by all the projectors of improved building contracts is that of arbitration. Most of the old forms of contract, and many of the new ones, provide that disputes between builder and owner shall be settled by two arbitrators, one chosen by each party, who shall choose a third, and the award of a majority of the arbitrators shall be final. At first sight, this method of settling controversies has a certain charm, but to most architects it soon loses its attractiveness, and so good a lawyer as Sir Edmund Beckett denounces it in unmeasured terms. On no account, as he says, should a building contract contain an arbitration clause, which simply commits the owner to the most expensive kind of lawsuit over every trifling affair that the builder may choose to require him to "leave out." Moreover, as a builder's claim in court must be sustained by sworn evidence, subject to severe cross-examination, and to the opinion of the architect, whose testimony generally determines the case, while any sort of story may be palmed off on arbitrators, and an unscrupulous man is more likely to get something awarded to him that he ought not to have by arbitrators than by a jury, the arbitration clause sets a premium on quarrelsomeness and bold falsehood. Fortunately, perhaps, the ordinary arbitration clause in a building contract is not binding. The rule is that an agreement between two persons to "oust the courts of their jurisdiction" is void, as contrary to public policy, and until the award of the arbitrators is made, either party can refuse to be bound by it, and apply to the courts. After it is made, however, under ordinary circumstances, there is no appeal.—*American Architect and Building News.*

HALIFAX.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

JUST before the advent of spring the prospect of a busy building season was fully commented on—it seemed a foregone conclusion that there would be quite a rush of work. Then the brick makers, lime burners and lumber dealers, in their active preparations to meet pressing requisitions, made the usual increase in the price of building materials. The mechanics and laborers, after their long winter rest, were eager to commence operations. The architects were busy preparing plans for contemplated new work, which, with that remaining unfinished from last year, reasonably justified the prevailing opinion that the building record of the "Ambitious City" for 1888 would surpass that of last year, and that there would be plenty of work for all hands at the same rate of wages. With such a prospect in view general satisfaction prevailed. But unfortunately, the usual discord and strife among the unions stopped all work, and although a settlement has been made between the Builders' Exchange and the workmen by the unions waiving their unreasonable demands, still the strike has had a bad effect, and has damped the order of those about to build. Consequently there is very little work in progress now, compared with what there would have been had no such strike occurred. The building public seem to have taken a comprehensive view of the situation, for the estimates for the work that has been tendered on so far I have been greatly in excess of last year—so much so, that few contracts have been put up to the present time, but we hope for the best, and I do not further disruption takes place this work may be again estimated on and proceeded with, and the balance of the season may be a very busy one indeed.

Following is the record of the buildings for which permits have been issued up to May 31 by the building inspector as taken from the books in his office, but as I have previously remarked this record is not by any means a correct statement of all the buildings in course of erection, as the builders not being under any pecuniary obligation so to do, neglect to make the required entries:—Mr. V. Stewart, a brick dwelling on York street; Mr. Milne, a new plate glass front, corner of Bruce and Rebecca streets; Mr. Thomas, 6 dwelling houses on James street; Dr. Farwell, 3 dwelling houses on Napier street; Mr. Taylor, 1 dwelling house on Emerald street; Mr. Warwick, 1 dwelling house on McCoo street; Dr. James, 1 dwelling house, Vine street; 1 dwelling house, Napier street; Mr. Brooks, 3 dwelling houses, York street, between Hep and Caroline streets; Mr. Poine, 2 dwelling houses, Charles street; J. Bell, new plate glass front, 117 Rebecca street; Mallock & Gibson, a brick store on Bay street south; Mr. Hamilton, 1 dwelling house on East Avenue; Mr. Davis, 1 2-story factory at 156 Catherine street; Mr. Martin, 2 stores on James street north.

The building of our new city hall has commenced, but is retarded by the action of the labor unions. Matters are now being settled, however, and it will be pushed on with energy. The plan for the proposed new Y. M. C. A. building are being prepared, the required amount for the erection of the same having been already subscribed, and as soon as the site is secured the plans will be submitted for tendering on.

The old clock factory here has been purchased by Wright & Company, of this city, who purpose making extensive alterations in and additions to the present building.

It is very gratifying to see the great change for the better that has taken place in the construction of the modern tenement houses in this city, and I presume the same can be said for all other cities in the Province. Old buildings are being remodelled with sanitary and other improvements, and additions made to them so as to bring them up as much as possible to the present style and requirements, for it is a fact well known to real estate agents that, not

withstanding the respect due to old style architecture, the newly erected houses in the so-called modern style sell at much higher figures in proportion to cost of erection than can be obtained for the more substantially erected buildings of the old style. It is proper to add that it should be so. It is hard to understand why we of the 19th century should regard it as the proper thing to implicitly follow the old style of architecture, either in the erection of our churches, shops or dwelling houses. Hamilton, like other cities, can boast of many very handsome, well designed buildings, and villa residences in the suburbs, but the majority of those erected within the last few years, especially, are characterized by lack of architectural design in exterior appearance or internal arrangement. The lamentable state of things exists owing to the fact that parties about to build do not understand the value of having their plans prepared by duly qualified architects, and the construction carried out under their superintendence, but on the contrary they submit their ideas to a carpenter or bricklayer who prepares a plan according to his own "practical knowledge," you know, which he submits with his estimate of cost of erection, coupled with the assurance that by the adoption of the same the services of an architect can be dispensed with and his fees saved. It is to be hoped that this penny wise and pound foolish idea will be soon discarded and better judgment prevail.

There have been a number of dwelling houses erected here within the last few years to let on the progressive payment system, and most of them have been so disposed of, but this mode of priority is falling into disrepute. At first sight the idea is plausible enough, but then the gild wears off after the first few years. When consideration is given to the actual cost after all is paid, the possibility of instability to make the regular payments and consequently the probability of losing all that has been paid as well as all title or right to the estate—such reasoning has very properly decided the people to first obtain possession of a lot, then borrow the money on mortgage at a five rate of interest, and contract for the erection of their home at the lowest cost,—when, with a reasonable rental, the principal and interest could be paid off in ten from to fifteen yearly instalments. Probably more than half of the dwelling houses now being built are done in this way.

Quite a number of tenement houses would also be erected here if the end would justify the means—that is to say, if the rent received would pay eight per cent. on the outlay after deducting for taxes, and providing a sinking fund of 1 per cent. for wear and usage. The question arises, can this fair investment be made under the existing order of things? The population of our cities is increasing, and dwellings must be had for them, but although workmen's wages have largely increased within the last few years, the parties so benefited show no disposition to pay higher rent for their homes.

MONTREAL.

(Correspondence of THE CANADIAN ARCHITECT AND BUILDER.)

ANYONE arriving in the city at this time would be impressed immediately with the fact that an extensive building boom had struck the city. Work is being pushed forward in all parts of the city, and St. James street, the principal thoroughfare, is quite a transformation scene, for on this street alone there are at least eighteen new fronts in construction, and this, with five imposing edifices, will make St. James the finest street in the Dominion.

The McKee property also re-modelled at a cost of \$20,000, by Messrs. Rice, Shapley & Co. The architecture will be of the Elizabethan order. Mr. J. J. Brown is the architect.

Plans will be asked for the new Young Men's Christian Association building on Dominion Square next month. The present building on Victoria Square is for sale.

The resumption of the old offices of the Canadian Pacific Railway has been commenced. The foundations have been examined by Mr. C. Clifton, of New York, the architect who is superintending the work for the Imperial Life. It is found necessary to take down the two wings, and then the foundations would not be strong enough for the extra weight which is to be added.

The impression that the cost of building is greater this year than usual has somehow gained ground among investing investors, and statements to this effect have been made in the papers here. During the winter mechanics and laborers were asking for higher wages, and many capitalists held off, but this does not apply to the present time, and as the men will now take less, it is a fact that the cost of building is actually lower than last year.

WINNIPEG.

(Correspondence CANADIAN ARCHITECT AND BUILDER.)

THE architects in this city at present have very little work, but hope that business will improve shortly. There are a few small private houses being built in and around the city, mostly frame. Work has commenced on the new buildings for the General Hospital. Mr. Zindorf, contractor, has a large gang of men at work on the R. V. R. brick building. Mr. Louieau, contractor, has commenced work again on the St. Patrick asylum which was stopped for the winter. Tenders are invited for a 2-story hospital, 100 feet long, 10 feet wide, at St. Joseph's, near the river. Tenders for a 2-story hospital at Neepawa, and are preparing plans for one at St. Jean Baptiste on the R. V. R. The bricklayers have adopted the 9 hour system and 8 hours on Saturday.

The Salvation Army Barracks at London, Ont., will cost \$14,000.

Reports of active building operations come from Peterborough, Ont.

The contract for the new Baptist church at Perth, Ont., has been let to Mr. Ireland.

A close finished with red cedar shelves and drawers is said to be death to moths and insects.

An investigation into the affairs of the St. John, N. B. Building Society, has revealed a deficit of \$66,000.

The Hamilton plasterers have agreed with the employers on a rate of 29 cents per hour for the current season.

The extension of McVillie Presbyterian Church, Cote St. Antoine, Que., will cost from \$3,500 to \$4,000.

The building being erected for the Salvation Army at Stratford, Ont., will be 30 feet wide and 30 feet deep with a stone basement 6 feet. The estimated cost will be about \$9,000.

The monthly average of buildings erected in Vancouver during the first three months of the present year was 75.

Work has been commenced on the iron bridge across the Wel land River at Port Robinson. The cost will be \$3,000.

Penacingshire recently voted \$100,000 for harbor improvements; Orillia, \$15,000 for waterworks and electric light.

The station and viaduct which the C. P. R. is building at Montreal will cost, apart from the ground required, about \$1,500,000.

The plans of Mr. W. J. Sault, architect, Toronto, have been accepted by the Port Hope Board, for a new school building to cost \$18,000.

The town of Fort Arthur has decided by a vote of the citizens that it is preferable that the new waterworks system for the town should be constructed and owned by a private company, instead of by the corporation.

A pile driver which was being moved from one point to another in the construction of a new bridge at Sutton, Ont., fell over upon Mr. Myers, father of the contractor, and Mr. Thos. Barker, killing both men instantly.

The following were the successful tenders for materials to be used in extending the waterworks system of Kingston, Ont.:—Cast-iron pipe and special casings, A. Garsthorpe, Hamilton; pig-lead, Jas. Robertson, Montreal; hydrants and valves, Stevens & Burns, London. The cost of labor will be about \$3,000.

