

CANADIAN ARCHITECT AND BUILDER

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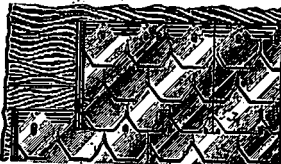
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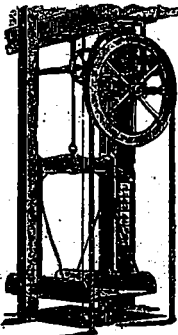
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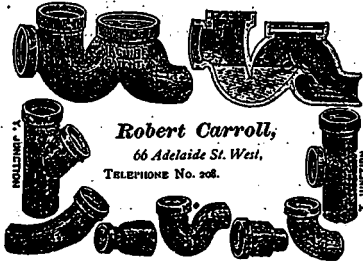
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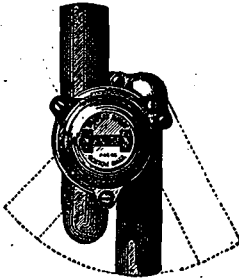
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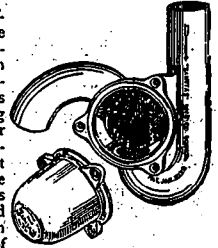
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WITH the present number, the CANADIAN ARCHITECT AND BUILDER enters upon its second year. In accordance with the expressed desire of a large number of our readers, the form of the paper has been so changed as to make it more convenient for binding. It will be noticed that while the

pages has been reduced, the number of them has been increased. We still find ourselves short of reading space, however, owing to our rapidly increasing advertising patronage, and shall probably find it necessary to again increase the number of pages. We regret that for lack of space, several interesting articles intended for publication in this number have to be held over. Other changes, designed to improve the appearance of the journal, appear in the present number, and are of a character, we trust, to meet with the appreciation of our readers. We had something to say last month about the favor bestowed upon this journal during the first year of its existence. We are now in a position to state that during the last month nine-tenths of the advertisers whose contracts expired with the close of Volume I, renewed them for the present year, and in addition, sufficient new contracts were made to increase considerably the average business done last year. Since the announcement was made of our intention to publish the "Canadian Contractor's Hand-Book" as a premium to new subscribers to the CANADIAN ARCHITECT AND BUILDER, many subscriptions have been received, daily from all parts of the Dominion. With such an encouraging prospect before us, we can have no doubt of the permanent success of this journal, and shall in every way possible endeavor to make it worthy of the generous support ac-

corded it. Many architects and others of our readers have materially assisted to promote its interests during the past year, by making reference to it as the source of their information when writing to firms whose advertisements they have seen in these pages. We trust that during 1889, the assistance given us in this direction will be much more general. It is a pleasure to observe the constant increase in the number of persons who contribute information of one kind or another adapted to the needs of our readers, through the medium of these pages. Such contributions, when of practical value, written concisely and to the point, will be ever welcome.

INVITATIONS have been issued for a "Conversazione" under the auspices of the Canadian Society of Civil Engineers, to take place in Montreal on the evening of the 17th inst.

THE City Solicitor of London, Ont., has given it as his opinion that the Local Board of Health has no power to compel the Water Commission to lay a water main in any part of the city. In consequence of this decision, it is said, the children attending one of the public schools are compelled to drink from a filthy well. Under such circumstances the validity of the Solicitor's opinion should at once be tested, and if found to be legal, application should be made to the Legislature on behalf of Local Boards of Health for power to compel compliance with conditions necessary to the prevention of disease.

WE are pleased to notice that harmony of feeling and interest between the architects and members of the Builders' Exchange, of London, Ont., appears to have been completely restored. In celebration of such a desirable consummation, the architects, builders and contractors of the city banqueted together the other evening and voted each other "jolly good fellows," which nobody will deny. We hope and believe that in future the parties to the recent dispute will be able to see eye to eye, and work harmoniously together for their mutual interest and the progress and prosperity of the city.

A CORRESPONDENT, writing from Montreal, calls attention to the fact that while Canadian architects very reasonably and properly complain of the conduct of those who, passing by native talent, give the designing and construction of their buildings into the hands of foreign architects, they are themselves in many instances guilty of equally unpatriotic conduct, inasmuch as they specify materials of foreign manufacture in preference to those produced in the Dominion. Our correspondent makes a point when he states, that if Canadian architects lead their clients to believe that materials of Canadian manufacture are necessarily inferior to those of foreign countries, they should not be surprised if in course of time their clients become educated up to the idea that Canadian architects must also be inferior to those of other countries. We hope that the practice of which our correspondent complains is by no means a

general one. That it obtains to too great an extent, however, we have had ample opportunity of knowing. We could name instances in this city, recently, where appliances of American manufacture have been specified, when a Canadian article of equal merit might have been obtained without even going beyond the boundaries of Toronto. Such conduct is unpatriotic in the extreme, and deserving of the severest censure. There are many lines of manufactured goods used in modern building construction which are not yet produced in Canada, and which must be obtained elsewhere. In all cases, however, where materials of Canadian manufacture can be obtained approaching nearly in quality foreign goods, preference should be given them. In this way we should help to build our country and each other up. Encouragement would be given for the establishment of new lines of manufactures, and for the further perfecting and development of those which already exist. Adapting the words of the poet to the case:

"Let us to ourselves be true,
And it follows as the day the night
We cannot then be false to any man."

ONE of our illustrations is a perspective view of the design submitted by Messrs. Darling & Curry, of this city, for the proposed Departmental and Legislative buildings for this province, which are now being erected in the Queen's Park according to the design prepared by Mr. Richard A. Waite, of Buffalo, N. Y. In the first competition, which was open to the world, the design of Messrs. Darling & Curry was awarded first position in merit, although the experts did not consider that they were entitled to any of the premium because they had exceeded the limits of cost. There were a number of plans submitted from the States, but none were fortunate enough to obtain mention. As the result of a second competition, it was decided to have the first premiated design and the above design submitted to tender, to settle the matter of relative cost. Working drawings, details and specifications were prepared, and tenders received. The lowest tender for Messrs. Gordon & Helliwell's design—the premiated one—was \$542,000; and for Messrs. Darling & Curry's design, \$612,000. The Government decided not to proceed with the erection of the building as the figures were too high, although they have since commenced the erection of a building which will cost not less than \$2,000,000.

There was nothing more done until the Government obtained a vote of \$750,000 for these buildings. They then decided to submit the two designs to an expert, and then decide their relative merits. The expert chosen was Mr. R. A. Waite, of Buffalo, who, while he did not decide in a manner to meet with the approval of the competitors, seems to have met the wishes of the Government, and thus gained for himself most liberal treatment, as he eventually secured the commission, and, to all intents and purposes, full permission to expend any sum reasonable or unreasonable. No one has yet been able to discover the nature of his reports on the two Canadian designs. The Government has treated them as confidential, even to refusing to allow the competitors to see them. When the Commissioner of Public Works was asked in the House to bring down Mr. Waite's reports on the Canadian designs, he refused, on the plea that he had not the permission of the authors of these designs. When the competitors asked him for the reports, he gave an entirely different reason, as one may easily understand. However, the reports cannot be seen, and consequently no one is able to judge as to their character.

There is another side of this question which is of considerable importance to the people, and that is, what description of building is the Province really getting in its new Legislative and Departmental Buildings? If the members of the Ontario Government know, they are the only persons who do, and we have our doubts as to their knowledge of the matter. The Canadian architects were held down to a definite expenditure, and even obliged to have the entire work ready for tender, so that the full expenditure would be known before the work was commenced. But when the work is entrusted to a citizen of another

country, all carefulness as to expenditure ceases. Only one branch of the work was submitted to tender, and even when that exceeds the appropriation for the entire building, a contract was entered into, and the Province was committed to the erection of the building, no matter what it may cost. A lithographic print of the buildings as they are being erected has been published, and from that source ideas may be gained of what the building will look like when completed. We will allow our readers to judge as to which is the better design of the two. That one of them is a most carefully studied piece of artistic work, as compared with the other, will be admitted. We will allow those who can see any merit in the inferior design to point out where the merit consists. The chief value, in our eyes, is its size, which must impress a person at first sight; but a close and careful study will show that there is not one really good or interesting feature about the building.

We do not understand the apathy of the people of this province as to the erection of this most important work. They do not seem to care whether it is built according to a good plan, or is an artistic building. They do not seem to care what it will cost, or if they are receiving value for their money. They allow a Government which should be the servant of the people, practically to tell them that it is none of their business. The Government refuse to give any information, and when they do make a pretence of doing so, it is almost invariably misleading, as it is apparently meant to be. Why all this withholding of information from those who should be informed? Is the Government afraid that the plan of their architect from the States will not bear the full light of day?

COMPETITIONS.

A NUMBER of architects practising in Toronto have received copies of the following circular:

"KINGSTON, Dec. 26, 1888.

SIR,—Enclosed we hand you resolution passed by our vestry at the late meeting. If you feel disposed to offer suggestions or submit plans, we shall be pleased to receive same, provided they are submitted without cost. We shall be happy to give further information if desired.

Yours truly,

R. WALDRON, } Church-Wardens.
J. MUCKLESTON, }

"At a meeting of Finance Committee of St. George's Cathedral lately held, the following resolution was passed: That the church-wardens be requested to solicit designs for the proposed alterations, involving the removal of the side galleries, and increasing the interior accommodation to 800 on the ground floor; such designs not to be charged for unless adopted by the Vestry, and such designs be submitted to a subsequent meeting of this Committee."

We have come across many competitions the conditions of which showed most conclusively that the framers of them had no conception whatever of the nature of an architect's duties, or the slightest idea that an architect had any respect for himself or his profession. We must confess that the above suggested competition surpasses anything we have heard of in its cool proposal that architects should submit schemes to alter a church in some way or other, in the hope that some one of them may obtain a small commission by submitting a scheme which may meet with the approval of incompetent judges. If these men were competent to decide an architectural competition, they would never have proposed one under the circumstances, but instead, would have devoted their time and intelligence to the selection of an architect who would be able to give them the advice they require. This arrangement would certainly necessitate the paying of an architect a reasonable fee for his services, which, no doubt, is a serious objection in the eyes of those who are much more desirous of having some pet scheme of their own carried out, than accepting the careful and studied advice of a man who has made the profession of architecture his life's work. We take this opportunity of informing the Vestry of St. George's Church that they will not receive any response from any capable architect in this province. The travelling expenses to Kingston and return would very likely be more than could be made out of the entire work if the building committee should be as carefully niggardly in dealing with the possible winners of the competi-

tion as they have been in the arranging of this (to be hoped abortive) competition.

There is some suggestion of taking out the side galleries of the church and obtaining additional seating in some other manner. Let us hope that no such thing will be attempted, or anything else which would injure this really good piece of classical work. This building may have faults, but we say most emphatically that it is too good a building in its every part to be meddled with beyond what is absolutely necessary to make it capable of meeting the requirements of the present time; and then only by an architect equally as competent as the designer of the building. It was designed to receive galleries, and the galleries should therefore remain. They are most appropriate and artistically satisfactory. The seating may be badly arranged and inconvenient, but that can easily be made right. The fronts may also be so high that no one can see over them, but that can be remedied by lowering the fronts or raising the floor of the galleries. All that the building requires, artistically, is that the windows be glazed with good glass, and the interior decorated to bring out its good qualities and to cover up its few defects.

