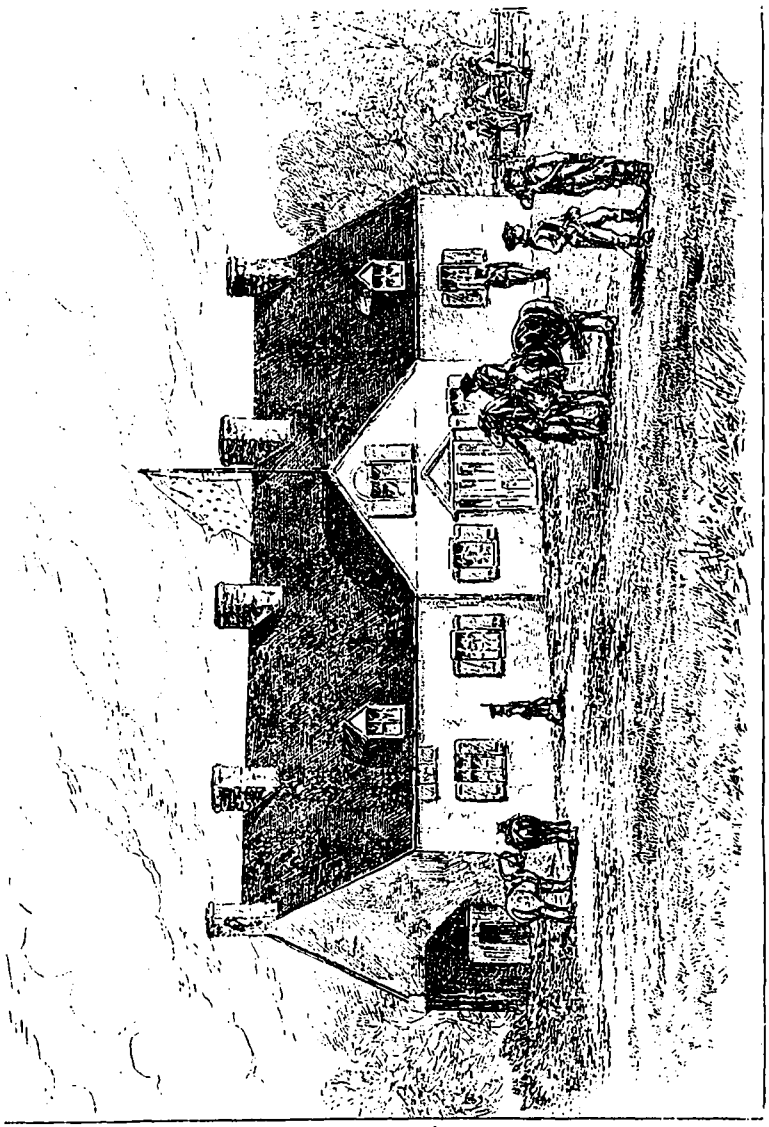

MONTCALM'S HEADQUARTERS AT BEAUPORT—1759.

PUBLISHED MONTHLY IN THE INTERESTS OF

Architects, Civil and Sanitary Engineers, Plumbers, Decorators, Builders, Contractors, and Manufacturers of and Dealers in Building Materials and Appliances.

VOL. I.—No. IX. **TORONTO, CANADA, SEPTEMBER, 1888.** PRICE 20 CENTS $2.00 PER YEAR.

—THE—

Canadian Architect and Builder

A JOURNAL OF MODERN CONSTRUCTION METHODS,

PUBLISHED MONTHLY IN THE INTEREST OF

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

C. H. MORTIMER, Publisher,

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SUBSCRIPTIONS.

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

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ADVERTISEMENTS.

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

EDITOR'S ANNOUNCEMENTS.

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

WE read of the caving in of sewers at Brantford and Woodstock., Ont., with injury to workmen, emphasizing the remarks made in the CANADIAN ARCHITECT AND BUILDER a month or two ago regarding the necessity which exists for a closer oversight of the means employed by contractors to protect the lives of workmen engaged in excavations of this kind.

THE City Solicitor has given it as his opinion that the clause in the Toronto Plumbing By-law which stipulates that no person shall receive a plumbing license in Toronto who is not a "Canadian by birth or naturalization," is unreasonable, and would therefore be held to be invalid. As the striking plumbers have been seeking to take advantage of this clause to prevent the employment of imported workmen, the information conveyed by the Solicitor will prove anything but acceptable to them.

WE are pleased to observe that the labor congress held at London, Ont., the other day, promised to give its hearty support to any practical efforts tending to reduce the consumption of intoxicating liquors. One of the greatest enemies to the prosperity and advancement of workingmen is the saloon. In recognizing this, and in resolving to combat the evil resulting from the drinking customs, the labor congress adopted one of the quickest and surest methods of raising to a higher physical, intellectual and moral status the condition of the class it represents.