Westminster Columbia.—About thirty-five new houses are in course of erection in this city, and plans are being prepared for nearly as many more. The class of buildings now being erected is far superior to the average dwellings which have been erected heretofore, and though rents are higher, nearly every house is leased before finished.

Architect Henri Mallage has forwarded to the railway commission at Ottawa the plans he had been requested to prepare by the town council of Longueuil for the proposed bridge across the river opposite the city. If a favorable opinion is received from the commission a joint stock company will be formed for the construction of the bridge. According to the plans the structure will be a gable one and will cost \$2,000,000. It will begin on the Montreal side of the river at Point Charles, near Quilvic's mill, and with a gradual ascent will span the main channel, 60 feet above the low water level, and with a gradual descent will cross St. Helen's Island ending on the Government common on the south shore above the town of Longueuil. It will be constructed of iron and will be wider than the Brooklyn bridge, which is 80 feet wide.

THE LUCIGEN LIGHT.

THE Lucigen Light is attracting much attention throughout Europe. The great light giving capacity of this new invention is such that the largest areas may be freely lighted at a merely nominal cost, as the Lucigen is an oil burner.

The inventor started out with the original intention of introducing his light to meet the requirements of railroad construction and other similar work which demanded strong and brilliant illumination, coupled with portability, out it was not long before a thousand and one uses appeared to which this light could be put, and hence its popularity abroad.

It is said that ship owners, whose vessels ply the English channels, intend introducing the Lucigen on their ships, supplanting the red and green light now in common use, and so frequently found to be invisible or deceptive in a slight haze. One or two Lucigens, it is claimed, would light up a ship and the surrounding sea so clearly that the masts, spars and hull of the vessel will be visible for miles; this has been unsuccessfully tried with electricity, but the blinding glare of the electric light was proved to render all but itself invisible; with the Lucigen the object sought for seems to be entirely possible.

This new light has great diffusive power and broad glow of light, and combined with its extreme simplicity have led to its adoption in all the important engineering and shipbuilding centres in Great Britain. If the reliable reports that we bear, speaking in such glowing terms of this new light, bear the test of practical use, a very important lamp has been discovered.

As colors undergo apparent modification according to their position and the quantity and the direction of the light falling upon them—a color on a horizontal plane, for instance, showing a different hue from that displayed on a perpendicular surface—it is always well before applying colors and tints to walls and ceilings, to attach a sample of the proposed color, painted on the paper, to the surface, this being the only correct way of selecting the most suitable hue or tint.

For a nicely decorated wall, flat the stiles straw color; the inner panel a very faint pearl tint; the band surmounting centre of oval white. Work on the centre, painting in colors of natural tints, kept in half tones; corner roses to be worked in deeper shade of straw and heightened white, the line surmounting the oval, a deep straw; and the line on the edge of white margin, gold, outlined with straw color, first line of square panel, straw color; middle line, gold; band between the two, a light pearl tint; outer line, a deep pearl tint.



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

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Woodstock, Feb. 16, 1888.

E. & C. GURNEY CO., TORONTO.

GENTLEMEN,—The No. 32 Hot Water Heater we bought of you for heating our offices is doing splendidly. When it was being put in we frankly admit we had serious doubts if a heater which appeared so small for the duty required of it would warm the offices sufficiently during the severe cold of winter. We are pleased to say, however, that during the days of intense cold through which we have just passed, our offices have been really uncomfortably warm, and this, too, without any forcing of the fire. The consumption of coal has been very light, and we have to express our perfect satisfaction with the heater.

Yours truly,  
 (Signed) THE PATTERSON BROS. & CO., LTD.

— MANUFACTURED BY: —

**THE E. & C. GURNEY CO., LTD.**

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

For sale by all the leading Fitters. Send for our book of testimonials, and illustrated description.

**AIKENHEAD & CROMBIE,**

Cor. King and Yonge Sts. TORONTO  
**BUILDERS' HARDWARE.**

AGENTS FOR

- Hopkins & Dickinson, New York.
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- C. Kasper, Patent Out Cleaner, Cleveland.
- Norton Door Check and Spring, New York.

Write for Catalogue of above Goods. Estimates given on Special Hardware by any Architect.

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 ENGRAVER, LITHOGRAPHER, Office Stationery & Specialty  
 DIE SINKER, EMBOSSEUR &c.  
 39 Colborne St. TORONTO

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

OTTAWA, 7th June, 1884.  
 DEAR SIR,—I duly received your letter of the 31st ultimo, requesting my opinion relative to the Cement manufactured at your establishments in Thorold, in reference to which the following is respectfully submitted: For the past forty years the natural Hydraulic Cement obtained at Thorold, Province of Ontario, has been used to my knowledge, on various extensive public works, and in every instance the result has proved highly satisfactory. When properly treated, ground fine, and used fresh from the mill, it will compare favorably with any natural or artificial cement that I know of for building or other purposes in a moist position, or for walls that have been built a few weeks before water has been let in on them. It is well adapted for concrete foundations, sea dikes, caissons, or indeed, for any hydraulic works; when properly prepared and mixed with two parts of clean sharp sand to one of cement, the result will invariably give good satisfaction.  
 I am, Sir, yours very truly,  
 JOHN PAGE, Chief Engineer of Canals, Canada.

JOHN BATTLE, Esq., Thorold; General Manufacturer, etc., Thorold, Ont.  
 QUEBEC, MONTREAL, OTTAWA & OCCIDENTAL RAILWAY.  
 CHIEF ENGINEER'S OFFICE.  
 JOHN BATTLE, Esq., Thorold; Montreal, 31st March, 1884.  
 DEAR SIR,—I have tested with Reith's Testing Machine the tensile strength of 46 blocks made from the barrel of Thorold Hydraulic Cement which you sent me last summer. The blocks were made of neat cement, and were 1 1/2 inches square at the smallest part. Four of them were kept 23 days in air, and only broke under the following weights: No. 1, 470 lbs.; No. 2, 470 lbs.; No. 3, 448 lbs.; No. 4, 470 lbs.; averaging 472 lbs. each, or 194 lbs. per square inch. The remaining two were kept one day in air and forty-seven in water, and broke under the following weights: No. 5, 470 lbs.; No. 6, 470 lbs.; averaging 470 lbs. each, or 193 lbs. per square inch.  
 Yours truly,  
 J. A. PATTERSON, Chief Engineer, Quebec, Montreal, Ottawa & Occidental Railway.

The THOROLD CEMENT is sold by the following dealers:  
 Toronto.—Edward Terry, 21 Queen St.  
 " Robert Carroll, 66 Adelaide St. West.  
 " Joseph Adamson, Esplanade, foot of George St.  
 Hamilton.—W. A. Freeman, James St.  
 London.—W. J. Gordon, James St.  
 London.—A. D. Cameron, Barwell St.  
 " Bennett & Co, 26 Bathurst St.

**MAGUIRE'S Ventilating Sewer Pipe, Self-Flushing and Self-Cleaning Trap.**  
 Chimney Tops, Fire Brick, Fire Clay,  
**PORTLAND THOROLD CEMENTS**  
 —AND—  
 always on hand.

Robert Carroll, 66 Adelaide St. West, Telephone No. 208.  
 Maguire's Fire Drains Trap, particularly adapted for house drainage and overhead sewer ventilation. The only reliable self-cleaning Trap in the market. Owing to the fact that the outlet C is below the inlet A, and formed at bottom, any liquid or solid matter entering the Trap B next, when it once reaches the top of said B, flows over and falls clear into the outlet C, not only increases the velocity of the flow of water and solid matter through the Trap B by creating a fall from the said Trap, but it is also so shaped that it effectually prevents any backwash through the outlet C into the trap B.

TELEPHONE 491.  
**Joseph Adamson,**  
 Esplanade, foot of George Street, TORONTO.

- |                     |                  |                  |
|---------------------|------------------|------------------|
| Block Stone         | Sewer Pipe,      | Portland Cement, |
| Cut Stone,          | Drain Tile,      | Canadian Cement, |
| Building Stone,     | Lake Sand,       | Keene's Cement,  |
| Paving Stone,       | Lake Gravel,     | Plaster Paris,   |
| Floor and P. Stone, | Fire Brick,      | Venetian Red,    |
| Grindstones,        | Fire Clay,       | Chimney Tops,    |
|                     | Lime, etc., etc. |                  |

Over 5,000 in use.  
**THE DUNNING - BOILER,**  
 Patent Wrought Iron or Steel, with Self-Feeding Coal Magazine, is the oldest and best for Low Pressure Steam Heating, and insures a warm house day and night.  
 MADE AS FOLLOWS: As a Magazine Boiler, which requires attention but once in twenty-four hours; as a Surface Burner, to burn hard or soft coal, wood or coke; as a Hot Water Boiler, for greenhouse and hot water heating; as a Portable Boiler, Steam set without brick-work. Also in Two Sections to pass through any door where a larger one cannot be used. Made in six patterns, fifty-one sizes. Send for Illustrated Catalogue, with full description and price.  
**STEAM KEPT UP CONSTANTLY**  
 LOW PRESSURE STEAM AND HOT WATER HEATING  
 N. B.—Correspondence solicited from Architects and persons building.  
**HIGH SPEED ECONOMICAL ENGINES AND WOOD-WORKING MACHINERY**  
 For Sash and Door Factories.  
 SEND FOR CATALOGUE,  
**WATEROUS ENGINE WORKS CO., - BRANTFORD, CAN.**

**RADIGAN'S PATENT METALLIC LATH.**  
 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.  
 Give them a trial and be convinced. Send for Circulars and Price List.  
**JOHN RADIGAN,**  
 68 Mary Street, HAMILTON, ONT.





**EXPLOSION OF A DOMESTIC HOT WATER BOILER.**

**E**XPLOSIONS of domestic hot water boilers attached to cooking ranges, water-backs in ranges, etc., through freezing of the pipes in cold weather, are becoming so frequent that it may not be out of place to give an account of one of the most destructive ones that has occurred recently, and point out its cause.

The boiler in question was used in a hotel in a large city in one of the northwestern States, where the temperature is very low at times. It was connected to the kitchen range; the range was a large one, and the heating surface was furnished by a coil of 1 1/2 inch pipe placed near the top, instead of the cast-iron front or back such as is commonly used in the smaller ranges in private dwellings. The connections to the boiler were made in the usual manner; the accompanying cut shows its essential features.