We also hear of a competition at Woodstock, Ont., the conditions of which should be copyrighted, so that the committee which drew them up might receive some money value for their ideas of the proper methods of dealing with architects. Why this committee did not make it a condition that competing architects should send along with their designs a subscription to the building fund, is more than we can understand.

When will the ordinary individual discover that an architect is not a man of trade—that he does not receive a commission for guaranteeing impossibilities, but for performing a definite piece of work according to the best of his ability.

The committee may understand that the members of the Architectural Guild of Toronto will not compete, and to that extent the competition will be a failure. We will refer to this matter in our next issue.

LOYALTY TO CANADIAN INDUSTRY.

MONTREAL, Jan. 8th, 1889.

EDITOR CANADIAN ARCHITECT AND BUILDER.

IN the issue of December 22 of the *American Architect*, I notice the correspondent for Canada deals a rather hard rap at American architects. Can any blame be attached to the architect whose services are sought after by parties building in Canada? It certainly implies a lack of confidence in the profession in Canada on the part of those who, residing in Canada, choose to seek their "talent" for building elsewhere. I agree with the writer in his indignation at this state of things, but who is more responsible for the public having this "leaning" than the "profession?" There are architects in this city who have systematically opposed the introduction of "domestic" work in buildings of their construction, not giving it an opportunity to demonstrate its unsuitableness. Now, sir, if an architect impresses on his client the necessity of buying furnishings from abroad, is not the natural conclusion of the "client" that all things keep pace with each other, and even the buildings must be proportionately better? resulting in the prejudice of the architects, like a double edged-sword, cutting both ways. There is a peculiar coincidence, that the architect who "buys abroad" and the client who "plans abroad" are both willing to expend more on "furnishings" or "plans" abroad, than either would "at home."

To make comparisons of results, the building now being erected for the Methodist Society, improves when compared with the New York Life Building, and a residence now being erected on Sherbrooke street, would be in keeping with 5th Ave., N. Y., edifices. Meanwhile, it is a little enjoyable to note the humor in which the profession take the present "epidemic" in this city for the American architect. If the profession would endeavor to create confidence in home industrial work, and by kindly advice as to shortcomings, encourage same, the tide which appears to be setting in in favor of things American, might not be so marked.

DOMESTIC.

MEASURED DRAWINGS COMPETITION.

THE Committee of the Toronto Architectural Guild appointed to examine competition drawings for the measured drawings prize, have reported as follows:

Your committee appointed to examine and report on the students drawings in this competition found the task before them a much more difficult one than they anticipated. Owing to the general excellence of the drawings submitted, it was no easy matter to decide which was really the best of all. The subject—the Eastern Entrance Doorway of the Toronto University—a building in the Norman or round arched Gothic style—is one which necessitated a very great deal of trouble, and the expenditure of a great deal of time. It embraced scale drawings to small scales and to large scales, and full sized details that could only be drawn free hand, and it may be considered a very decided test as to the abilities of each student. It is no small matter of credit to each one, that although the amount of real hard work and steady application must have proved far greater than anyone anticipated on deciding to enter the competition, not one failed to submit the required number of drawings, or attempted to scamp what he did in order to send in the whole set. Everyone appears to have gone about the work in a most painstaking and conscientious manner, and although only one could obtain a prize, none need feel any shame that he is not the winner, or regret that he entered into the task. Each student will have found great benefit to himself, and the work he has accomplished will have opened his eyes not only to his own deficiencies in knowledge of the subject, but to the fact that there is far more in architecture than possibly he had ever expected.

By reference to the table of marks, the exact relative position of each drawing will be seen. Not only has each set as a whole been compared, but every single drawing also, and its place duly assigned.

And now, a few remarks upon the drawings themselves. In the case of the one placed last on the list, it is only fair to call attention to the fact, that the author is found to be a student of only one year's standing—the junior of all the other competitors by several months—and he has shown considerable pluck and perseverance in entering the competition at all. His motto "*Labor Omnia Vincit*" is a good one to start out upon; if he goes on in this spirit through his course of pupillage, he will do well.

"Venture" sends in a set of drawings (placed 5th) very elaborately shaded in pen and ink, and with Indian ink brush work on his full sized details. It is a very pretty set of drawings, though divided up on a good many small sheets, but this kind of shading work is not the best for measured drawings, and his work has to be judged altogether apart from the effect produced by this mode of finishing. Correctness of outline is of more importance, but the labor expended shows that the author has his heart in his work.

"Green Seal" (No. 6) has, although he has worked very hard and industriously, made a mistake which it will be well for him to correct in future; it is that of doing a great deal of work not asked for, to the omission of that required. He has devoted much time and labor to the theory of the formation of the spirals and curves of the mouldings and has not completed the essential and practical drawings. His drawings are carefully executed and show great precision, and the fact that his section of the jamb and arch mould gained the highest mark for that subject, intimates that had he kept to the requirements of the competition, he would have gained a better position.

"Greek Fret" is apparently a youthful student. His drawings are fairly well executed, but rather mixed up together; but as a beginner, he also deserves great praise for his work, and when he sees how others have arranged their sheets, he will know how to do better another time. He occupies the seventh place.

Of the two sets by "Scotia" (placed third), and "Albion" (placed fourth), it was a very difficult matter to decide which should take precedence. As will be seen by reference to the table of marks, their drawings are very much alike in merit. The drawing of both is very good, and the arrangements are

fair, "Albion" taking a few more marks than "Scotia" on the drawings of the cap and mouldings of the arch and jamb and in general arrangement and neatness. "Scotia" has hit upon an important matter, viz, that of carefully figuring his details, and though "Albion" has in some cases done likewise, his system is not so good as "Scotia's." The result is that "Scotia" obtains thirteen more marks than "Albion."

"Le Noir" has prepared a very careful set of drawings, well arranged and finished up, and his sheets present a very attractive appearance. The manner in which he has "printed," too, his drawings, and put in the accessories, deserves great credit, and the fact that his marks are only twelve less than the prize winner, shows that he deserves great praise.

To "Tritfoil" (or Three Circles) the highest number of marks is awarded, not that his drawings are so very much better than others, for it has been shown that all are remarkably good. The whole set is good. The measuring has been carefully done, and the plotting done with exactness. "Le Noir" and "Venture" are better than "Tritfoil," however, in their free-hand drawing of the capital, and "Green Seal" in his drawing of the jambs and arch mouldings. "Le Noir" also comes out ahead in general arrangements. Of the other subjects "Tritfoil" has gained the highest marks. The following is the table of marks:

MOTTO OR SIGN	PLAN, ELEVATION, SECTION	CAPITAL, FULL SIZE	IRON WORK	CAP & ARCH MOULD, ETC.	SECTION ARCH & MOULDS	GENERAL NEATNESS AND ARRANGEMENT	TOTAL
"Tritfoil"	200	94	100	100	49	45	588
"Le Noir"	198	100	98	88	40	50	574
"Scotia"	188	92	60	96	44	38	548
"Albion"	186	90	80	98	39	40	535
"Venture"	184	88	80	88	30	37	517
"Green Seal"	160	88	80	35	50	30	413
"Greek Fret"	156	80	70	40	35	34	451
"Labor etc."	120	40	30	20	28	20	528

(Signed,)

F. DARLING
W. G. STORM
J. GEMMELL
R. W. GAMBIER-BOUSFIELD.

OUR ILLUSTRATIONS.

A VILLAGE CHAPEL—LANGLEY & BURKE, ARCHITECTS.

THE *motivo* is taken from a section of country where stone fences abound. Reference to the plan will indicate the general scheme. A stone wall encloses the entire lot, than which nothing in the way of a fence can be more satisfactory, in the matter of both form and color, each passing year enhancing its beauty.

The chapel, up to the level of the window sills, would be built of the same stone as the fences, and above, of frame, to be either plastered and roughcast, or weather boarded or shingled, the latter a favorite method in New England and the Lower Provinces.

The chapel as shown in the design would accommodate about 325 persons, and has a generous vestibule in the tower. The baptistry would be open, and candidates would descend and ascend without being exposed to view. The school building is directly connected with the chapel by broad folding doors, enabling an audience of 400 to 500 persons to participate in the services on special occasions. Opening off the school-room are infant and bible class rooms. An ample porch gives independent access to the school building. The prevailing color of the stone walls would be a reddish grey, exhibiting a variety of tints when sledged and giving the key to the coloring of the work above.

The casings, corner posts, the eaves and gable-mouldings would be painted a cottage brown, the walls if shingled, would be either left to assume a soft grey by the touch of time, or the shingles would be dipped before being put on in a stain of burnt sienna. If walls are roughcast they would be either left the natural color of the lime, or tinted a soft salmon.

The roofs would be painted terra cotta or left to assume the soft grey shades already referred to. The chimney and vent stack would be built of dark red bricks laid with brown joint. The interior would be finished with pine, oiled and slightly stained.

DESIGN FOR THE PROPOSED DEPARTMENTAL AND LEGISLATIVE BUILDINGS FOR THE PROVINCE OF ONTARIO, AS PREPARED BY MESSRS. DARLING & CURRY, TORONTO.

The cost of erecting the buildings in accordance with the above design would have been, as per lowest reliable tender, \$612,000.

TORONTO ARCHITECTURAL GUILD.

THE Architectural Guild of Toronto met on the 13th of December, and carried forward much important business. There was a very good attendance.

The first meeting of the Guild for this year took place at the "Hub" on the evening of January 10th. There was not as large an attendance as usual, but there was a very interesting meeting, and much business of importance transacted. The following officers were elected for the present year: Secretary and Treasurer, Mr. S. G. Curry; Executive Committee, Messrs. D. B. Dick and E. Burke. There is a balance to the good of over \$200 after all expenses have been paid. The annual fee was increased to \$15, but the cost of the monthly dinner is to be defrayed out of the general fund. It was decided that the entrance fee should be \$10 during this year. The committee appointed to decide the measured drawings competition handed in their report, which is printed elsewhere. The committee on tariff changes also handed in their report. It was decided to have the report printed before discussing it. The committee having in charge the formation of an Architectural Society for the province, reported progress. The members were inclined to think the progress was very slow, but hoped that a report would be received from this committee at the next meeting.

LONDON.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

I AM glad to be able to inform you that the long pending difference between the architects and builders here in regard to the form of contract to be adopted, has been settled agreeably to all parties.

Tenders will be opened for the conversion of a large wholesale house on Talbot St., into an hotel, probable cost \$10,000, and for the erection of a Methodist Church in the north part of the city, to cost \$14,000.

BOSTON.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE architecture of Boston is known so well by all lovers of the art on this side of the Atlantic, that it would be superfluous to say anything regarding its older buildings. Few there are among the readers of this paper who have not, either by actual sight, or through the agency of published prints, become familiar with all its public and private edifices worthy of note, which have been standing for any length of time. So we shall confine the limits of the letter, to a short description of some of the principal buildings now in process of construction.