THE Mayor of Toronto is entitled to much credit for the settlement which he has been the means of bringing about with the University authorities in regard to a renewal of the Queen's Park lease. The Mayor proposes that the city shall pay as a yearly endowment to two chairs in Toronto University the sum of $6,000 in addition to the cost of maintaining the park and approaches thereto in proper order. This proposition the University authorities have signified their willingness to accept, and the difficulty is therefore as good as settled. Every citizen of Toronto must rejoice at such a happy outcome of a case in which the decision of the courts was adverse to the city, and under which decision the citizens would have been deprived of the park and avenues on the improvement of which they have expended vast sums of money. The loss of the Queen's Park would have been well-nigh irreparable, owing to the impossibility of securing as much land elsewhere in the centre of the city for park purposes. As to the $6,000 endowment which it is proposed to give to the University, this much can be said: a large number of the students at the University are the sons and daughters of citizens of Toronto, and the money which the city gives for the purpose of increasing the efficiency of the institution they will receive back indirectly in the better education of their children. While the citizens of Toronto have cause to congratulate themselves that the city has come so well out of this difficulty, they and their representatives in the Council should in future guard against putting in office men who by the neglect of their duties may at any time involve the city in difficulty and loss.

ATTENTION has been called by the loss of life resulting from several holocausts which have lately taken place in New York city, to the inadequacy of the means provided for escape in case of fire, of persons located in high buildings. We are probably more neglectful than our neighbors in this particular. It is the exception rather then the rule to see buildings in Canadian cities provided with fire escapes. Some day, doubtless, we shall be startled to learn that a number of human lives have been lost as a result of carelessness in a matter which calls for the greatest precaution.

IN proof of the saying that "it's an ill wind that blows nobody good," the news comes that a cyclone which recently passed over the fever-stricken city of Jacksonville, Florida, cleared the atmosphere, lowered the temperature and washed perfectly clean the surface of the streets. In the opinion of the physicians the result tended to materially lessen the infection. We observe that the cyclone in question is described as a moderate one. As there is no means of regulating cyclonic force, sanitarians do not anticipate that it will be likely to come into popular favor as a remedial agent.

THE new Court House and City Hall enterprise for the city of Toronto, after lying dormant for many months, has been advanced a stage. Tenders have been received and opened for the whole work. The figures in these tenders aggregate $1,305,034. The Council has on hand for the erection of these buildings something over $800,000. Since the tenders were opened, it has been decided to ask the citizens to vote $600,000 more to carry the work to completion. We understand it is the intention to place the designs for the buildings on exhibition in some public place where the citizens will have an opportunity to see and examine them. Having examined them, we may be allowed to express the opinion that the buildings erected from them will prove a credit to Mr. Lennox, the architect, and to the city of Toronto. We have therefore no hesitation in saying that the citizens should vote the extra amount required to successfully carry out the enterprise. As we have before pointed out, this city is growing at a surprisingly rapid rate. It has doubled its population during the last ten years. Ten years hence we may reasonably expect that the population will have reached at least a quarter of a million. In view of these facts, it would be anything but economy or wisdom to erect a cheap structure for the purposes of a city hall and court house. The money which the citizens are now asked to give will insure the erection of buildings that will be sufficiently commodious for the requirements of the future, while at the same time they will stand as an imposing public ornament for all time to come. The citizens must now assume the important responsibility of deciding what the character of the new buildings shall be. Let the decision be a wise one.

THE professional labor agitators have evidently a strong hold upon the managers of several of the Toronto daily papers, if indeed they do not actually edit or write some of the articles bearing on the relations of employers and employees appearing therein. In the early days of the plumbers' strike in Toronto, these papers, instead of discussing the situation from an impartial standpoint, allowing that blame might rest upon both parties, and counselling mutual concessions for the purpose of bringing about a speedy settlement of the dispute, took the ground at the start that the conduct of the employers was characterized by selfishness, injustice and unreasonableness. In taking this unwise position, the papers in question were really doing the strikers an injury instead of rendering them assistance. The strikers were patted on the back and told that victory was sure to be theirs, which had the effect of making them refuse to recede from any of their demands. The employers were called hard names, which only made them the more determined to fight the thing out. A little judicious advice might have helped to end the difficulty long ago. Now that the strikers have virtually suffered defeat, the agitators who inspire the articles in the daily press would fain undo the mischief they have done, and are advising conciliatory measures. One journal says:—The strike has continued long enough for both parties to learn to respect each other. The fight has been prolonged and bitter, and as far as both are concerned there has not been the slightest change in the situation for at least ten weeks. It is time now that milder counsels prevailed and that both sides should reason together. There must be some common level upon which both sides can meet. There is no disgrace in an honorable treaty in which both sides make concessions, neither is it generous even for a victor to take an unfair advantage of a brave, but vanquished opponent. Let the master plumbers and the strikers each appoint a committee of sober level headed members, giving the hot heads and fire brands a chance to stay in the back ground, and there is not the slightest doubt that the strike will be at an end inside of twenty-four hours, and that both sides will be satisfied. Let there be no delay; because every day lost in idle contention is so much time lost that can never be recalled. A man may lose a fortune and make it again, but a day's labor lost is an injury not only to the man that loses it, but to the community at large that can never be repaired. This is the opinion of the majority on both sides, and why should it not be acted upon at once?" The journals would have better served the interests of all concerned in this unfortunate difficulty, but especially of the workmen and their families, had they advocated "milder counsels," at the beginning. Let us hope that in future the "hot heads and fire brands" will not be allowed free scope in the columns of the daily press.