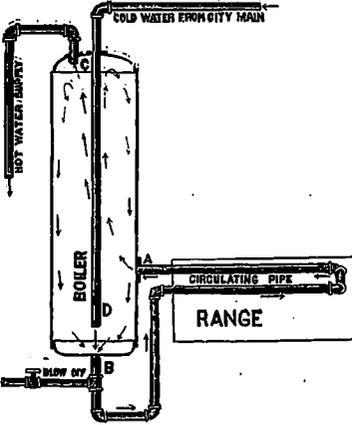
The operation of all boilers of this sort is as follows: The connections being made as shown in cut, the water is turned on from the main supply and the entire system is filled with water. When it is filled and all outlets are closed, it is evident that no more water can run in, although the boiler is in free connection with and is subjected to the full pressure of the source of supply. When a fire is started in the range, and the water in the circulating pipes of water-back is heated, the water expands, is consequently lighter, and flows out through the pipe into the boiler at A, as this connection is placed higher up than the one at B; this starts the circulation, and the water as it becomes heated constantly flows into the boiler at A, and rises to the upper part of the boiler, while the cooler water at the bottom of the boiler flows out into the circulating pipes at B, and if no water is drawn a slow circulation goes on, as heat is radiated from the boiler, in the direction indicated by the arrows, the water at the top of the boiler always being much hotter than at the bottom. When the hot water cock is opened, cold water instantly begins to flow into the boiler at D, by reason of the pressure on the city main, and forces hot water out of the boiler at C. Thus it will be seen that hot water cannot be drawn unless the cold water inlet is free, and it is equally evident that cold water cannot enter the boiler unless the hot water cock or some other outlet is open.

The above points being understood, we are in a position to investigate the cause of the explosion referred to, which killed one person and badly injured twelve or thirteen others, besides badly damaging the building.

On the morning of the explosion fire was started as usual in the range about 4 o'clock a.m. It was found on trying to draw water that none could be had from either cold or hot water pipes; it was rightly judged that the pipes were frozen. The fire was continued in the range, however, and the breakfast prepared as best it could be, and a plumber sent for to thaw out the pipes. He arrived on the premises about 7 o'clock, as would naturally be the case. He opened both hot and cold water cocks, and getting neither steam nor water, concluded there was no danger, and proceeded to thaw out some pipes in the laundry department first. About an hour afterward the explosion occurred. The lower head of the boiler let go, and the main portion of the boiler shot upward like a rocket through the four stories of the hotel and out through the roof.

The coroner held an inquest on the remains of the person killed, and some of the testimony given, as reported in a local paper, would be amusing were it not for the tragic nature of the affair which called it out. The usual expert, with the usual vast and unlimited years of experience, was there, and swore positively to statements which a ten year-old boy who had been a week in the business ought to be ashamed to make. He had examined the wreck with a view to solving the mystery? The matter was as much of a mystery now as it was on the day of the explosion? His theories were exploded as fast as he presented them. The boiler must have been empty. If it had been full of water it could not possibly have exploded, etc., etc. And then a lot more nonsense about the "peculiar" construction of the boiler. As a matter of fact there was nothing peculiar about the boiler or its connections. Everything was precisely like all boilers of this class, of which there are probably hundreds of boilers in daily operation throughout the country, and moreover they were all right. Now let us inquire what caused the explosion. Every-

thing was all right at 8 o'clock the previous evening, for water was drawn at that time. The fire was built in the range at 4 o'clock a.m. It is admitted that the cold water supply pipes were frozen, for no water could be had for kitchen use. It is also proved absolutely that the hot water supply was frozen or otherwise stopped up, by the fact that at 7 o'clock the plumber who came to thaw out the pipes opened the hot water cock and got "scalding water hot steam". Here was his opportunity to prevent any trouble, but he let it pass. Any one who understood his business would have known that there must have been a tremendous pressure in the boiler at this time, as the range had been fired steadily for three hours; there was about eight square feet of heating surface exposed to the fire by the circulating pipe in the range, and there had been no outlet for the great pressure which must have been generated during this three hours' firing. The blow-off cock should have been tried at once; if this were clear, and the probability is, from its proximity to the range, that it was clear, the pressure could have been relieved and the disaster averted. If the blow-off proved to be stopped up, then the fire should have been at once taken out of the range. At the time the plumber opened the cocks connecting with the boiler, it probably was under a pressure of four or five hundred pounds per square inch. An ordinary cast-iron water-back such as is used in small ranges in private houses, would have exploded shortly after the fire was built, but it will be noticed that the heating surface in this case was furnished by a coil of 1 1/2 inch pipe; this was very strong, and the boiler was the first thing to give way; simply because it was the weakest part of the system.



Accidents of this sort can be easily avoided by exercising a little intelligence and care. The hot water cock should always be opened the first thing on entering the kitchen every cold morning. If the water flows freely, fire may then be started in the range without danger. If it does not flow freely, don't build a fire until it does.—*The Locomotive.*

**SANITARY CONDITION OF TORONTO.**

**T**HE Toronto City Commissioner had inserted in the daily papers recently a statement that all the streets and lanes in the city had been cleaned, and that he would be much obliged to any citizen who would inform him of streets remaining uncleared. We were struck on reading the notice with the thoughtfulness of the Commissioner, and his evident desire to honestly fulfil his duties. Accepting his invitation, we began peering into lanes when opportunity offered in our daily walks. We expected to find them as perfectly clean as possible, but in this we were greatly disappointed. Many, it is true, had been cleaned, but what a number had not been touched! It was also noticed, whenever investigation was carried far enough, that many lanes leading out of other lanes were filthy from end to end, and that nearly all the cleaning had been done in those opening into important streets.

If it is unavoidable that the citizens must put up with dirty lanes throughout the winter months, they should certainly have the benefit of clean ones during the summer. Dirt should be removed for the sake of cleanliness, but much more because it is the cause of disease. There is too much apathy on the part of the people on all sanitary questions. If it is only some one else who is ill, we do not concern ourselves, but when we are ill, we look at things very differently. In the one case, we call for economy and condemn extravagance; in the other

we affirm that economy is criminal when the exercise of it results in injury to ourselves.

The authorities of this city are so economical that they cannot afford to erect a garbage crematory; but deposit in all the low lying places in the city filth which should be completely destroyed by fire. What the result of this mode of proceeding may be cannot be definitely stated; but of one thing we can be assured—that many of the future inhabitants of this city will be ill when they need not have been, and many will be laid in their last resting place before their time, because of the false notions of economy entertained by our governing bodies.

**VENTILATION AND DISEASE.**

The following recommendations formed the substance of a report on the subject of ventilation presented by a Committee of the Provincial Board of Health of Ontario, at the meeting held in this city a fortnight ago:—1st, that the sputa of consumptive patients, wherever it is possible to have it so; be received into suitable vessels containing a disinfectant and as soon as possible disposed of by fire; 2nd, that the freest possible ventilation of rooms occupied by consumptive patients be always and in every case secured, and in order to accomplish this result that (a) a minimum space of 1,000 cubic feet should be allowed to each occupant of a bedroom, (b) superfluous curtains, carpets, furniture, etc., should be forbidden, (c) wall paper on bedrooms should also be forbidden; 3rd, that as consumption is the principal cause of death in this province, and the germs of the disease must therefore be widespread, thorough ventilation of public buildings, especially school rooms and dwellings; is strongly recommended; 4th, that sanitation and health resorts in which consumptive patients are brought into close proximity with patients affected with other diseases, more particularly diseases of the air passages, are to be avoided; 5th, that in hospitals tuberculous patients ought to be separated from those affected with other diseases; 6th, that in a private family occupancy of the same bed or even of the same room with a consumptive patient, if consistent with the duties of humanity, be forbidden.

The town of Strathroy will shortly be lighted by electricity.

J. Harris, plumber, Halifax, N. S., is reported as having assigned.

The streets of St. Thomas will be lighted by electricity for the next three years at a cost of 28 cents per light.

It is recommended that the water supplied to the citizens of Ottawa should be purified by aeration, precipitation and filtration.

The Standard Electric Light Company of Canada, Cookshire, Que., has been incorporated with \$25,000 capital stock, for the purpose of manufacturing electric apparatus.

Plumbers are reminded by the *Sanitary News*, that a fortress is no stronger than at its weakest point, therefore, the best job of plumbing with a little leak is hardly better than a botch.

The Medical Health Officer, City Engineer and representatives of the City Council of London, Ont., have had a conference with the Provincial Board of Health regarding the best method of disposing of sewage.

The water supply of St. Johns, Que., has been declared impure and unwholesome. The water from the Richelieu is good if taken at the proper point and led to the town in such a manner that contamination would be impossible.

In view of the possible danger from Asiatic cholera during the approaching summer, it is gratifying to observe the promptitude of the Dominion Government in deciding to make needed improvements at Grosse Isle, for the purpose of perfecting as far as possible our quarantine system, in accordance with the suggestion of the Provincial Boards of Health.

The Master Plumbers' Association of Philadelphia, recommends as a proper test of house drainage, a pressure equal to three pounds to the square inch applied to the soil-pipes or drainage-system in new houses, or to entire new work in old houses before the fixtures are attached or placed in position, and for work with the fixtures attached a pressure equal to "water gauge."

The recommendation of the Medical Health Officer that vendors of milk be required to obtain permits, and submit to having their premises regularly inspected has been adopted by the Toronto Local Board of Health. The necessity for a more careful oversight of milk vendors and their premises formed the subject of comment in these columns recently, and we are pleased to

see that the matter is to be dealt with at once. We believe it could be readily demonstrated that a very large percentage of cases of infectious disease are due to the impurity of the milk supply in this and other cities.

Five patents have been issued to Elias E. Ries, a Baltimore electrician, for methods and apparatus for heating by electricity. By this system, which is said to be absolutely safe, dwellings can be supplied with heat from central generating stations, by the same conductors that supply the current for the incandescent electric lights. The patents include inventions for private heating from central stations and special methods for heating and lighting railway cars. Patents covering applications for domestic and industrial operations are still pending.

Alum is said to have power to purify water, and even to deprive it most of the bacteria that it sometimes contains. That muddy water can be cleared by alum has long been known; but it is a comparatively recent discovery that a very small quantity of alum, so small that it is not injurious to drink the water that contains it, will rid the water of nearly all its bacteria. A Pennsylvania physician found that the water that was drawn by the people of a village where typhoid fever was epidemic was swarming with bacteria. Fifteen drops of it, when spread upon a suitable surface, were capable of forming 8,000 colonies of these microscopic vegetable germs. He added alum, in the proportion of half a grain to a gallon, and found that not only were the earthy and vegetable matters precipitated, that the colonies of bacteria were reduced from 8,000 to eighty, and these were of large size.