On the 28th of November, the corner stone of the new Public Library was laid. Among those taking part in the interesting and impressive ceremony, were Mayor O'Brien, Dr. Oliver, Wendell Holmes, and Mr. McKain, of McKain, Mead and White, the architects. All the drawings of the proposed building were on exhibition at the old state house some time ago, and were viewed by large numbers of architects, draughtsmen, and other interested citizens daily. Though at first, their seemingly simple and unpretentious lines rather troubled some of the city fathers and others not used to such architecture, almost everyone now seems to be of the opinion, that nothing more appropriate could be built. Copley square on which has been chosen the site of the new building, will on its completion contain a unique architectural group, which in themselves would be worth a visit to Boston, to any architectural student. There are to be seen the Museum of Fine Arts, the new old South Church and Trinity Church, and the massive imposing and beautiful structure which the new Library bids fair to be will form not the least in this grand collection. Mention should also be made in this connection of the large addition to the museum of fine arts now in progress, by which its capacity will be about doubled. The term *cotta* work which formed the distinguishing feature of the old building has been left out of the new, probably on account of the cost. From Copley square and its beautiful buildings we wend our way to Pemberton square, and there our thoughts are turned into an entirely different channel as we gaze on the huge piece of construction, whose walls have just been completed. There is the new Court House, artistically speaking there is nothing to study in the building, for the design is common-place among the common-place. The building will probably meet its requirements in a good and workmanlike manner, but it is certainly a great pity, that in a city like Boston, so important a building was permitted to be built from so tasteless a design. Speaking of the Court House it might be mentioned that the buff colored bricks, with which the

terior courts are lined, have been brought from the kilns belonging to the Hon. W. E. Gladstone at Hawarden, Wales.

It is to be expected that the present State House, whose gilded dome has been Boston's landmark for so many years, may have a rival soon. The state of Massachusetts has brought the property immediately in the rear of their present headquarters, and a supplementary building will probably be erected, as soon as possible. The terms for an architectural competition are now being prepared, and it is not likely that much time will be wasted, as the present building though dear to the hearts of all Bostonians, is generally admitted to fall far short of its requirements in many ways.

On State street, architects Peabody and Stearns, are putting up what will probably be one of the finest office buildings in the city. The Fiske building, as it is called, occupies some 80 feet square of ground, and is ten stories high or 130 feet from sidewalk to roof, while the roof and the lantern which is to crown the building will bring the total height to about 218 feet. The State street front is of granite, and, with the exception of the main entrance which is a round arched, all the openings are square. The walls of the building have just been completed and though simple in design have a very fine effect. The roof, as the figures just given show is an important factor, in the design, and it is probable, that after the dome of the State House, it will be the first distinguishable feature of the city, by incoming vessels.

Boston can boast of few buildings that are high in the New York or Chicago sense. The Parker House has long stood pre-eminent among those buildings making any pretensions that way, but the Fiske building is even more aspiring, and a new nine story shop on the corner of Tremont and Beacon streets will likely prove a dangerous competition in the race. This latter building, which is now well on to completion is a plate glass and iron construction, whose design has evidently been governed by the necessities of its owners,—a large retail firm. The two street fronts are almost entirely window space. Six granite piers about three feet wide extend from basement to roof, and these to the uninitiated passer-by appear to carry a good deal more weight than they seem able to bear.

An interesting piece of constructive engineering is now in progress here, in the shape of the new Howard Bridge, which is being built across the Charles River, connecting the west end of the city with Cambridge. The bridge is 2,160 feet long and has 23 piers of 75 and 105 feet span alternately. The plate girders are built on the cantilever principle. They are floated into place on scows, then lowered on to the piers, by letting water into the boats thus sinking them to the required depth—altogether a very interesting process to watch. The foundation for the stone piers is composed of spruce pines which are cut off two feet below water (the river here being affected by the tides.) Four inch sheet piling is then built around them and a concrete cap is put on, the concrete extending down 8 feet amongst the piles, thus completing the work. Messrs. Shields and Carroll the contractors for the masonry work and foundations are a Toronto firm. This bridge is expected to be done by next June.

A new addition to the large number of statues and monuments in this city, has recently been erected on the common facing Tremont street. The Attucks monument, as it is called, has been erected to the honor of the five men, (a negro, Crispus Attucks, being the leader,) who in the year 1770 fell in what is called here the Boston massacre. The memorial consists of a granite column and a bronze female figure with a broken chain in her hand and an eagle with spread wings at her feet. The shaft of the column is round but the base has been elongated on one side and on it stands the figure. The bronze work has been much admired, but the column itself has created some dissatisfaction and will probably be altered.

On Friday evening the 30th of November, the rooms of the lately organized architectural club were opened. The occasion was happily chosen as a fitting one to tender a reception to Mr. Geo. F. Newton, the third Reich Scholar, who has just returned from his travels. The meeting was quite informal but nevertheless was much enjoyed by all present. The numerous water color sketches, and pen and pencil drawings which Mr. Newton has made during his trip, were on exhibition, then, and during the following week, and have been much admired for their exquisite rendition and for the beauty of the subjects chosen.

The architectural club was formed last September for the social and artistic benefit of young architects and others interested in architecture. Since its organization its membership list has grown from twenty to over a hundred, rooms have been leased, and neatly and tastily fitted up and furnished, and much enthusiasm has been kindled among the younger branches of the profession. Classes are being formed and with such teachers as Ross Turner in water colors and D. A. Gregg in pen and ink work are an assured success. The rooms are centrally located at No. 6 Hamilton Place, and all visiting architects and draughtsmen will be made welcome.

The following have been elected officers of the Montreal Contractor's Association for the present year: President, Wm. Rutherford; First Vice-President, Jos. Brunet; Second Vice-President, J. R. Savignac; Secretary and Treasurer, A. Lapiere.

On the completion of work on the McClary Mfg. Co.'s new building, at London, Ont., the contractor for the brick work, Mr. Wm. Hayman, entertained his employees at a banquet. Among the guests was Mr. J. M. Moore, the architect of the building.

MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE past year on the whole has been a successful one as regards the building trade. At the commencement of the year, there was a decided disinclination to undertake any large contracts without a very large margin for a possible rise in the labor market. This, though causing a stagnation in affairs at the opening of the season, was soon settled on a normal basis, and, as a matter of fact, the cost of building has compared favorably with that of previous years. The following is a brief resume of some of the principal building operations:

The Canadian Pacific Railway depot, on Windsor St., a magnificent stone structure, modern Romanesque in style, of which Mr. Bruce Price, of Boston, is the architect, cost, over \$500,000, is now nearly complete, and the various departments are taking up their quarters in the new building.

The new Bonaventure station of the Grand Trunk, replacing the infamous old wooden structure, is also completed and in working order, having been examined by the City Surveyor and duly subsidized as agreed by the city council. The building is of red brick and terra cotta throughout, and was designed by Mr. Scott, of Ottawa.

The Protestant Insane Asylum, after creating an amount of wrangling (tending to qualify some of the rival partisans as future inmates) is partly ready for the roof, the work having been pushed forward by Messrs. Stuart and Quinlan, the contractors, under the superintendence of the architects, Messrs. T. W. & E. C. Hopkins. The total cost will amount to some \$125,000. The above firm are also engaged in carrying out a large extension at the "Windsor Hotel," the foundations of which have been put in. The design includes a large hall and concert room, the details of the wood work and finishings being very chaste and good. Messrs. Hopkins are also completing the large eight story warehouse (illustrated in your columns) on Craig street, for Mr. T. C. Wilson, the front of which is of pressed brick and terra cotta on a story of colored sand stone, the stone work being executed by Messrs. Barbeau & Fournier, the brick and terra cotta by P. C. Wand, and the woodwork by E. Roberts.

St. James st., however, has seen the "boom" localised—nearly every building of importance having either undergone, or being about to undergo renovation of some kind.

The colossal premises of the "New York Life Insurance" building on the corner of Place D'Armes Square, which completely dwarfs the towers of the French parish church, is now complete as regards the exterior, and will be occupied early in May. Messrs. Babb, Cook and Willard, of New York, are the architects, the masonry having been well executed by Peter Lyall, and the carpenter's and joiner's work by Simpson & Peel.

Nearly opposite, the old C. P. R. offices have received such sweeping alterations and enlargement by the same contractors, under the superintendence of Mr. C. Clinton, architect, New York, as to be hardly recognisable. The facade is effective, with an open colonnade of Corinthian columns over the original Doric and Ionic orders. It will be occupied in May by the Imperial Fire and Life Insurance Company.

From this westward, the whole aspect of St. James St. is changed—first, by the large red sand stone block of stores and offices erected on the site of the old Methodist church, of which Mr. A. P. Dunlop is architect, the stone work being carried out by H. Hutchinson, and the carpenter work by W. McDonald. The new Methodist Church on St. Catharines St., by the same architect, will be opened early in the summer, the school and class rooms being already occupied.

The City and District Savings Bank opposite, has been remodelled and an additional story added, forming fine suites of offices with elevators and modern appointments, at the hands of Mr. A. Raza, architect, who has also rebuilt the premises of Messrs. Bourgeau and Perraud, making a bold and effective front of the buildings which were burned out a year ago.

"Nordheimer's Hall" is also approaching completion, the premises having been completely gutted after the last fire, and rebuilt as stores and offices with granite front, by Mr. T. R. Browne, architect, who also has in hand the "Royal Insurance" Company's building at the corner of Place D'Armes Square and Notre Dame St., also the remodelling of the Molson property on St. James St., at a cost of \$20,000.

The Mechanics' Institute has had two additional stories added, and the interior formed into offices all fitted up in good style by Messrs. Wright & Findlay.

The suburbs are full of new villas, some of harmless character, others, "things to shudder at, not to see." Mr. A. T. Taylor is engaged on a large residence for Hon. Geo. Drummond, on Sherbrooke St., which is of a very high order of design. This house, with Sir Donald A. Smith's premises on Dorchester St., by Messrs. Hutchinson & Steele, ought to convince any impartial mind that there is no absolute necessity for importing foreign talent whenever anything more than the stereotyped 23 ft. front "villa residence" has to be erected.

The last named firm have also completed a fine block of eight houses on Sherbrooke St., for Mr. T. Heenan, of New York, at a cost of about \$80,000. These fronts are very effective, and free from the prevalent indispensable "Queen Anne" mansions.

The various departmental schools have received extensive alterations, and a large new school erected at the west end by the same architects.

A Methodist training college is in course of erection at Cote St. Antoine, by Mr. T. P. Hill, architect, at an outlay of about \$50,000.

New middle class schools in connection with the Church of St. John the Evangelist, are being erected from the designs of Mr. P. B. Williams, at a cost of about \$30,000. They will be ready for occupation for the summer term.

The School of Art in connection with the Council of Arts and Manufactures for the province, of which S. C. Stevenson, B. A., is secretary and director, is in full swing and doing good work in affording technical instruction in the various branches. The total number of students is over 400, of all ages from 15 to 40. The classes are free with an entrance fee of one dollar which is returned to regular attendants at the close of the session, and are as follows: Freehand drawing, Messrs. E. Brequit and F. S. Cleverley; advanced freehand model and object drawing, Mr. Rene Quintin; mechanical drawing, J. T. Gardham; architectural drawing, E. Belanger, C. E.; modeling and wood carving, Arthur Vincent; lithography, T. A. P. Labelle; decorative painting, E. E. Meloche; stair building and building construction, L. H. Blouin; plumbing, F. Horton; pattern making class (for boot and shoe makers) Messrs. T. Godin and A. Patrie. The plumbing class is under the control of the "Plumbers' Association," who agree to deduct one year from the term of apprenticeship of all pupils. The classes are held every evening from 7:30 to 9:30.