The National Association of Master Plumbers of the United States, which will shortly meet in annual convention, has compiled the following list of subjects for papers to be read on that occasion: "Does the plumber have the same confidence reposed in him as the family physician?" "The disposal of drainage in inland cities?" "The Holly water system and its advantage for interior works?" "The artesian well;" "Competition;" "Salt-glazed sewer pipe vs. cast iron pipe for interior drainage;" "The comparative advantages of lead or galvanized iron pipe for waste-pipes;" "Flushing of water-closets and urinals;" "The lighting of a country residence;" "Surface water drainage;" "Ventilating pipes;" "The drainage of a country house;" "American vs. imported earthenware;" "Hot-water and steam heating;" "The prevention of water-wear;" "Out-door closets in cold climates;" "The disposal of garbage;" "The lead-worker;" "History of the pump;" "Electricity and plumbing;" "Automatic flushing;" "The plumber as an inventor;" "Natariums;" "Air currents in buildings;" "The plumbing fraternity."

It has been well remarked that in the earlier tracery the form of the lights was most studied, while in the latter the outline of the tracery bar has been the most attended to. While the last merits its share of attention, it seems clear that, as a window is essentially an opening or a combination of openings, the forms of its lights, rather than of the lines which separate them, have the first claim upon consideration. The decorated variety seems to be the latest in which the claim was fully admitted, and it unites, perhaps, more than any other the beauty both of openings and of the lines.—Sir G. G. Scott.

Painters' cream is a preparation used by painters to cover up work they are obliged to leave unfinished for a length of time. They cover with it the parts already painted, and it preserves the colors, and can easily be removed when the work is again taken up. It may be made as follows: Take half an ounce of the best mastic, finely powdered, and dissolve over a gentle fire in three ounces of nut oil. Pour the mixture into a marble mortar, with two drachms of powdered sugar-lead at the bottom of it. Stir this with a wooden pestle, and keep adding water in small quantities till the whole appears like cream and refuses to admit more water so as to mix freely.



Architects, Engineers, Builders, Owners and others are invited to read particulars of all kinds of construction work, specifications, for plans, contracts in this department. Please state location, character and cost, and names of person or persons controlling the work.

- PARKHILL, ONT.—A water works project is on foot.
- BOYMANVILLE, ONT.—The town will put in waterworks.
- FORSYTH, ONT.—A new English church is to be built this summer.
- INGERSOLL, ONT.—The C. P. R. will build a new brick station.
- WOODSTOCK, ONT.—A new post office building is to be erected here.
- QUEBEC.—A new City Hall is proposed, and a site for the same has been offered.
- PORT HOPE.—The Grand Trunk viaduct will be rebuilt to accommodate a double track.
- GREENBELL, ONT.—A new Methodist church and an Agricultural Hall are to be built here.
- CHICOUTIMI, QUE.—There is a probability that water works will be established here shortly.
- WINDSOR, ONT.—The Town Council has accepted the offer of J. C. Patterson, M. P., of a free site for a new high school.
- HAMILTON, ONT.—The \$30,000 necessary for the erection of the new Y. M. C. A. building has been secured, and work will be commenced at once.

The contract for the stone work of the G. T. R. shops at Stratford has been awarded to Mr. Wm. Gibson, proprietor of the Beamsville quarries.

OSHAWA, ONT.—Plans for the R. S. Williams & Son's new piano factory in this town have been prepared by architects King & Goenlock, of Toronto.

WINNIPEG, MAN.—The Salvationists will probably erect a barracks this summer.—A company is seeking incorporation for the purpose of erecting a large brewery here.

ST. JOHN'S, N. B.—A syndicate of Americans have acquired 300 acres of land, near this city, and intend erecting large pulp works and cottages for their workmen, at a cost of \$300,000.

WIARTON, ONT.—Architect J. C. Foster, Owen Sound, has prepared plans for a new Opera House to be erected here. The building will be furnished with all modern stage attachments and fittings.

The handsome dressed limestone building almost completed for the British American Bank Note Company, Ottawa, collapsed last week. The building cost \$46,000 and can only be restored at less of \$10,000 or \$15,000.

LONDON, ONT.—The Chemical Manufacturing Company will erect a fireproof brick and iron building in place of that recently destroyed by fire. The new structure will cost about \$5,000.—A 60 feet addition to the Michigan Central freight sheds is to be erected.

OWEN SOUND, ONT.—A new ward school to cost about \$5,000 is to be erected on West street. There will also be additions made to the Market street school.—The Disciples congregation will erect a larger building than the one they now occupy; the architect is Mr. J. C. Foster.

OTTAWA, ONT.—The Railway Committee of the Canadian Senate have adopted the bill authorizing the construction of the International bridge over the Detroit river.—A by-law to expend \$20,000 in public works has been notified by the ratepayers.—The Department of Railways and Canals has received plans for the new railway bridge over the St. Lawrence at Montreal to be built by a joint stock company at a cost of \$200,000.

MONTREAL.—The Local Government will expend \$1,000,000 on a new courthouse to be erected on the DeBarny property facing the City Hall.—The Protestant School Commissioners, of Montreal, are preparing to build two new schools, one in Hochelaga Ward and one in St. Jean Baptiste Ward.—A large and handsome cut stone building five stories high with a mansard roof will be erected on the site of the building which was recently burned on the corner of St. Paul street and Jacques Cartier street.—Mr. P. L. O. David, president of the St. Jean Baptiste Society and M. P. for Montreal East, proposes the erection by the Society of a grand French-Canadian National Hall at Montreal, which will be the meeting place for important gatherings.

TORONTO, ONT.—The Canadian Bank of Commerce will erect a new building at the corner of Spadina Avenue and College street.—A public school is to be erected on the Island.—The St. George's Society have selected a site and will erect a building on the north

side of Elm street. Estimated cost, \$5,000.—Tenders are wanted by the Ontario Commissioner of Public Works for the necessary iron work for the new Parliament buildings. Particulars in advertisement in this paper.—Chief Engineer Parley, of the Public Works Department, recommends the dredging of the eastern entrance to Toronto harbor to a depth of 18 feet, and the protection of the sides of the channel to prevent it from again filling up. The estimated cost of the work is as follows:—Crib work, 354,000; dredging foundations, 250,000; dredging channels, 315,000; stone in tanks, etc., 225,000; contingencies, etc., 100,000; total, 1,044,000.—The plans for the new drill shed are being prepared at Ottawa, and tenders for the erection of the building will be called for shortly.—The Congregationalists of West Toronto Junction will ask for tenders for the erection of a new brick church to cost \$15,000.—The City Engineer has asked the Council for the site of 200,513 to be expended on the maintenance, repairs and reconstruction of sewers, culverts, manholes and roadways.

The following building permits were issued from the City Commissioner's office during last month:—Thos. McDougall, 2 storey brick add., and one storey brick building, Sherbourne st., cost \$1,000; Robt. Sargent, additions to Nos. 774, 776, 278 St. Albans st., cost \$2,400; Mr. O'Grady, 2 storey c. dwelling, Mississauga Ave., cost \$1,500; R. L. Fraser, mansard roof on 3 dwellings, Church st., cost \$4,500; E. G. Stearns, 3 storey brick dwelling, Queen's Park, cost \$12,000; brick Presbyterian church, cor. Dundas st. and Dovercourt Rd., cost \$4,000; brick Methodist church, Bathurst st., cost \$25,000; C. R. S. Dinnick, two pairs brick houses, east side Borden st., near College st., cost \$16,000; T. M. Blythe, 6 detached 2 storey brick dwellings, cost \$7,400; B. D. Freeland, a storey and attic bk. dwelling, Park Rd., cost \$3,500; Mr. Laveak, pair 2 storey bk. stores and stables, Orange Ave., and Huron st., cost \$5,500; E. E. Pike, 2 storey and attic bk. dwelling, Harbour st., cost \$3,700; Murray Bros., pair s. d. 2 storey and attic bk. dwellings, Lower Ave., cost \$10,000; John Douglas, pair s. d. 2 storey and attic bk. dwellings, Harbour st., cost \$7,500; S. Mercer Adams, three 3 storey bk. stores and hall, McCaul & Queen sts., cost \$10,000; Verml Transfer Co., bk. stables, York and Peter sts., cost \$5,000; Goodenrich & Worts, galvanized iron elevator, Esplanade st., foot of Parliament st., cost \$25,000; trustees Western Congregational Church, bk. church, Spadina Ave., cost \$20,000; Blyth & Bell, pair att. r. c. houses, Wallow st., cost \$1,400; J. Wardell, pair att. r. c. storey and attic bk. dwell., Spadina Ave., cost \$5,500; trustees Spadina Ave. Methodist Church, store and bk. church, cor. Spadina and College sts., cost \$65,000; Bettam & Co., bk. add., 114 Yonge st., \$1,000; trustees Dundas St. Congregational church, bk. add., cost \$16,000; Dr. J. E. Graham, a storey and attic bk. dwelling, Church st., cost \$7,000; C. C. Witchell, 3 storey bk. store, Spadina Ave., near College, cost \$3,000; T. A. Lytle & Co., 3 storey bk. add. to factory, Richmond st. w., cost \$3,000; David Richards, pair a storey and attic bk. dwellings, McCaul st., cost \$12,000; Scott & Graham, a detached bk. dwellings, Dovercourt Rd., cost \$10,000; Wm. Dineen, alterations at 224 and 226 Sherbourne st., cost \$2,400; J. L. Thompson, two 3 storey bk. stores, Lombard st., cost \$20,000; Victoria Rink Co., brick and glass rink, Huron st., cost \$30,000; Public School Trustees, a storey and attic bk. store, Duke st., cost \$20,000; R. Smart, two 3 storey bk. stores, Wellington st., cost \$45,000; Mrs. Gilbert, pair s. d. 2 storey r. c. dwellings and alterations at 146 and 148 Section st., cost \$5,500; A. Patterson, 2 pair 3 storey bk. stores; Gloucester and Yonge sts., cost \$2,500; Mason & Risch, bk. add. to piano factory, King st. w., cost \$10,000.

Of Japanese raised leather paper designs for fillings, dados, borders and friezes, there is this spring an endless variety.

The erection of a reredos in St. Paul's Cathedral, London, is said to have caused great dissension in the ranks of the Evangelical party, some of whom defend such decoration, while others pronounce it unjustifiable.