The Plumbers' Association is in a flourishing condition, being now in the third year of its existence. Monthly meetings are held in the rooms of the Contractors' Association, (of which this society is a section) and papers are read and discussed. About 40 members have joined the Association, which has for its object the raising of the standard of both work and workmen. When this has been effected in some degree by means of the Plumbing Class above mentioned, it is hoped the system of licensing after due examination may be introduced into the by-laws of the corporation. Mr. John Date is President, Mr. F. X. Drapeau, Vice-President, and Mr. J. W. Hughes, Sec.-Treasurer.

FACTORY CHIMNEY CONSTRUCTION.

By WM. KNOX, ARCHITECT AND C. E.

A TALL chimney is seldom a very pleasing-architectural feature; yet it is an important part of factory construction, requiring special architectural skill, a point not often acknowledged by either architects or owners. A manufacturer contracts with a boiler-maker for a certain amount of power from a given quantity of coal, and if he fails to perform his contract there is trouble, when the chimney may be the whole cause of the failure.

If a chimney is required to take away gases or fumes from retorts and furnaces, then it must be built to a height sufficient to carry these clear of the surrounding premises. This height can only be determined by a knowledge of the nature of the gases, etc., and the situation of the factory.

In the following paper it is only intended to deal with a chimney necessary for ordinary factory purposes.

In order to give the required draught to the common steam-boiler, the chimney should be not less in height than 80 feet above ground surface at its base, and not exceed 150 feet unless there is higher land in the immediate neighborhood.

To find the necessary area of a chimney, first ascertain as nearly as possible the area of the grate bar surface of the various furnaces; then if the chimney is to be 80 feet in height above the ground surface, multiply the area of the grate surface in square feet by 14; for a chimney 100 feet high, multiply by 11; for a chimney 120 feet high, multiply by 12; and for a chimney 150 feet high multiply by 9.8, and the quotient in each case will be the area of the chimney in square inches at its narrowest point. The area at the top of a chimney should never be less than at the base; some engineers say that it should be greater, because the smoke and air entering the chimney at a very high temperature, ascends rapidly, but as it cools in its passage through the flue its progress gradually becomes slower. A square chimney was erected by us last year, in Hamilton, for the Canadian Screw Company. It is 100 feet from floor of boiler house to top of cope. The flue has an equal area at top and bottom of 2,116 square inches. It was designed to give draught to three boilers of 100 h. p. each, two drying ovens and four annealing furnaces. To it also was connected an 8 inch pipe from the drains. It is now working and giving perfect satisfaction. The foundations ought to be deep enough to take all the footings below the reach of frost, each course projecting beyond the one above not more than two-thirds of its own depth—thus increasing until a projection of foundation is gained beyond the line of the base of the chimney, equal to one twenty-fifth of the height of the chimney above the ground surface. This is necessary for the stability of the chimney upon a good hard bottom. On soft land or bad bottom, the area of the foundation must be increased so as to spread the weight over a surface sufficient for its support.

The strongest chimney is one built entirely with brick above a stone foundation, and the best form of plan is the octagon, the draught of which is almost as good as the circular, and the cost of building is considerably less.

In setting out the brick work, start at the top and figure downwards. If the width of the flue is less than 5 feet, then the walls of the chimney will only require to be one brick for 25 feet below the cope, and if the outside of the chimney has a battens of $\frac{1}{2}$ inch in every foot, the thickness of the walls at the base will be what they measure.

The inside face of brick work above foundation ought to be of fire-brick, carried about $\frac{1}{2}$ the height of the chimney, and air space is not necessary,

unless where a strong flame (as from wood fuel) would be constantly striking. Finally have as few openings as possible into the chimney, and upon no consideration allow waste or exhaust steam to enter it.

NATIONAL ASSOCIATION OF BUILDERS OF THE UNITED STATES.

BOSTON, Dec. 27, 1888.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—Appreciating your generous reference to the efforts of this Association to "improve the position of the master builder," I have the pleasure to forward to your address duplicate copies of the following, viz., "Uniform Contract," Forms 34, 36, 37 and 38, the latter showing our efforts to induce Associations or Exchanges throughout the United States that are not at present affiliated with us, to join our Association and send delegates to represent them at our coming convention.

Should I be able to give you any information or papers that will aid you in the establishment of a "Canadian Builders' and Contractors' Association," I will cheerfully furnish such as you may require.

We hope soon Canada will be part of the United States, and then all your builders can join our national body.

Yours respectfully,

WM. H. SAYWARD,

Secretary.

HAMILTON.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

SO far we have had an open winter and favorable weather for all kinds of building operations, which has certainly proved a blessing to the working men in the building trades. It has enabled them to live comfortably and make up for the great loss of time in the early part of the season consequent upon the building strikes.

Reviewing the season's work, it is gratifying to see that there has been a large amount of work done in Hamilton and its suburbs, comparing favorably with the average of the past five years.

The new City Hall is roofed in, and with two weeks of fine weather, the slating will be finished. As it is all closed in, the interior work will be carried on throughout the winter, giving unexpected employment to a number of carpenters. The contractor, Mr. Piggott, deserves credit for his energy and perseverance in pushing on the work in face of the difficulties he had to contend with.

There were quite a number of fine villa residences erected here last year, varying in cost from \$3,000 to \$12,000, besides quite a number of smaller buildings which I have already reported, and a great many that I could not report owing to the oft repeated fact that the Hamilton building by-law is a myth—a by-law to be broken in almost every instance—as the record in the Inspector's office has not set forth one half the buildings that were erected.

This is a bad state of things, but as the members of our new City Council promise many reforms, it is hoped that during the present year builders will be compelled to comply with the law, in which case it will be a great source of pleasure to forward to your journal a correct list and description of the building operations of the city.

THE CANADIAN ARCHITECT AND BUILDER, I am pleased to know, is largely circulated here, and is well received. I would suggest that you should introduce an enquiry column in your journal, for questions and answers, so that those desiring information on any subject might avail themselves of the best means of acquiring it. There is no doubt that the well informed will willingly impart their knowledge to assist those who are seeking for information.

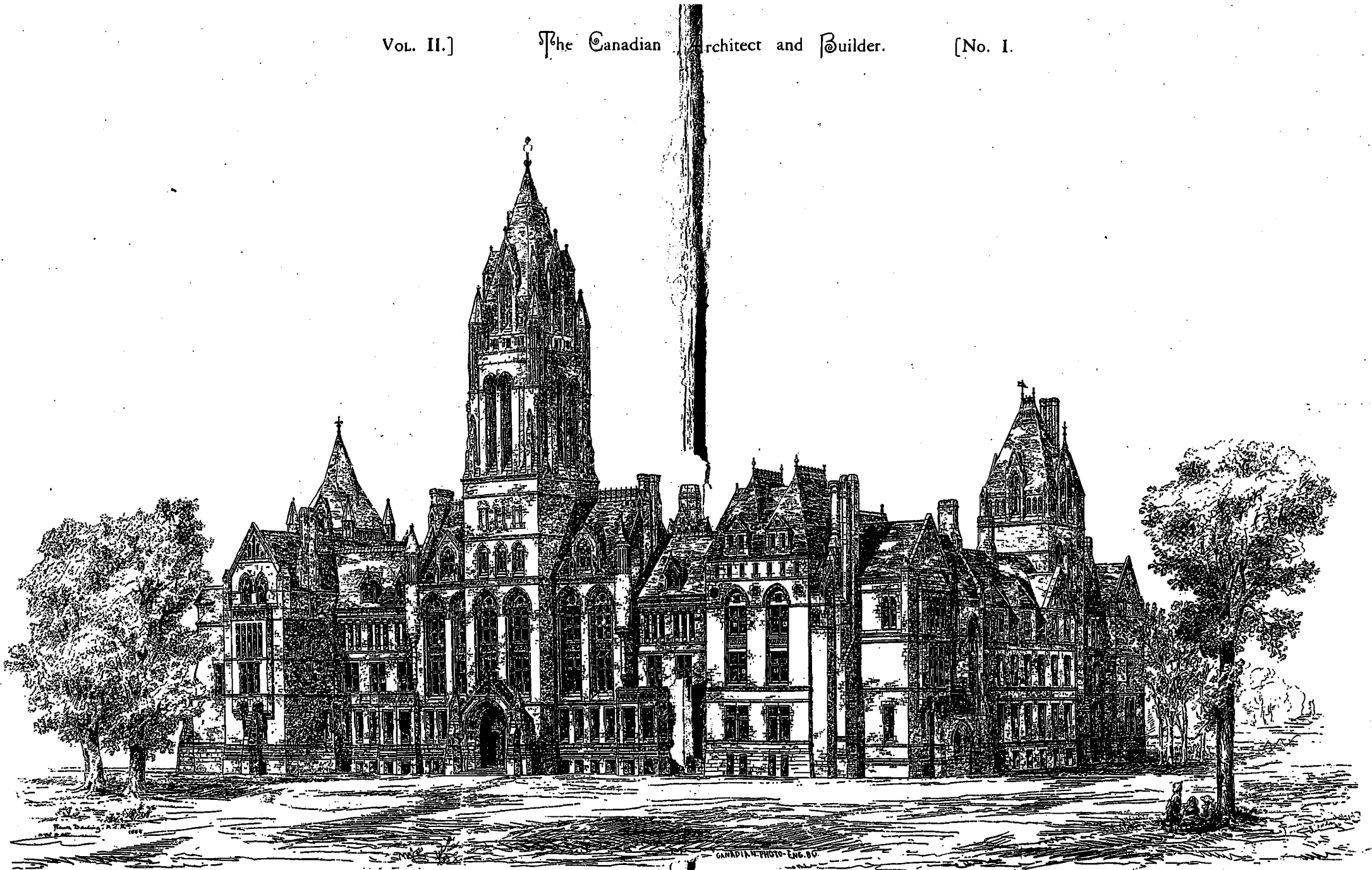
The Montreal Master Plumbers' Association has elected the following officers:—Chairman, Alderman V. Grenier; Vice-Chairman, James Mattison; Secretary, A. Martin; Assistant Secretary, W. M. Briggs; Committee, I. Jacotel, William Brittan, J. Sadler, P. Carroll, John Wate, J. W. Hughes; Interpreter, J. R. Savignac.

Messrs. Knox & Elliott, architects, of this city, have perfected a process by which they are enabled to make any number of copies (up to 50) of working drawings, reproducing the various colors with surprising exactness. Such a process will save at least the expense of one draughtsman, besides expediting the work of the contractors.

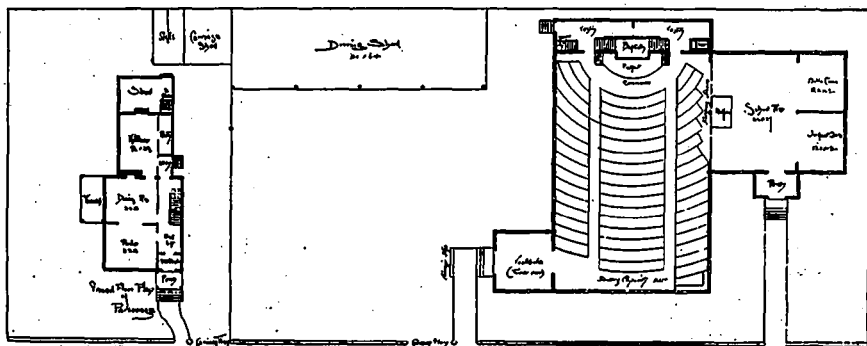
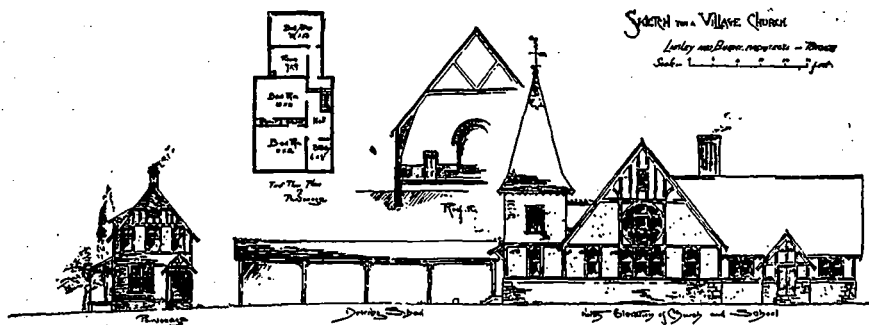
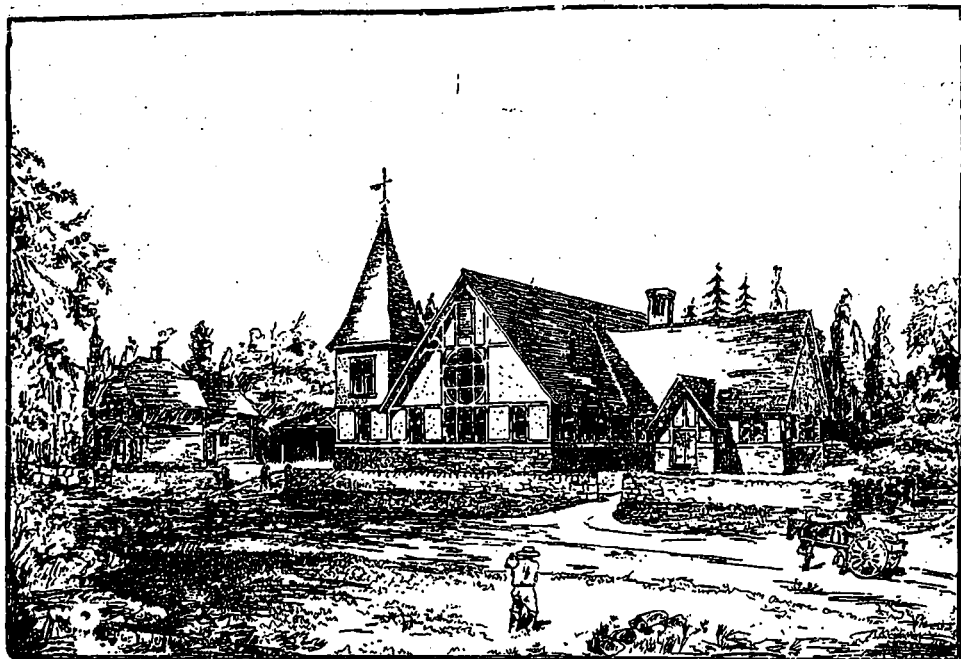
The criticism of American architecture, more especially the architecture of Chicago, by "Abacus," in the November number of this journal, has called forth rejoinders from several American architectural journals. The *Inland Architect* good naturedly admits that "Abacus" tells American architects and people "a great many things that it is well to heed." At the same time it takes him to task in most sarcastic language for some of his other statements.



INTERIOR OF LIBRARY, OSGOODE HALL, TORONTO.



DESIGN FOR THE PROPOSED DEPARTMENTAL AND LEGISLATIVE BUILDINGS FOR THE PROVINCE OF ONTARIO,
AS PREPARED BY MESSRS. HALL, GARDNER & CURRY, TORONTO.



SANITATION

SUB-SURFACE IRRIGATION DRAINAGE.

By EDMUND BURKE.

THE disposal of liquid or semi-liquid house wastes in localities destitute of sewers has been for many years a very serious problem, and more especially since civilized communities have become awakened to the necessity of sanitary reform.

In the "good old days" when the yard well was the nearest approach to a plumbing appliance, the housewife was content to throw the kitchen slops on the ground near the back door and sometimes very near the well, oblivious of the fact that the filth laden water eventually found its way into the said well, greatly to the danger of the health of the household.

A step backward was the rough stone drain leading oftentimes nowhere, each crevice holding decaying filth, the whole becoming an elongated cess-pool.

Then as plumbing appliances began to be introduced, and when no convenient water course was at hand, the leaching cess-pool was introduced, built of uncemented brick or stone and poisoning the ground with its foul fillings, generating death dealing gases, often bottled up, with their only outlet through traps or defective fixtures.

The method of disposing of house wastes by the sub-surface irrigation system, was developed in England some 25 years since by Rev. Henry Moule, and was introduced into America by Col. Geo. E. Waring, of Newport, some years later.

The system consists in the intermittent flow and distribution of liquid sewage through open jointed porous tiles (known to us as weeping drains), into the soil at from 9 in. to 18 inches below the surface of the ground, and at intervals of about 6 feet. These pipes should be laid in rows, like a grid-iron. It is necessary that these pipes should have just sufficient fall to prevent the liquids running too rapidly to the ends of the drains and thus gorging them at these points, and causing periodic eruptions of filthy water to the surface.

At the same time, the fall should be sufficient to carry the water into and along every branch, whence it will find its way evenly and rapidly into the ground; a fall of about one half an inch in 10 feet has been found to best meet these requirements.

For the success of this system it is necessary to provide: 1st, a settling tank; 2nd, a flush tank, and third, that the ground shall have the proper slope and be drained either naturally or artificially.

The settling tank is necessary for the first reception of the sewage, especially where fecal matters and deposits of grease have to be dealt with. This tank should be built of hard brick, built in cement, and plastered with the same material both inside and out. It should be extended to the surface, coped with stone, and having a durable hinged and padlocked iron lid. It has been found that the bulk of the more solid portions of the household wastes becomes reduced to liquid pulp in a few days and passes off without choking the drains.

The mouth of the outlet drain should dip several inches below the surface to prevent the entry of floating grease or solids. The tank should be of capacity sufficient for all possible demands—at the same time it should not be so large as to contain an undue amount of filth—better that it should be smaller and more frequently emptied.

An examination is required only at long intervals for the removal of possible accumulations of grease, the greatest enemy to the continuous working of any drainage system.

The flush tank is necessary to create the intermittent flow before mentioned. This tank should be of size sufficient to store and retain the accumulating

wastes till the previous discharge has had time to become thoroughly absorbed by the ground. Its size should also approximate the combined capacity of the discharge pipes, so that the whole system will be filled at one discharge of the tank.

The ground should be carefully levelled off to a fall equal to that required for the drains, so that when laid they shall all be, as nearly as possible, at an equal distance from the surface.

If the soil is loamy or gravelly and a few feet higher than a water course or depression, it will not require under-drainage. If heavy clay, retaining surface waters, it will. Some sandy soils are too porous, and some clay soils too retentive, and when such is the case the lacking constituents can be supplied at a comparatively small expense. When the above requirements are taken into consideration it will be seen that considerable judgment will be called for, and that perfect success may not crown the first attempt. Dr. Pinkham, of Montclair, N. J., who, with others of that town has given the system a thorough test, says: "When organic matter is absorbed into the soil near the surface, as provided for by this system of sub-surface irrigation, coming in contact as it does, in a state of minute subdivision, with the air and condensed oxygen contained in the porous soil, it undergoes a rapid oxidation. The change which takes place is in every essential particular equivalent to that of combustion. The organic matter thus treated is just as much destroyed as if it was burnt, and the resulting products are as harmless as the products of combustion of wood or coal. Soil which has been used in this way for many years has been found to be but little changed, the liquid resultsants of disintegration having evaporated or become absorbed by the roots of plants, while the solid resultants which remain, but slightly (and not in any essential particular,) differ from the original constituents of the soil."

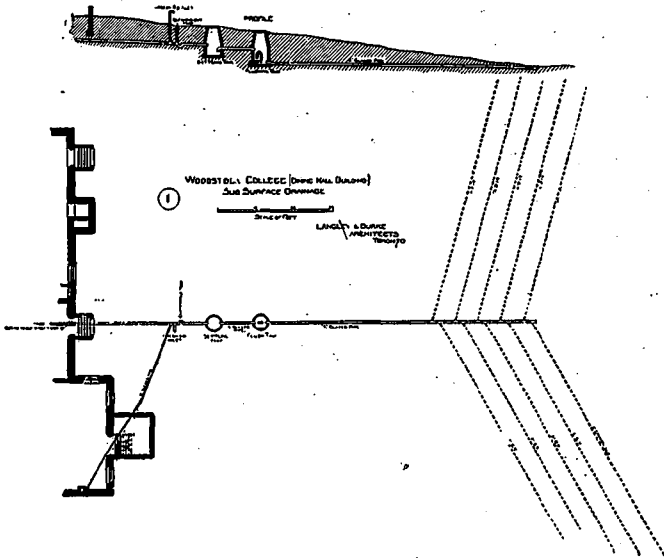
Dr. Pinkham, again, quoting Schubler, says: "The earths possess the remarkable property of absorbing oxygen gas from the atmospheric air, a phenomenon pointed out many years ago by A. Von Humboldt. This property of the earths is confirmed almost without exception, provided they be employed for this purpose in a moist state. In the experiment which he instituted, exposing one thousand grains of different earths for thirty days in vessels of 15 inches cubic contents (15 inches of air containing 3.12 inches of oxygen) he found clay loam absorbed

that sandy loam absorbed 1.39 inches of oxygen, 1.65 inches, and garden mould 2.60 inches."

With regard to the quantity of land required for the system, Col. Waring recommends an area of 250 square feet to each person. Allowing the household a consumption of 300 gallons per day, will give 3 gallons of sewage to 25 square feet of ground. If we assume a depth of only 4 feet for soakage, this will give us 100 cubic feet of earth to filter and absorb 3 gallons of water per day.

In the experience of those who have used the system it has, when properly constructed, been a complete success.