There are friezes that look well in lighter tints than the wall color, but the general practice is to have the coloring stronger than the latter. One rule which should be applied to either mode is, that the forms should be distinct however vague the general wall design. Where moldings of rooms are very heavy, grey and lightstone friezes of more than ordinary depth should be introduced to lessen the too heavy effect.

In the constructive arrangement of relief and chased work, mere tangles of leaves, branches, flowers and scroll work are not to be admired. The way to escape such floridity and exaggeration is by a geometric development of some feature of the form of the principal figure or figures in the other parts, with a certain amount of simplicity as opposed to bewildering labyrinthine windings.

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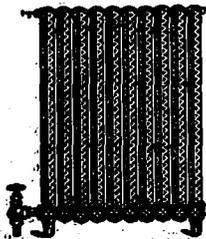
By the construction of this Radiator, each section has (entirely distinct from each other) a separate and positive circulation within itself, producing not one slow, sluggish, continuous circulation, but as many sharp and constant circulations as there are sections composing the Radiator, thereby maintaining a greater heat, and saving water, while the advantage that will be appreciated by the Trade; the inlet and outlet are both at the same end, and has been arranged that it may be used for Hot Water or Steam without making any change to the connections, or any alterations whatever—a feature possessed by no other Radiator that we are aware of. We also claim that we are the only makers of such Radiators as can be taken apart, and each section, or addition sections to increase its capacity, without returning it to the manufacturer. This alone is an advantage, particularly in cases where the City in which it is manufactured. These Radiators are now fitted up in the following places:—H. P. Post Office, Peterborough Post Office, Picton Custom House, N.S.; Picton Marine Hospital, N.S.; Winnipeg Custom House, Kingston Custom House, Three Rivers Custom House, Point St. Charles Post Office, and many other private dwellings.

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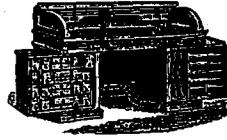
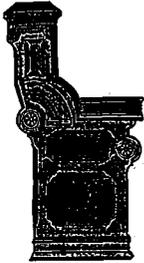
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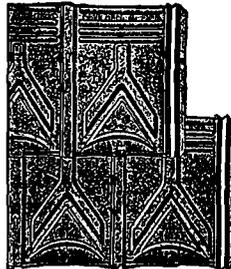
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Charles E. Lee, Carpenter and Builder, Riverstown, N. S. says: "I have had one of your Hand Circular Rip-Saws for about three months, and am much pleased with it. I have done the ripping for 10 houses in that time, which is over forty miles through inch boards, three times as high as Dutch planks. This is fine good for reworking; having rip-sawed all joints and saved all scraps for 200 windows."  
A. R. Williams, 1115 Ohio, says: "A few days since we had some 100 small drawers to make for a drug store; I should power mill wanted 60 cents each for making them. With my foot-power machinery I made them and saved 200 good wagons on the job. If desired, these machines will be sold ON TRIAL. 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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# Decoration.

## HOW TO DECORATE.

By W. H. ELLIOTT.

It is a mistake to suppose that because a wall paper or a piece of stained glass, or an article of furniture, or a hanging is cheap, it should also of necessity be in bad taste. Doubtless the fact that much that is cheap is bad as well, has given ground for the supposition that a good thing cannot be had without paying well for it. Therefore in the first place do not be satisfied with anything that has the negative quality of stylelessness, and that cannot be objected to because there is nothing to object to in it. Aim at an effect of some kind in every room down to the kitchen. Study the purposes for which the room is used, in the carpets, wall papers and hangings, as well as in the furniture. There is a style of design which is as appropriate for the bedroom as the bedstead is. A quiet paper in light color for the main wall, with a deep tinge or upper paper in flower designs naturally treated, generally make a good effect for a bedroom wall, with hangings of somewhat similar design to the upper paper. There being usually few unimportant pictures on bedroom walls, bright sparkling color in parts of the decoration is very desirable, to give interest to the treatment of the room. Do not be afraid of color, unless it is in bad taste. Neutral tints and absence of color are an evidence of weak taste or of a timidity begetten of ignorance. A dining room should be warm

and rich in color, especially in the ceiling, the walls being a suitable background for the best pictures in the house. And so on through every room in the house, let there be evidence of study and discrimination in the selection and arrangement of every detail. Above all, do not endeavor to transplant a friend's room which you very much admire into a very different location in your own house which may make the decoration in every way unsuitable. A room into which no ray of sunlight can possibly find its way, may well be in china yellow or terra cotta and all the sunny colors of silk and cretöne, but such effects in a southerly chamber with large openings for the glowing sunlight, would almost dispense with the necessity of further warmth in the coldest weather, to say nothing of the smothering sensation one would feel during July or August on entering the room.

Again, do not buy a carpet or a drapery you particularly fancy, and then endeavor to have all the other features of the room conform to it. This is a favorite method of going to work on the decoration of a room, and it is a safe thing to calculate on very much vexation of spirit and very moderate success as results of the method.

If you have confidence in your decorator, submit your judgment to his in all matters of experience, and in most matters of taste, reserving for yourself the perhaps as important items of expense and personal preference or antipathy.

To make gold lacquer, put into a four-gallon tin one pound of ground turmeric, one and a half ounces of gamboge, three and a half pounds of powdered gum sandarach, three-quarters of a pound of shellac, and two gallons of spirits of wine. When shaken, dissolved and strained, add one pint of turpentine varnish well mixed.

Bright colors and positive tints may be employed in outside decoration with excellent effect in emphasizing architectural features, but the more brilliant they are, the greater is the demand for good judgment in their application.

With the rich and varied decoration in vogue house-painters are beginning to regard their craft as closely trenching on the fine arts. In relief work, however, they still widely depend on the effects of light on flat and curved forms for the shade.

A new form of table lamp is in brass of ovaline form, having on two sides a concave porcelain medallion on which is painted a female form. A jet black shade pierced for medallions consists of portraits painted on porcelain, surrounded with inlaid leaves and twigs in silvery metal on the dark shade.

Were concave ceilings introduced into parlor, dining and reception rooms, better opportunities for the decoration would be afforded. A concave sky, although the curve is all but imperceptible, is certainly more pleasing than a flat sky. With such a ceiling the cove could be dispensed with, and with angular molded lines, forming border of ceiling, would disappear, giving place to flower, leaf and branch designs reaching upward and outward. To a lofty room such a ceiling would impart increased stateliness. Where the ceiling is structurally flat, converging ribbed arches with central pendant or base might be carried out in papier mache. Rooms present so many angles, mantels and furniture contributing a considerable share, in addition to walls that curvilinear forms are welcome variations. Even deep coffers, polychromatically decorated, are enhanced in beauty by a curved ground, which carries the eye naturally from one side to the other of the ceiling surface, thus causing it to take in the whole.

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1/4 and thicker, three upper Am. Ins.	25 00	30 00
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1/2 to 2 and 1/2 mull run	30 00	35 00
1/2 to 2 and 1/2 dressing	14 00	16 00
1/2 to 2 and 1/2 common	12 00	13 00
1/2 to 2 and 1/2 spruce culls	10 00	11 00
1/2 to 2 and 1/2 maple culls	9 00	10 00
1 inch clear and pick	24 00	28 00
1 inch dressing and better	18 00	20 00
1 inch siding, mill run	12 00	15 00
1 inch siding, common	10 00	12 00
1 inch siding, ship culls	10 00	11 00
1 inch siding, mill culls	9 00	10 00
1/4 and thicker cutting up plank	21 00	25 00
1/4 inch strips, 4 in. to 8 mull run	14 00	15 00
1 inch flooring, common	14 00	15 00
1/2 inch flooring	14 00	15 00
P.X.X shingles, sawn	\$2 40	\$2 50
P.X.X shingles, sawn	2 40	2 50
Eastlake painted iron shingles, per square, (19,000 feet)	4 50	
Eastlake painted tin shingles, per square	4 50	
Eastlake genuine galvanized iron shingles, per square	7 00	
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Special siding, per square	3 50	
Lath, warrick	1 50	

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Common Walling	\$ 8 50
Good Facing	10 00
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Stones	
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Foundation Blocks, " Cubic Foot	10 40
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" green	5 00 6 00
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" on Mackay, New	5 00 6 00

### Black slate

7 50

White, American, 3/4 in. x 12 in. x 18 in. N. Pac. Coast, warranted unslaking

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Per Load of 1/2 Cubic Yards

PAINTS. (1st oil, 3/4 lb.)

White lead, Can. 6 50

" " " " 6 50

Red lead, Eng. 5 50

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N.W. Cull, 1/2 in. x 12 in. x 18 in.

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Culls, 1/2 in. x 12 in. x 18 in.

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Cement, etc.

Portland Cement, per barrel

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Hot-cut Am. or Can. pattern, 3 inch

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Hot-cut Am. or Can. pattern, 2 1/2 inch

and above

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and above

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Can. pattern, 1 1/2 and 1 3/4 inch hot-cut

3 40

Am. Pattern, 1 1/2 inch

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Can. Pattern, 1 1/2 inch

3 95

Finishing Nails, per 100 lb. keg, 1 1/2

and 1 3/4 inch

\$ 5 55 4 80

Finishing Nails, per 100 lb. keg, 1 1/2

and 1 3/4 inch

4 55 4 30

Finishing Nails, per 100 lb. keg, 3/4

and 1 inch and up

3 08

Paints, etc.

White Lead, pure, 65 to 100 lb. kegs.

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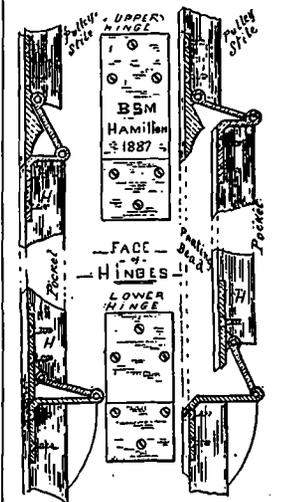
Fifteen hundred dollars, and payable to the order of the undersigned, must be subject to and upon the conditions mentioned in the specifications, accompany each tender.

Security for the fulfillment of any contract entered into is to be given as stipulated in the specifications; but the Government will not be bound to accept the lowest or any tender.

C. F. FRASER,  
Commissioner, &c.

Department of Public Works for Ontario,  
Toronto, 30th April, 1888.