Col. Waring says: "Seven years ago last October, when I built my present house, I applied this method there in the most thorough way, and have been watching it with great care with a view to what I might learn from it from that time to this. I do not hesitate to pronounce it absolutely perfect. I am satisfied that it affords relief which is open to every one who has even a little bit of ground adjoining his house. I would say, by the by, that I have no water-closets in the establishment; we use earth closets only; so that my experiment has not been complicated by that element. At the same time there is no practical difficulty; there is no reason why that may not be taken care of as well as the other. The water seeps through the soil, thus finding an outlet, and the soil through which it passes filters out the foul matters. Immediately the water passes away, fresh air enters from the surface, and by the well-known concentrated oxidizing power of porous matters, whether powdered earth or whatever it may be, an entire decomposition is effected of this foreign matter, so much so that after five years, there being, from defec-



tive work, an occasion to take up a part of this system of drainage, I took up the whole, and gave it a thorough examination, and in no place could you detect in the earth which lay adjacent to these tiles, in which they were immediately encompassed, either by appearance or odor, the slightest difference from ordinary fresh-smelling garden mould. This has been going on, as I say, since seven years ago last autumn, for a household of six persons, with rather a copious use of water, and there has been no other means adopted. I would not, of course, on my own single experiment, venture to recommend this, as I have done frequently, to the public as being worthy of adoption. Its use has extended very much. I applied it last year to the sewage of the whole village of Lennox, in Massachusetts; and in England it is being adopted for the sewage of country houses far and wide, and is based on the principle which is thought by many English engineers to promise the only relief that they can have from their sewage. When I am describing this, the question which is almost universally asked is, what becomes of the solid matter and grease in the settling basin? At first I used to have it taken out and buried about once in three months—dug a trench in the ground near by, cleaned out the settling basin and buried its contents in the trench. But once, only a week after cleaning it out, I had occasion to empty it again for another purpose and found that it was as foul as it had been after a longer interval. That was about three years ago. Since that time the settling basin has never been opened except for inspection, and its condition remains always the same. The explanation is perfectly simple. The solid matter at the bottom of the tank is decomposable matter, and is constantly passing itself off in solution in the water which flows away; and the matters which are decomposing are very strong producers of ammonia, which acts upon the under side of the floor of grease and converts that into soap, which in its time passes off."

James C. Bayles, author of the well known treatise on "House Drainage and Water Service," says: "Having had three years' experience with this system, so far as its essential details are concerned, in draining my new house, I have no hesitation in expressing the opinion that under favorable conditions it will work satisfactorily, and be found an improvement on any other system which can be contained within the restricted limits of a village lot or villa site."

Dr. Whiteborne, physician of the Essex County Penitentiary, says: "I would say that the fact of the utility of the system is patent, and under proper conditions is available for the healthful disposal of the sewage equally of the smallest family or the largest public institution. Before the change was made here the solid fecal matters were composted and made use of on the farm, but a large portion of the immense amount of liquid, holding noxious matter in suspension, found its way into a neighboring brook, and contaminated both the air and the running water, being perceptible as far as Caldwell village, three fourths of a mile distant. At present the solids are equally available for composting, and the saturated liquids, by means of the system of laterals, are disposed of without defiling the running water below. During summer the ground above is made use of for a kitchen garden, and produces abundantly, so that thus controlled, these elements otherwise poisonous, are made subservient to the good of man."

Mr. Edward S. Philbrick says: "There are so many places where this system is applicable, and its merits are so great in such places, that a full and detailed description of it may be of interest. The limits of its application are as follows: Wherever a quarter of an acre of grass land is available for a single family of eight or ten persons, or an acre for an aggregate of eighty persons, so situated that the surface of the sod is five feet or more below the level of the house drain, where it leaves the house or houses, this system will dispose of all their sewage in a satisfactory manner, summer and winter, with very little attention, for a term of years."

Dr. Pinkham, before referred to, addressed circulars to some sixty people who for various lengths of time had employed the sub-surface irrigation system. Their replies were satisfactory almost to a unit.

The questions were: 1st, State size of family; 2d, Approximate firstcost of system; 3d, Approximate cost of annual maintenance; 4th, Length of time in use; 5th, Is system free from nuisance? 6th, Is all house waste satisfactorily disposed of? 7th, Have stoppages occurred? 8th, Is the soakage area underdrained? 9th, Is it superficially dry? 10th, Give any facts which you

think may be of service in determining to what extent and under what circumstances this system can be recommended for general use.

As to question 1st, (size of family,) the answers were, "from four to one hundred and fifty"—the latter number in Essex County Penitentiary; and, (first cost) ranged from \$175 to \$1,000; 3rd, (cost of annual maintenance,) "from nothing to \$25"; 4th, (length of time in use,) "seventeen months to five years"; 5th, (Is system free from nuisance?) "Yes," unanimously; 6th, (Is all waste satisfactorily disposed of?) "Yes," in all but two cases; 7th, (Have stoppages occurred?) "No," in all but four instances; 8th, (Is soakage area underdrained?) "No," in every case but one; 9th, (Is it sufficiently dry?) "Yes," unanimously; 10th, (Give facts, etc.) all spoke most favorably, giving the system second place only to the system in vogue in regularly served towns. Where stoppages occurred, the replies were to the effect that it was to a small extent, and in one, "once in three years."

The accompanying cuts Fig. 1 and 2, are the plans and details of the system as adopted at the new Dining Hall Building erected at Woodstock College, and carried out by the firm of which I am a member, in the years 1886 and 1887.

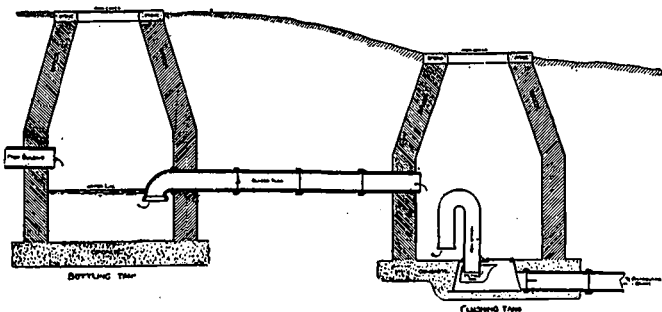
The site selected for the new building is between the two old buildings and well situated for the new method of sewage disposal.

The Smead system of heating having been adopted, the "dry closet" system was introduced—conveniences being required only for the steward and servants of the institution.

The fixtures employing into the drainage system are four sinks, five wash tubs and two baths. Water closets could also have been added if found desirable, in which case a larger and deeper receiving tank would have been required, giving a longer time for the paper and excreta to dissolve. The dining hall is planned to accommodate from 150 to 200 boarders.

No accurate data could be obtained as to the required length of drain tile

WOODSTOCK COLLEGE (Dining Hall Building)
DETAIL OF SETTLING AND FLUSH TANK



which would be required. A sufficiency of ground was leveled and some 600 feet lineal of 2 in. porous drain tiles laid. This quantity proved somewhat inadequate, and an extension of about 50 ft. in length was made after one winter's trial.

The system was installed under several disadvantages, notwithstanding which it is reported as working satisfactorily, and as having solved a most perplexing problem in regard to the disposal of the college wastes.

The disadvantages above referred to were

1st, that glazed T pipes had to be used for connections to the weeping drains instead of specially made Ys.—the Y looking down stream, instead of up as in ordinary drain tiles; and, the weeping drains should properly have been laid in specially made gutters of half tiles; instead of these, rough boards 6x1 inch, from 6 to 12 feet long were used; 3rd, specially made caps to cover the upper side of the joints of the weeping tiles could not be obtained in time, and in substitution, pieces of tarred felt were used, and kept in place with gravel and stone chips till the earth was filled in.

The Y pipes looking down stream receive the flow more evenly, the tendency of the flow being to pass the T pipes nearest the tank with a rush, thus gorging the lower end of the system.

The object of laying the weepers on a foundation of tiles or boards is to secure a more even fall, and in case of stoppage one or more pipes can be removed, cleaned and replaced, by an unskilled workman without interfering with the grading or working of the system.

The weeping drains are laid from 9 in. to 12 in. below the surface of the ground and the area is used as a lawn. No trouble in regard to frost was experienced, although the thermometer ranges several degrees lower in winter there than in Toronto.

The system as applied to Lorne Park summer resort will be illustrated in a future issue.

An English critic, writing about his visit to Toronto, calls it "a first-rate town, barring its mud, which appears to be composed of Portland cement and glue in equal proportions." He adds further: "It would, according to our notions, be an improvement to the appearance of the streets if a glimpse of the sky were here and there allowed to be caught through the fabric of electric wires which pervades the atmosphere."



A SAMPLE OF ENGLISH DECORATION.

A RECENTLY decorated apartment in London, which is about eighteen by fifteen, and some eleven feet high, has no moulded enrichment on either walls or ceiling, but is treated entirely with painted decoration, the color scheme of which is full of cheerful yet refined harmony.

The walls are divided in panels and stiles, reaching from skirting to cornice. The panels are flatted a delicate tone of warm or French grey, and the surrounding stiles in a contrasting tint of greenish grey. Enriched marginal mouldings and corners in "light and shade" of old-gold color, frame each panel, while a fine inner line of pure white further helps the border and assists to the appreciation of the surrounding colors.

Each panel is occupied by a masterly-painted cupid in various aerial attitudes, in direct interpretation of Mr. Ruskin's ideal—less his "vines and trellis-work"—of drawing-room decoration. In the interposing stiles of the panels a staff of gold color supported from a conventional head, is painted in combination with flowers, etc., by which means the balance is firmly preserved, whilst the hanging ribbons and encircling flowers are painted in the usual natural colors, subservient to the harmony of the entire composition of such detail. Beyond a small gold color star, placed in the top, horizontal stile, immediately over each cupid, no further ornamentation of the former, is presented.

The design of ceiling consists of a large centre having a sky (Italian) painted thereon, with birds and butterflies relieving the mass of sky treatment. In each of the four pairs of side panels harmonious groups of flowers in natural colors are painted on the ground of French grey, which is common to the color of the wall panels. The stiles surrounding the side panels are in vellum with stencilled rosettes of gold color. The space between the panels last mentioned and the ceiling centre panel is in quiet buff, with the lines and ornamental breaks in flat ornament of gold color. A relief framing, also of gold color, is painted to the large centre, and the four corner medallions and an external stile of the green-grey as used on walls, surrounds the whole design.

In the corner medallions are represented the four seasons, by allegorical studies of female heads, painted in natural color against blue background.

Marginal lines of old gold and subdued blue are used generally throughout the ceiling, and the remaining detail of ornament connected therewith is rendered flat and in gold color.

The cornice is finished in greys, vellum, and white, assisted with a little gold and positive color.

The woodwork is finished in flattening and decorated as follows: The panels of door, etc., are left with a background of vellum color; the stiles and remaining wood work in the green grey tint used for the wall stiles. Upon the top long panels of the door, which has four panels, ornament somewhat similar to that on the wall stile is painted in a highly finished manner, whilst the lower panels are occupied with representations of musical instruments usual to the Italian style. The panel mouldings are finished in the French grey, and part gilded, by which introduction of gold the panels are effectively framed, and additional richness given to the door in its entirety.

An Ottawa despatch of the 10th inst, says: Messrs. T. Turnbull and W. C. Trotter, of Montreal, interviewed Hon. Mr. Bowell to-day on behalf of the Standard Drain Pipe Co. of St. Johns, Que., to urge a change from *ad valorem* to specific duties on certain classes of drain pipes which now bear a duty of 35 per cent. *ad valorem*, on the ground of fraud and undervaluation, and in order to keep out of Canada what has proved to be an inferior article.

A Pittsburg man has invented a glass conduit which he thinks solves the problem of underground electric wires. Plates of glass are grooved on the upper surface, and the wires are laid in the grooves and cemented with pitch. Then other plates of glass are laid over the first, and wires put upon them in the same way. When all the wires are laid the whole is inclosed in a wooden box and embedded in cement.



THE SEWER PIPE CONTROVERSY.

THE *Canadian Manufacturer*, in its anxiety to make a point against this journal and in the hope of securing an extra advertisement or two for its pages, assumes, unasked, the position of a modern Falstaff in defence of the manufacturers of Canadian Sewer Pipe, who, when occasion demands, are abundantly able to defend themselves. It is apparent from the manner in which our contemporary misrepresents our position, which we so clearly defined on a previous occasion, that it has no intention of carrying on its part of the discussion with conscientious fairness. For this reason, and because we should be loth to deprive our Fallsstaffian neighbor of the satisfaction he evidently finds in knocking down men of straw which he has himself set up, we shall leave him to his unenviable occupation: The following extract from a letter received a few days ago from the President of the Standard Drain Pipe Company, of St. Johns, Que., shows (1) that the parties most deeply interested in this controversy, the Canadian Sewer Pipe Manufacturers, admit the fitness of the treatment accorded to them by this journal, and (2) that their would-be champion has not only spent his labor for naught, but made himself ridiculous into the bargain:

"ST. JOHNS, Q. Dec. 29, 1888.

C. H. MORTIMER, ESQ.

Dear Sir,— * * * I am much obliged to you for having given me an opportunity to plead our cause in the columns of your paper, and the explanation of the stand you took is satisfactory. Probably being so much interested in the question I did not fairly weigh it at first. Wishing you the compliments of the season and increased prosperity,

Yours faithfully,

W. C. TROTTER."

BLACK ROCK, Dec. 20th, 1888.

Editor CANADIAN ARCHITECT AND BUILDER.

IN the December number of your paper a paragraph appeared headed "Thickness of Sewer Pipes." The opinion of Engineer Rust is given as to proper thickness, etc., and he is also quoted as saying that "the American pipe at present in use in Toronto is hardly up to this standard." This is no doubt true as to most of the pipes being used in your city, as but little of our pipe has been used this season, but we wish to state that our make is fully up to Mr. Rust's standard of thickness, as the samples in the City Engineer's office will show. Will you kindly give this the same prominence in your next issue as the above quoted article had in the December number, both in justice to ourselves and the dealers who have favored us with their orders.

Yours very truly,

N. C. BARNUM,

Secretary Buffalo Sewer Pipe Co.

TO MAKE A DRAWING BOARD THAT WILL NOT WARP.

726 121ST STREET, N. Y. CITY, December 21st, 1888.

Editor CANADIAN ARCHITECT AND BUILDER.

Sir,—In answer to the request of Mr. Ballarge, for a board which will not be likely to warp, I submit the following. It is made of three ¼ inch thicknesses of pine and butternut, laid alternately as follows:

The middle thickness is first either glued together in four 12 inch widths of pine with square edges, or in narrow 2 inch widths of ¾ inch tongued and grooved stuff, then the bottom layer glued on diagonally, as shown

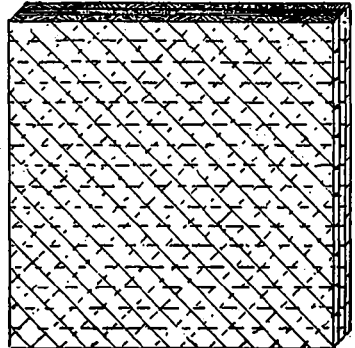


FIG. 1.

in the sketch I send enclosed. When this is perfectly set, the top layer can be glued on. After the glue has set, the whole ought to be cleaned-off perfectly out of wind and straightened across so that a chalked straight edge

will touch any part of the surface. The edges should next be straightened and squared. After all this has been properly done it would be well to further guard against warping, by plowing the edge with a quarter bit all round and gluing on a tongued and mitred batten in the way shown by

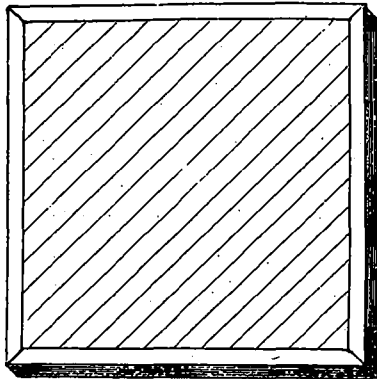


FIG. 2.

Fig. 2. If this be not sufficient to prevent its warping, ledgers can be screwed across the back, but the above ought to give a firm unyielding surface, that is, if the work on it be properly done.

Yours truly,

OWEN B. MAGINNIS.

Editor CANADIAN ARCHITECT AND BUILDER.

Replying to the inquiry in the CANADIAN ARCHITECT AND BUILDER for December, "How a board 4 feet square $\frac{1}{2}$ to 1 inch thick, can be made so it will not warp." I would submit the following:

While seemingly a very simple thing, it is often a troublesome thing to make a board with the required surface and so little thickness, which "will not warp." I do not think it adds very much to the certainty of a board staying true and out of wind to "build it up" from small thin strips, or thin layers crossing each other, as I have seen some boards made in that way develop a tendency to warp as badly as any. Such a construction is much more expensive than some other ways which will secure equally as good results.

For such a board, I would recommend pine, perfectly seasoned and clear, not less than $\frac{1}{2}$ inch thick, in strips 4 inches wide, grooved and tongued together. These strips should be ploughed or grooved on the back or under side one inch from each edge, with a groove $\frac{1}{2}$ inch wide, and one half the depth.

In addition to this, the surest protection against warping is to put cleats on the back, made of hardwood, fastened with screws, the screw holes through cleats being somewhat elongated as slots to allow for any shrinking or swelling in the width of board. If it is necessary or very desirable to do away with cleating on back, I should put battens 2 inches wide, same thickness as board, across each end, grooving and tonguing same. All joints should be well glued.

If California redwood was available, I should much prefer it to any other lumber, as it is perhaps the least likely to shrink, swell or warp. With this lumber, 4 boards 12 inches wide, well jointed and battened across ends, simply gluing without tonguing, would give as satisfactory results as a more expensively made board from many other kinds of lumber.

A. D. WASTE.

The Yorkville and Carlton Brick Company, Toronto, recently shipped a carload of Canadian-made bricks to Mr. J. Andrews, Norwalk, California, via the Canadian Pacific Railway.

The new building for the Manual Training Department of Woodstock McMaster University, will be of white brick, 32 x 80 feet, two stories high, and will contain rooms for classes in drawing, carpentry, wood turning, wood carving, blacksmithing, and a machine shop. It is to be completed by May 1st.

PUBLICATIONS.

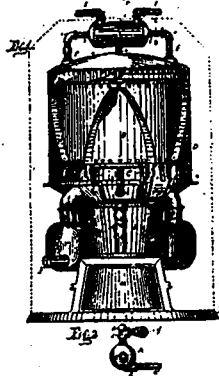
We beg to acknowledge receipt of an attractive calendar sent out in the interests of the Standard Drain Pipe Co., of St. Johns, Que.

We are indebted to the publishers of the *Monetary Times* for a useful souvenir in the shape of a letter-opener made of celluloid, and bearing the motto, "After opening your letters by means of me, let promptness in answering your motto be."

RECENT CANADIAN PATENTS.

Combination Steam and Hot Air Heater.

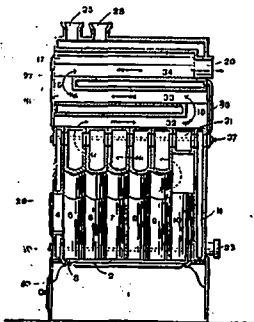
No. 29,900. The J. F. Pease Furnace Co., Toronto, Ont. (assignee of John F. Pease, Syracuse, N.Y., U.S.), 19th September, 1888; 5 years.



Claim.—1st. The within described low down combination steam and warm air heater, having the boiler B within the combustion chamber over the fire-pot, and the combustion chamber of greater diameter than the fire-pot, all substantially as and for the purpose set forth. 2d. The combination of the fire-pot, with the upwardly flaring section between the fire-pot and combustion chamber, the combustion chamber of greater diameter than the fire-pot, a steam boiler within the combustion chamber, and suitable steam and warm air connections, all substantially as described and for the purpose set forth. 3rd. The combination of a fire-pot, with a radiator surrounding or partially surrounding the same, a combustion chamber connected to the fire-pot by a flaring section mounted on the fire-pot, the combustion or smoke flues leading from the flaring portion of the combustion chamber into the radiator, substantially as specified. 4th. The combination of the fire-pot and combustion chamber, with a steam boiler located within the combustion chamber, having a steam dome located within the outer casing of the heater, and outside the combustion chamber, substantially as described and shown. 5th. The steam dome A connected with the boiler B by suitable steam connections, and having a return drip pipe to return a water of condensation to the boiler, in combination with the combustion chamber of a warm air furnace, substantially as shown.

Hot Water Boiler.

No. 29,705. Charles E. Gate, Winnipeg, Man., 21st August, 1888; 5 years.



Claim.—1st. A combination hot water boiler having the peculiar form of the vertical sections 5, 6, 7, 8, 9 and 10, the front 4 back 11, the water way connections 21, 21, with stoppers 23, 23, and bolts 37, 37, combined with the frame 1 forming ash pit bars, 2, 2, lips 3, 3, door 30, the furnace 36, door 29, apertures 12, 12 and 14, 14, twin flues 31, 31, twin flue doors 28, 28, return pipe 26, or more in number, placing either at back or sides of both, substantially as and for the purpose above set forth. 2d. A combination hot water boiler having the peculiar form of the horizontal section 15, 16 and 17, having their under sides corrugated as shown or plain, the apertures 18 and 19, the smoke chambers 32, 33, 34, exit 20, doors 27, 27, service flow pipes 25, one or more in number, movable back 35, the vertical water way connections 22, 22, the stoppers 23, 23, and the bolts 24, 24, substantially as and for the purpose set forth. 3rd. A hot water boiler composed of a combination of vertical and horizontal sections, substantially as and for the purpose above set forth.

The contract for the Teeswater, Ont., water works, has been let to Myles, Hunting & Co., of Hamilton. The pumps will have a daily capacity of 600 gallons.

CONTRACTS

CONTRACTS AWARDED.

J. P. Eford has been awarded the contract for the Jubilee Hospital, Victoria, B. C., at the price of \$50,558.

Mr. Sam. Flory has been given the contract for brick work on the new addition to the McClary works, London, Ont.

The contract for the enlargement of the Cobourg post office building to cost \$8,000 has been awarded to H. & J. Henderson, of that town.

Contracts have been awarded as follows on the Hotel Dieu Hospital building, Windsor, Ont.; brick and stone work, H. Reaume; carpentering, Henry Walker; roofing and trimming, Neveux Bros., and heating, Purser & Son.

Mr. S. A. Ross, of Cornwall, who has been given the contract for the construction of new locks on the Cornwall canal, is entering with vigor upon the work. The material will be got out this winter, and if the weather should prove favorable, excavating will be commenced. The total stone work is estimated at about 46,000 yards, and the total excavations about 10,000 yards.

CONTRACTS OPEN.

WINNIPEG, MAN.—A Congregational Church is to be erected here.

TEESWATER, ONT.—An electric light system is to be established here.

GALT, ONT.—A block of stores to cost \$10,000 are to be erected here.

REGINA, N. W. T.—A new school house to cost \$13,000 is to be erected.

WHITBY, ONT.—The Board of Education talks of building a gymnasium.

TORONTO, ONT.—Ald. Boustead will build a \$14,000 residence on Bloor street.