## YOUNG'S IMPROVED PULLEY STILE HINGES For Box Frame Windows.



SHUT - (to take out bath)

WITH the above hinges the ordinary double hung window sash can be taken out of the frame for cleaning, etc., without disturbing the ropes or parting heads, and the result of long experiment, to insure strength and perfect action. The parting heads season to miter, and slide in with the pocket H, to clean the check of sash - thus the sash recedes in at one side, and clearing the upper parting head is taken out, the pulley boxes are in the pockets H, and the lines are held in a lock plate on inside of sash by means of a knot on the end of the line, which is raised and run up to the pulley box in taking out the sash. The attention of architects and builders is called to these hinges. For further information and price apply to the inventor,

**J. H. YOUNG,**  
117 KING ST. WEST, - HAMILTON, ONT.  
AGENTS WANTED.

## McARTHUR & CO.

1807 NOTRE DAME ST. and 5 & 7 DOLLARD ST.,  
MONTREAL.

IMPORTERS OF  
Artists' and Painters' Supplies.

AGENTS FOR  
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Send for price lists. Tel. 701.

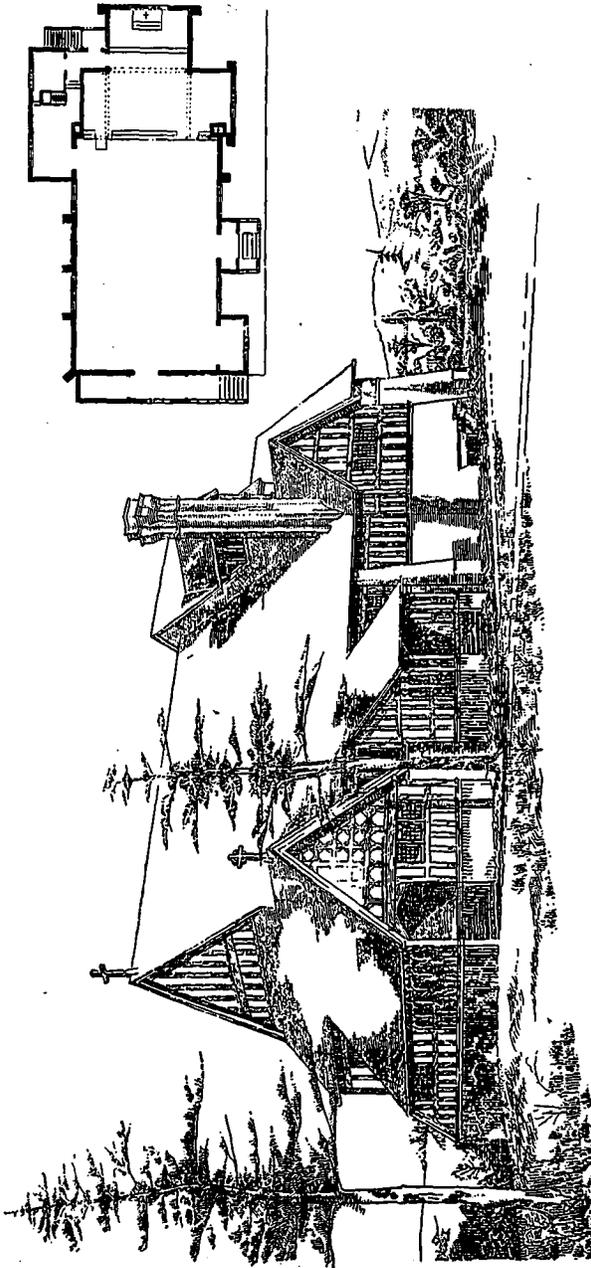


## Notice to Contractors.

SEALED TENDERS, addressed to the undersigned, and endorsed, "Tender for Iron Work of Parliament Buildings," will be received at this Department until noon of Thursday, the 29th day of May, for sundry wrought and cast iron work required for the new Parliament Buildings. Printed specifications and forms of tender can be obtained at this Department. All blanks in form of tender are to be properly filled up; and tenders must, as to form, surface and otherwise, comply with the terms set forth in the specifications. An accepted bank cheque for the amount of

### MONTREAL PRICES.

Asph. 1 to 4 in.	\$13 00 @ 15 00
Bluch, 2 to 4 in.	15 00 20 00
Walnut, per M.	60 00 95 00
Butternut, per M.	50 00 85 00
Cedar, per M.	60 00 95 00
Ch	



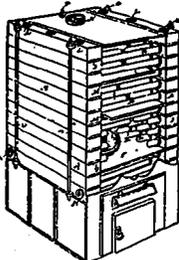
CHURCH OF ST. SIMON, ROSEDALE, TORONTO.  
STRICKLAND & SYMONS, ARCHITECTS, TORONTO.



RECENT PATENTS.

Sectional Boiler for Heating Purposes.

No. 28,775. George Guest, Toronto, Ont., dated 27th March, 1888.



Claim.—1st. A boiler having two sides formed of a series of hollow compartments properly joined together, each compartment forming a head for a series of tubes, which are screwed into, or otherwise fixed to the compartments and arranged in relation to the fire-pot in such a manner that, while connecting the compartments forming the sides of the furnace, the expansion and contraction of the tubes will not twist or injuriously affect the compartments forming the said sides, substantially as and for the purpose specified. and. The compartments A arranged one above the other and connected by water-legs G, the joints between the compartments being formed on their outer edges so as to have a space between each compartment, substantially as and for the purpose specified. 3rd. The compartments A arranged one above the other and connected by water-legs G, in combination with the tubes D, each connected at one end with one of the compartments, and plugged or otherwise closed at its other end, a horizontal partition J, with an opening K through it, being placed in each tube, substantially as and for the purpose specified. 5th. The compartments A arranged one above the other and connected by water-legs G, in combination with the tubes D, each connected at one end with one of the compartments and plugged or otherwise closed at its other end, tubes I arranged to connect the compartments A with a water-leg H, substantially as and for the purpose specified. 6th. The compartments A arranged one above the other and connected by water-legs G, in combination with the tubes D, each connected at one end with one of the compartments, and plugged or otherwise closed at its other end, and deflecting plates M, substantially as and for the purpose specified.

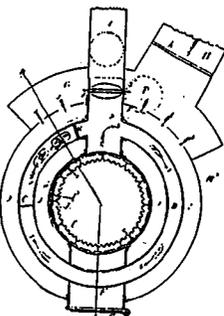
Composition for Plastering and Decorating the Interior and Exterior of Walls with a Material known as "Canton-Plaster."

No. 28,719. Alfred J. Pigeon, Montreal, Que., dated 16th March, 1888.

Claim.—A compound composed of gels, molasses, bichromate of potassium or chrome alum, or tannic acid, glycerine, wood, straw or other fibrous pulp, clay, whitening and raw linseed oil, substantially in the proportions specified and for the purpose herein set forth.

Warm Air Furnace.

No. 28,743. Thomas G. Waales, Toronto, Ont., dated 22nd March, 1888.

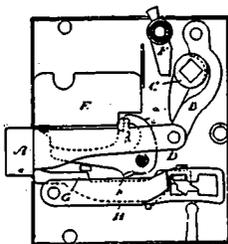


Claim.—1st. A fire pot for a warm air furnace, constructed of vertical sections, with ribs on its inner and outer surface, for the purposes set forth. and. A combustion dome for a warm air furnace, constructed so as to encircle the fire pot to keep the sections thereof in position, and also provide an air space between the combustion dome and fire pot, said combustion dome provided with a number of small apertures around its circumference and near to the lower edge thereof, for admitting air which passes up through the air space between the fire pot and combustion dome, to ignite the gases arising from the burning fuel, as set forth. 3rd. The annular rim encircling the combustion dome at its lower edge, and provided with apertures equal in size and number to those in

the dome, and so placed as to coincide with the apertures in the dome, and which rim may be moved sidewise by rod of lever for the contraction or enlargement of said apertures, as set forth. 4th. A dual radiator for a warm air furnace, constructed so that the active heat will pass from the combustion dome into, and circulate around the upper portion thereof, thence passing down suitable pipes into, and circulate around the lower section thereof thence passing out into the smoke-pipe, from which it is carried to the chimney, as specified and described. 5th. A cold air receiver for a warm air furnace, constructed partly around the outer side of the base of the furnace casing, for receiving and distributing the cold air to the warm air chamber inside of the furnace casing, as set forth. 6th. An air pipe for a warm air furnace, connecting the cold air receiver with one or more of the warm air pipes, for the purpose of supplying cooler air to the apartments of the building when necessary, as specified and shown. 7th. In a warm air furnace, the combination of two radiators B and C, placed horizontally one above the other and by means of stop plates N, direct draught regulator D, junction pipes D, the active heat is made to circulate entirely around each radiator before passing out into the smoke pipe, substantially as arranged and operating as set forth. 8th. In a warm air furnace, the combination of the combustion dome A, fire pot L, grate K, ash pan K, dust pipe E, with check damper E, substantially as arranged and operating as set forth. 9th. In a warm air furnace, the combination of the cold air box H, with regulating slide M, cold air receiver G, cold air pipe P, warm air chamber J and warm air pipes H, substantially as arranged and operating as set forth.

Gravity Lock.

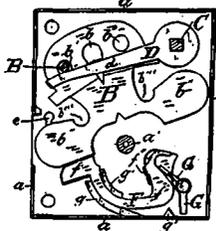
No. 28,573. The Peterborough Lock Manufacturing Company, (assignee of Charles S. Osgood). Peterborough, Ont., dated 22nd March, 1888.



Claim.—1st. The combination, with a latch-bolt, of a pivoted lever having its short arm in contact with the latch-bolt, with its long arm arranged to support a vertically-adjusted weight, substantially as and for the purpose specified. and. The combination, with a latch-bolt, of a pivoted lever having its short arm in contact with the latch-bolt, its long arm arranged to support a vertically-adjusted weight and its heel in contact with the tumbler of the lock, substantially as and for the purpose specified. 3rd. The combination, with a latch-bolt, of a pivoted lever having its short arm in contact with the latch-bolt, and its long arm arranged to support a vertically-adjustable weight, and a pivoted stop arranged to lock the weight, substantially as and for the purpose specified. 4th. A pivoted lever arranged to support a vertically-adjustable weight and formed so as to be in contact with the stop-side of the tumbler of the lock, in combination with the lock-bolt formed so that its end may be adjusted against a shoulder formed on the head of the latch-bolt, substantially as and for the purpose specified. 5th. A latch-bolt A pivotedly connected to the pivoted hanger B, which is actuated by the tongue a, formed on the spindle-bearing C, a projecting lip d formed on the bolt A, and extending close to the short arm d of the lever D, in combination with the vertically-adjustable weight E, arranged to rest upon and supported by the long arm of the lever D, substantially as specified. 6th. A pivoted lever D arranged to support the vertically-adjustable weight E, and having a lip h extending over the tumbler H, in combination with the said tumbler and with the lock-bolt G, arranged so that its end may be thrown against the shoulder e, formed on the head of the latch-bolt A, substantially as and for the purpose specified. 7th. A keeper I having a bevelled projection f, in combination with a square-ended latch-bolt, substantially as and for the purpose specified.

Combined Latch and Lock.

No. 28,766. Charles Sandford, William Feecey and James Feecey, Madoc, Ont., dated 24th March, 1888.

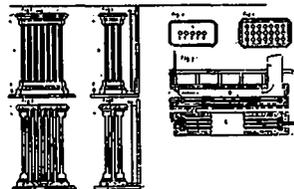


Claim.—1st. In a combined latch and lock, the combination of the casing A, a, A1, having the post a1 and pin B1, the latch bolt B having a central slot a, eyes d1, latch heads d11, recesses d111, and lugs d1111, hung eccentrically upon the pin B1 and resting in its normal position upon the post a1, the lever D adapted to be operated by the spindle C, and operating the latch bolt B by lugs d1, engaging the slot a and lug d111, a latch key E engaging the

lug d1111, and inserted through keyholes a, partly covered by the latch bolt B, locking cams F, F, guided in a race g, g1, g11, g111, and having heads f, f1 and shoulder f11, and adapted to be operated by a key, the head f adapted to situate between the post a1, and the rear shoulder of the projecting latch bolt, substantially as set forth. and. In a combined latch and lock, the combination of the casing A, a, A1, having the post a1 and pin B1, the latch bolt B, having a central slot a, eyes d1, latch heads d11, recesses d111 and lugs d1111, hung eccentrically upon the post a1, the lever D adapted to be operated by the spindle C, and operating the latch bolt B by lugs d1, engaging the slot a and lugs d111, a latch key E engaging the lug d1111 and inserted through the keyholes a, partly covered by the latch-bolt B, substantially as set forth. 3rd. In a combined latch and lock, the combination of the casing A, a, A1, having the post a1 and pin B1, the latch bolt B having a central slot a, eyes d1, latch head d11, recesses d111 and lugs d1111, hung eccentrically upon the pin B1, and resting in its normal position upon the post a1, an operating lever acting upon the latch bolt B by a lug d, substantially as set forth. 4th. In a combined latch and lock, the combination of the casing A, a, A1, having the post a1, pin B1, guides g, g1, g11, g111, keyhole G1, the latch bolt B, having a central slot a, eyes d1, latch heads d11, recesses d111 and lugs d1111, hung eccentrically upon pin B1 and resting in its normal position upon the post a1, an operating lever acting upon the latch bolt B by a lug d, and the cams F, F1, having heads f fitting in the recess between the post a1 and the rear shoulder of the forward end of the latch head B1, shoulder heads f1 adapted to be operated by a key, and shoulders f11 adapted to be engaged by the stop g11, substantially as set forth.

Ventilator in Connection with Hot Water Heating Apparatus.

No. 28,640. Charles C. Longard, N. S., dated 6th March, 1888.



Claim.—1st. In a device for ventilating buildings, rooms and apartments, in connection with hot water radiators, the construction and arrangement of the diaphragm K with or without a non-conducting lining, the air pipes or conduits E, and the diaphragm K between the current of fresh air and the base pipes, top and other parts respectively of the radiator, substantially as and for the purpose described. and. In a device for ventilating buildings, rooms and apartments, in connection with hot water radiators, the combination of the diaphragms K (with or without a non-conducting lining) and K1, and the air pipes E, substantially as and for the purpose described. 3rd. In a device for ventilating buildings, rooms and apartments, in connection with hot water radiators, the combination of the diaphragms K (with or without a non-conducting lining) and K1, the air pipes E and the chambers of air spaces C and H, substantially as and for the purposes described. 4th. In a device for ventilating buildings, rooms and apartments, in connection with hot water radiators, the combination of the diaphragm K (with or without a non-conducting lining) and K1, the air pipes E and the chambers of air spaces C and H, substantially as and for the purposes described. 5. In a device for ventilating buildings, rooms and apartments, in connection with hot water heating apparatus, the construction and arrangement of the diaphragm G, between the current of fresh air and the different parts of such heating apparatus, substantially as and for the purposes described. 6th. In a device for ventilating buildings, in connection with hot water heating apparatus, the intervention of a shield or diaphragm between the current of fresh cold air and the heating apparatus, to protect the water in the apparatus from freezing in consequence of a draught or current of cold air striking thereon, substantially as described.

HOW PAINTS ARE OBTAINED.

EVERY quarter of the globe, says the Argonaut, is masked for the materials—animal, vegetable and mineral—employed in the manufacture of the colors one finds in a paint box. From the cochineal insect is obtained the gorgeous crimsons, as well as the crimson, scarlet and purple lakes. Sepia is the inkly dead discharged by the cuttle fish, to render the water opaque for its own concealment when attacked. Indian yellow is from the urine of the camel. Ivory black and bone black are made out of ivory chips. The exquisite Prussian blue is got by fusing horses' hoofs and other refuse animal matter with impure potassium carbonate. It was discovered by an accident. In the vegetable kingdom are included the lakes, derived from roots, barks and gums. Blue black is from the charcoal of vine stalk. Lampblack is soot from certain resinous substances. From the madder plant, which grows in Hindostan, is manufactured Turkey red. Gamboge comes from the yellow sap of a tree, which the natives of Siam catch in cocoon net shells. Raw sienna is the natural earth from the neighborhood of Sienna, Italy. When burned it is burned sienna. Raw umber is an earth from Umbria, and is also burned. To these vegetable pigments may probably be added Indian ink, which is said to be made from burnt champlion. The Chinese, who alone can produce it, will not reveal the secret of its composition. Mastix—the base of the varnish so called—is from the gum of the mastix tree, indigenous to the Grecian archipelago. Blister is the soot of wood ashes. Of real ultramarine, but little is found in the market. It is obtained from the precious lapis lazuli, and commands a fabulous price. Chinese white is siac. Scarlet is iodine of mercury, and cinnabar, or native vermilion. It is from quick-silver ore.

**DESTRUCTION OF LEAD PIPE IN MASONRY.**

ACCORDING to G. V. Krorr, in a German contemporary, the destruction of lead pipe which is set in masonry is due to the action of free lime. Besnon had previously observed that saturated lime water attacks lead, and that it was imprudent to have lead pipes in contact with cement.

If bright-lead shavings and lime water are brought together with the exclusion of air, the lead will not be attacked, and its lustre will remain unimpaired for a long time. If, however, air has access the lead will be attacked violently by the lime water. After the lapse of a short time, the presence of considerable quantities of lead may be detected in solution by means of hydrogen sulphide, and the lead will be coated with yellow oxide. If lead is placed into slacked lime, milk of lime or lime mortar, and exposed to the air, the action of the lime, a thin yellow coating of oxide will be observed on the following day. The action will always be found strongest at the surface, where the absorption of oxygen from the air takes place most readily. The hydrated oxide of lead which is formed by the action of the oxygen and moisture dissolves in the lime water and is partly precipitated upon the lead as anhydrous yellow oxide. Such a coating of yellow oxide will therefore also be formed when lead pipe is brought into contact with cement or mortar containing uncombined lime in the presence of air and moisture.

A lead pipe which had been imbedded in cement was coated with a heavy reddish-yellow coating of oxide. The analysis of the coating, dried at 110° C., gave 99.05 per cent. oxide of lead, the remainder consisting of carbon dioxide with traces of silica, ferric oxide and lime. The residue consisted essentially of pure oxide of lead. An analysis of the oxide coating of a second pipe are 98.96 per cent. oxide of lead, the remainder consisting of dioxide and water.

The mortar surrounding the lead pipe had the following composition:

	Per cent.
Sand.....	78.4
Calcium carbonate.....	7.45
Calcium oxide.....	4.15
Water.....	9.99

On a number of lead pipes of the Berlin water supply the oxide coating was white. When caustic lime is not present the oxide of lead formed through the oxidation will take up carbon dioxide from the air and form the white carbonate. If, on the contrary, caustic lime is not present the carbon dioxide will be absorbed by it, and the oxide of lead will keep its yellow or red color.

The greater part of the pipes with the white coating were not uniformly attacked, but only in spots, giving them a po-marked appearance. Very often the spots were only a mm. in diameter, but the corrosion nevertheless goes quite deep into the metal. The oxide crusts are generally found to be very porous, especially that on pipe III., and absorbed liquid with much avidity, which decidedly increases the rapidity of the corrosion. The quantitative analysis of the coating on three samples of lead gives the following results:

	I	II	III
Sand.....	0.2	0.5	1.15
Plumbic oxide.....	74.3	82.7	78.4
Carbon dioxide.....	8.8	8.3	11.4
Sulphur trioxide.....	—	1.5	1.3
Nitrogen pentoxide.....	5.1	2.0	0.3
Lead chloride.....	10.6	2.6	5.8
Water.....	1.0	1.7	1.3

The coating of another strongly corroded pipe contained still more nitrate. Lead chloride and lead nitrate appear to play a very important part in the corrosion of lead, the chemical process corresponding to the formation of white lead, with the aid of small quantities of acetic acid. In an impure soil, the destruction of lead pipe is probably often prevented by the lack of oxygen, because the decomposition of organic matters consume all the oxygen which is present.

**PAINTING ON CEMENT.**

ACCORDING to the *Bulletin de la Ceramique* it is known that the caustic lime which is not in a state of combination in cement, saponifies the oil used in painting. Consequently, painting on cement is only practicable when, under the influence of the air, carbonic acid has united with the caustic lime to form carbonate of lime. When it is desired to paint cement without delay, attempts are sometimes made to neutralize the lime by acids; but the above named journal recommends in preference the use of ammonia, the acid of which combines with the lime while the acid is liberated. The effect produced is, however, only artificial. Various other expedients are referred to, but the solution of the problem would seem to consist in the use of casine. Fresh white cheese and slaked fat lime are added to the color. The mixture hardens rapidly, assumes the consistency of stone and is insoluble in water, a formation of aluminates of lime taking place. It is according to this system that the mural paintings at the Berlin War Museum were executed.