INGERSOLL, ONT.—The C. P. R. will build a station and warehouse at a cost of \$10,000.

PICTON, ONT.—Improvements to the Cardwell House are to be made, at a cost of \$7,000.

KINGSTON, ONT.—Improvements are to be made to the Sharbot Hotel, at a cost of \$7,000.

LONDON, ONT.—For particulars of tenders wanted, see London corres pondence in another column.

LONDON, ONT.—The C. P. R. ask tenders for grading 110 miles on their proposed new line from this city to Detroit.

KINGSTON, ONT.—Tenders will be asked for the completion of the tower of St. Mary's cathedral. The intention is to add ninety feet to its present height.

CALGARY, N. W. T.—Mr. T. C. Keefer, C.M.G., of Ottawa, has been asked to prepare plans for the proposed water works.

WESTMINSTER, B. C.—A handsome brick block is to be erected by Mr. Wolfe, on the site of the old Caledonia Hotel building.

QUEBEC.—Plans have been submitted for a new hotel with 250 bedrooms, to be erected on the site of the old Parliament buildings, at a cost of \$200,000.

STRATFORD, ONT.—\$6,900 have been collected for the erection of a county and city general hospital, and it is said the work of construction will shortly be commenced.

OTTAWA, ONT.—The Minister of railways is said to have decided to build a steel bridge, costing half a million dollars, over the Grand Narrows, on the line of the Cape Breton railway.

NIAGARA FALLS.—The upper Suspension bridge, which was destroyed by a wind storm a few days ago, is to be rebuilt at once, with new materials. For particulars address Chas. Smith, Clinton, N. Y.

ELECTRICITY FOR LIGHTING DWELLINGS.

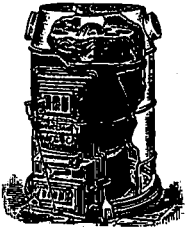
IN a recent address before the Society of Arts, London, Mr. W. H. Preece, a well-known expert, speaking of the matter of expense, referring to the glow-lamp of Edison, said that the "commercial out put has been increased six times, while its cost has been diminished eight times." He further shows how the machinery, such as the steam engine for this purpose, has been greatly improved. He claims that in the general post-office, London, the light from the electric glow-lamp cost twenty-two shillings as against the gas-lamp at eighteen shillings per annum. In referring to its hygienic value from a purely mercenary standpoint, he says: "In our Central Saving Bank in London it has been found, after two year's experience of electric lighting, that the average amount of absences from illness has been diminished by about two days a year for each person on the staff. This is equivalent to a gain to the service of the time of about eight clerks in that department alone. Taking the cost at the 'over-time' rate only, this would mean a saving in salaries of about £640 a year. The cost of the installation of the electric light was £3,349, and the annual cost of working £700 per annum—say a total annual cost of £1,034. The cost of the gas consumed for lighting purposes, was about £700 a year, so that on a whole there was a direct saving of something like £266 a year to the government, besides the material advantage of the better work of the staff resulting from the improved atmospheric conditions under which their work is done." The general ad-

vantages of system has been so fully recognized, according to Mr. Preece, that "our admiralty have been foremost in this work. All our war-ships are gradually receiving their equipment. Our ocean-going passenger ships are also so illuminated.

MONTREAL ICE PALACE.

MONTREAL is to have another winter carnival next month, and (weather permitting) an ice palace as the principal attraction. The designs for the palace have been prepared by Messrs. E. C. Hopkins and J. A. Radford, architects, of that city. A correspondent reminds us that Catharine of Russia was the first to show to the world the possibility of erecting such a structure, and quotes in this connection the following lines of Cowper: "No forest fell, Imperial mistress of the fur-clad Russ! When thou would'st build; no quarry sent its stores Tenrich thy walls; but thou didst hew the flood, And make thy marble of the glassy wave." For more than a century and a half no attempt was made to rival the structure of the Russian queen. A few years ago, however, at the suggestion of Mr. R. D. McGibbon, of Montreal, the idea of a winter carnival and ice palace was successfully carried out, and has been as successfully repeated on several occasions since.

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"FAMOUS," for Wood 5 feet long.

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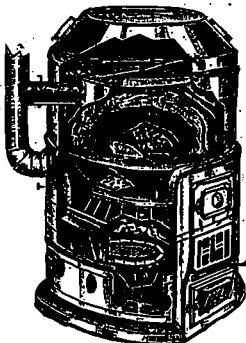
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MANUFACTURERS OF
GLIDE MOVEMENT HOT AIR REGISTERS.

A PROVINCIAL ASSOCIATION OF BUILDERS.

LONDON, ONT., Jan. 12, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—The officers of the Builders' Exchange here are elected the third Tuesday in January of each year. I cannot give you much information until the annual meeting takes place, but I think it very probable that our present organization will disband and reorganize. Last year it was decided to work the Exchange as a Federation of Trade Associations, but owing to some of the trades refusing to form an Association and elect representatives, it hasn't given entire satisfaction, and I expect there will be a change. I think in Ontario we want a central organization to devise and adopt a constitution and a principle of formation that must be uniform throughout the province. I would favor a meeting being called in some central place and delegates invited to attend from all cities or towns already having or desirous of forming an Association. It might be done now before the busy season commences.

As you have doubtless seen by the papers, our long vexed question with the Architects here, concerning the form of contract to be used here, has been amicably settled, and we have now the best agreement in force in this country. Will forward you copies, and you will see that there are only one or two variations from our original one that I sent you last spring. After all differences had been settled and the agreement signed by every architect in the city, the builders got up a big supper in the Grigg House. All the architects were present, besides a goodly number of representative men (about 200 sat down to table) and a very enjoyable evening was spent, toasts, speeches and songs being in order till about 1 a.m. The architects especially requested that such a meeting might recur on every succeeding anniversary. The management committee, owing to limited time, omitted to send invitations to kindred associations, also to the management of your valuable journal, for which we tender you our sincere regrets, and assure you that such omissions shall not occur on any future gathering of the kind. I remain,
Yours very truly,
GEO. S. GOULD,
Sec'y Builders' Exchange.

Telephone 1035.

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TO ARCHITECTS AND BUILDERS.

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M. J. HYNES, Manager
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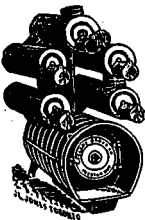


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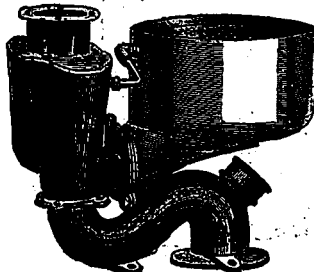
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WATER CLOSET**

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the Market.

The Bowl contains a large quantity
of water; it has a good flush and
deep trap, perfect seal, and made with a
3 inch vent.



Mr. C. J. Bateman, city architect of Boston, Mass., was a visitor to Toronto recently.

Dobson & Son have commenced the manufacture of heating appliances and elevating machinery generally at Vancouver.

A quarry of red stone at Shimimicas, N. S., has proved so valuable that next spring operations on a large scale will be commenced.

Letters patent have been issued incorporating the Ottawa Granolithic Paving Company with a capital of \$25,000. J. C. Roger, Jacob Erratt, J. E. Askwith, A. McLean, A. Robillard, H. Robillard, of Ottawa, and Robt. Forsyth, of Montreal, are the corporate members.

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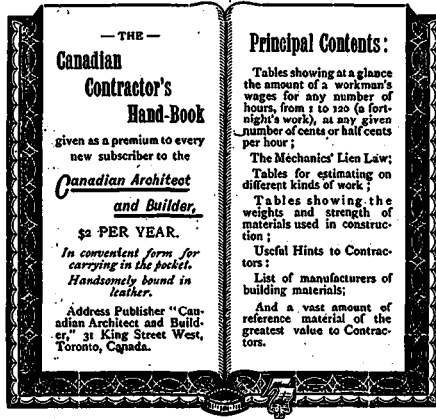
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PRIVATE RESIDENCES,

Green Houses and Conservatories.

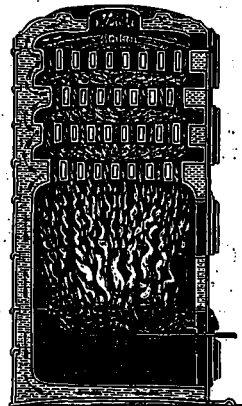
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The only Heater with a Circular Fire-Pot and
Iron Stove Linings, insuring perfect
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The minimum of friction and the maximum of surface
combined constitute a perfect Water Heater.

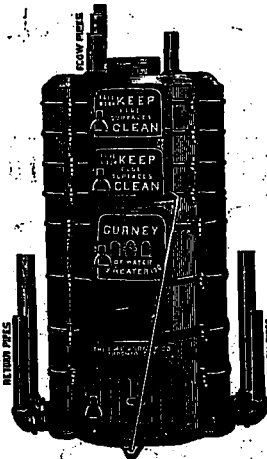
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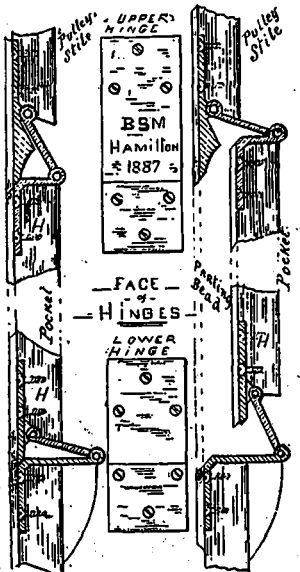
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PULLEY STILE HINGE**

For Box Frame Windows.

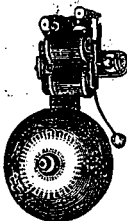


SHUT — OPEN
(To take out sash)

WITH the above hinges the ordinary double hung window sashes can be taken out of the frames for cleaning, etc., without disturbing the stops or parting beads, and are the result of long experiment, to insure strength and perfect action. The parting beads are cut to mitre, and slide in with the pocket H, to clear the check of sash—thus the sash recedes in at one side, and clearing the opposite parting bead 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 released 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,

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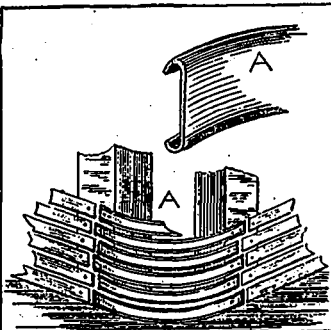
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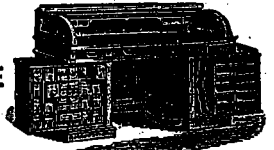
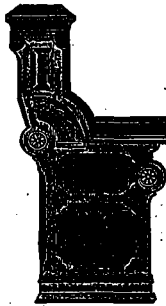
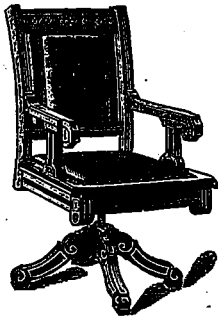
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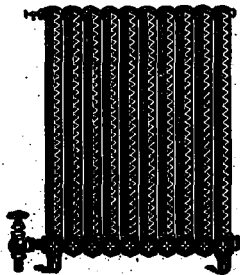


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possessed by no other Radiator that we are aware of. We also claim that with this Radiator any person in the trade can
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