To make the composition, three parts of cheese and one of slaked fat lime are stirred, the quantity of color to be added being regulated by practice. Only earth colors, or oxides of iron would be used for light red to dark brown shades; for blue, ultramarine or cobalt blue would be used; for white, oxide of zinc, or sulphate of baryta; and for black, animal black. Inorganic colors, such as those of aniline, would not be used, nor would Prussian blue, vermilion, blue ochre and white lead be employed, on account of the sulphur present in the cheese in combination with these substances.

If the painting surface is too dry it can easily be dampened. The gaseous lime should be prepared daily, and the brushes should be cleaned after the application of each coat of paint. The process thus described is recommended for its economy, the walls of a house being painted first on the scaffolding is removed. The gaseous paint does not easily take fire, and is therefore considered particularly suitable for the decoration of theatres and for application to stage carpenters' work generally.

**CRUSHING STRENGTH OF SOME BUILDING MATERIALS.**

At a recent meeting of the Engineers' Club of Philadelphia, Mr. Howard Murphy, secretary, presented the results of some tests of the crushing strengths of some building stones, bricks and other building material made at the Watertown Arsenal.

No. of Tests	MATERIAL.	Crushing strength in lbs. per sq. in.	
		FROM	TO
6	Lee, Mass. Marble.....	30,504	25,000
10	Potomac Red Sandstone.....	16,925	25,000
3	Connecticut Limestone.....	11,900	15,500
3	Hummelstein, Pa., Sandstone.....	12,810	15,500
6	Montgomery Co., Pa., Blue Marble.....	9,550	12,700
6	Philadelphia Pressed Bricks.....	7,510	10,900
4	Indiana Limestone.....	7,100	10,500
12	Philadelphia Hard Bricks.....	5,740	20,850
10	Ohio Sandstone.....	3,950	16,350
6	Philadelphia Brick Masonry in Cement Mortar.....	1,600	2,485
6	Philadelphia Brick Masonry in Lime Mortar.....	799	1,994

**FRENCH VENEERING PROCESS.**

FRENCH wood-workers are greatly interested in a so-called new process for veneering with veneers of all kinds of wood. They claim that these veneers fully preserve the appearance and qualities of the massive wood. The veneers are pasted on strongly resisting sheets of paper and in that state sold to the trade. These veneers, the suppleness of which is most extraordinary, can be handled quite as easily as tapersy paper and are useful for various purposes. They have all the qualities of the wood in full size and can be quite as easily washed or varnished. The mode of application on surfaces is very simple, but a certain amount of care is required, especially when the great thickness of work is desired. The grooves and fissures must first of all be filled up with putty of a good quality, or plaster if it should be a wall. If the wall is new it must be washed with a warm solution of glue, 12 pints of glue-paste to 14 pints of water. When the glue is dry the wall may be polished with emery paper. If the object has already been papered the old paper must be removed before the veneer is applied. In cases where the object is painted it would be necessary to rub the paint with rough emery paper first and polish it with the finest kind afterwards. No coating with glue is required on the face. A small quantity of flour-paste must then be applied to the surface prepared in this manner by means of a piece of muslin. The stuff should be applied dry and smoothed with an equally dry brush. When these operations are completed the veneer is moistened with the water to which glycerine in the proportion of one to sixteen parts is added, in order to soften the wood and give it a great suppleness when once dried. As soon as the wood has swollen uniformly enough it may be cut into different sizes as required. The surface about to be veneered is then coated with glue and the veneers are placed in proper order. They are then lightly pressed in order to expel the air. A piece of pine or cork wood may be used for that purpose. All the joint parts must be juxtaposed and not allowed to overlap, and all the paste must be carefully wiped off. As soon as the wood is dry all the stains that may have been made in these manipulations should be removed by washing with a weak solution of oxalic acid in water, one teaspoonful of acid in one and three-fourths pints of water. All these operations being completed, the wood after being well dried is rubbed by No. 1 emery paper, or No. 2 for fine woods, and afterwards thoroughly polished. For maple wood two slight coats of white shellac will be quite sufficient. Wood like oak and ash require to be filled out with wax, softened in methylated spirits and afterward polished with orange shellac or hard oil polish.

Limestone is being taken from near Madoc for building purposes in Toronto.

Mr. Charles Taylor, Drumbo, Ont., is erecting a new brick plant in mill.

The firm of Halley Bros., planing mill operators, St. John, N. B., has been dissolved.

The Blacker Brick Co., Brantford, Ont., is the name of a new organization which commences operations with a capital of \$20,000.

The Campbell Sewer Pipe Company, of Hamilton, Ont., has secured the contract of supplying Winnipeg with pipe for the current year.

Fire destroyed Mr. George Augustae's planing mill and \$1,000 worth of lumber at Port Colborne, on April 30th. Total loss, \$5,000. No insurance.

Wood pulp is rapidly being substituted for plaster of paris in the manufacture of all kind of building ornaments in France, where a new method has been devised.

About \$1,500,000 worth of property was destroyed in the United States and Canada during the month of March through fires originating in wood-working establishments.

The firm of M. J. Hayes & Bro., henn cotton manufacturers, of Toronto, has been succeeded by the Terra Terra Cotton and Brick Co., incorporated, with a capital stock of \$200,000.

Belgian capitalists are said to have requested a Montreal civil engineer to prepare a report on the cost of material and labor, with a view to establish a large mirror and plate glass factory in Montreal or vicinity.

An English electrician, Dr. Lodge, has made experiments which he says go to show that good conductivity in a lightning rod may be a drawback to its efficiency. He states that when the best conductors were used, the discharge was sudden and violent, but when poor conductors were used, up to a certain point, the violence of the discharge was lessened. Iron was shown to be a better protection than copper, on account of a lower co-efficient of self-dissipation.

Messrs. Theop. McDonald & Co., proprietors of the Queen City Calcutting Works, Toronto, and manufacturers of the Waters' patent metallic shingle, are making considerable additions to their works, and placing new machinery.

P. G. Close; H. V. Ellis; P. W. Ellis, W. P. Ellis; Susannah Jane Ellis and Sarah Ellen Moodie, all of Toronto, are incorporated as the Hungford Marble Company, with a capital of \$200,000. The company will commence mining operations in Hastings County.

A by-law will be voted upon by the ratepayers of St. Thomas on the 22nd and grant a bonus of \$5,000 to Mr. Still, of Tilbury Centre, provided he removes his wood-working factory from that place to St. Thomas, and employs an average of forty hands for a period of ten years.

There is talk of a company being formed in Toronto to engage in the manufacture of scoriated brick. The promoters of the enterprise are Messrs. J. J. Davidson, J. D. Hay, and Beverley Robison. A test of these bricks for paving purposes will be made on Toronto streets.

A very fine mahogany stain is made by boiling in one gallon of water, eight ounces of madder and four ounces of fustic. The old rule is to streak the wood before it is quite dry with black stain to produce the grain of mahogany, but some kinds of wood give much better results when finished by the process recommended for the antique oak surface.

The *American Cultivator* recommends mixture of hydraulic cement and skim milk for painting farm buildings and fences. The cement is placed in a bucket and sweet skim milk stirred in until the mixture is of the consistency of cream. The proportions are about one quart of cement to a gallon of milk. Color may be added if desired. This paint is cheap and durable.

To restore mahogany, first wash well with soap and water, and then polish daily with the following oil: Take half an ounce of alkent root, cut small, and add to a pint of linseed oil, then let this stand for a week, then add half an ounce of powdered gum arabic and an ounce of shellac varnish. Keep these ingredients standing by in a bottle near a fire for a week, and then strain off. When using, rub it well in.

Perhaps the most wonderful thing that has been discovered of late is the new glass which has just been in Sweden. Our common glass contains only six substances, while the Swedish glass consists of 14, the most important elements being phosphorus and boron, which are not found in any other glass. The revolution which this new refractor is destined to make is almost inconceivable. If it is true, as positively alleged, that, while the highest power of an old-fashioned microscope lens reveals only the one four hundred-thousandth part of an inch, this new glass will enable us to distinguish one two hundred-and-four-million-seven-hundred-thousandth part of an inch.

**PUBLICATIONS.**

WE note with pleasure that our excellent American contemporary, the *Progressive Age*, will in future be published semi-monthly instead of monthly as heretofore. The publication offices, too, have been removed from Philadelphia to New York. The *Progressive Age* devotes itself entirely to gas topics, and is an ably conducted journal.

We have received from the author a copy of a "Manual of Engineers' Calculations," by D. McLaughlin Smith, late clerk of Steamboat Inspection Office, St. John, N. B. This work, which is designed to assist engineers desirous of passing the Board of Steamboat Inspection, contains rules for working and answering the kind of questions usually propounded to such candidates. The book contains many valuable tables and a number of illustrations: A beautifully engraved portrait of the author's father, Wm. M. Smith, M. E., forms the frontispiece to the book, and a sketch of his life is also found in its pages. Persons interested in the subjects of which this book treats will find its contents of great practical interest and value.

Our esteemed contemporary, the *Sanitary News*, has advanced its subscription price from \$2 to \$3 per year.

**PERSONAL.**

A. O. Wheeler, builder and contractor, of Toronto, has resigned.

Mr. Smart, Minister of Public Works for Manitoba, is seriously ill.

Messrs. Sneed, Dowd & Co., furnaces, Toronto, have dissolved partnership.

Mattison Bros, contractors, Spring Hill, N. S., have dissolved partnership.

Mr. B. A. Campbell, a prominent Canadian contractor, died recently at Niagara Falls.

At a recent meeting of the Toronto Master Carpenters' Association, Mr. Wm. Simpson was presented with a handsome and costly set service and an address in recognition of his efficient service as Secretary of the Association during the past three years.

The following gentlemen have been elected officers of the Council of Arts and Manufacturers of the Province of Quebec for the ensuing year:—President, Mr. S. E. Davison; Vice President, Mr. J. P. Fiches. Committee—Messrs. C. Dupont, J. Carred, Lieut.-Col. Stevenson, Dolvin and A. Lequet.

The solicitors of the Dominion Subway Company, Toronto, are seeking authority from the city to lay underground conduits for electric light and other wires.

Ald. Hanley, of Belleville, Ont., has secured the contract for the carpenter work on the new \$100,000 St. Paul's Catholic church, Toronto. He has also the contract for the carpenter work on a new Catholic church at Tweed, Ont., and is preparing plans for the new High School at Madoc.