THE inferior quality of our workmen, if we may be allowed to speak of them in this way, calls for some radical change from present methods, if we are to attain as a people the position to which we are justly

entitled. The old method of apprenticeship, in the days when machinery was not the power which it is now, produced superior workmen. The present method, which is largely the result of the introduction of machinery, produces but few good mechanics, and a very large number of botches. If we accept the above as facts—and we must do so—are we to quietly admit the situation and do nothing, or are we like men to make an effort to overcome the difficulties and secure an intelligent and competent body of workmen? The attempt, it is true, must be made in the face of strong opposition from the workmen themselves, but even such opposition will not make the attempt, if it should be made, a forlorn one.

We will consider what might be done to the betterment of one of the building trades, and that the most important of all. The ordinary carpenter has no theoretical knowledge, and we regret to say, but little manual dexterity. His object is not so much to acquire knowledge and skill that he may do good work, as to acquire what will enable him to obtain average wages. That the ordinary mechanic should be thus easily satisfied, is a mystery in this land, where the greater number are working like slaves to acquire a higher position than they now hold. It may be that the retarding circumstances surrounding the workman in the building trades are too great to be overcome except by a long, earnest and sustained effort. That apprentices have not a fair chance to learn any one of the building trades, is an admitted fact. Between the selfishness and indifference of their employers, and the persistent efforts of the unions to place impediments in their road to knowledge, the apprentice has in the present day an uphill fight to make to become a skilled workman. It is no doubt true that one half of them are not anxious to become skilled mechanics, and that if opportunities were given, they would not make an effort to take advantage of them; but as the State is interested in all men having the largest amount of knowledge they can make use of, it is necessary that some means be adopted to enforce the acquiring of mechanical or other skill to enable the individual to earn a living. The industrious should not support the idle, nor should the ignorant workman be supported by the intelligent and skillful mechanic.

We believe that this evil has become so great, that the Government should take hold of the matter. To that end we would suggest that an Apprenticeship Act should be passed, under which all boys desirous of learning trades should be indentured, with a distinct and clearly drawn clause showing how and in what they are to be instructed. The Government should also establish schools to give theoretical training, and all apprentices should be compelled to attend such schools. There should be a reasonable number of examinations to test the knowledge of the students, and at the close of the apprenticeship course the student should receive a diploma stating his proficiency in the different subjects taught. There should also be an inspector to see that apprentices were being given proper instruction in the manual branches of their trades. The employer with whom the apprentice has served should fill out a certificate stating distinctly and clearly his accomplishments and skill, which should be countersigned by the inspector. With such a system as this, every opportunity would be given the intelligent apprentice to become a skillful mechanic. He would also be very much benefitted by the theoretical training he would receive, and which now he has to do without.

SANITARY SCIENCE IN THE HOUSE.

IN a lecture on "Sanitary Science in the Home," Mrs. R. H. Richards, who is one of the instructors in the Massachusetts Institute of Technology in Boston, says: "I know no man will dare say it in so many words, and, therefore, it is the more incumbent upon me to do so. I am sure if the much abused architects and builders were to speak their minds they would say that it was the women who hindered them from carrying out the plans which they know to be best. How can a builder survive the scorn which greets him when he proposes to leave all the drain pipes exposed? How can he put hoods over the gas-burners when the artistic sense of the woman who is to occupy the room is offended? How can he convince the women of the family that they should wear thicker clothing in the house in the winter, and not expect to have a whole house made so comfortable that they can wear thin slippers and silk dresses in weather approaching that of the Arctic regions? Does it avail for him to argue with them? Must he not cater to their tastes? And, as they are the ones who live nine-tenths of the time in the house, the man of the family lets them have their own way."

CIRCULAR

OF THE COMMITTEE OF CONFERENCE OF THE AMERICAN INSTITUTE OF ARCHITECTS, THE WESTERN ASSOCIATION OF ARCHITECTS AND THE NATIONAL ASSOCIATION OF BUILDERS ON A STANDARD FORM OF CONTRACT.

Dear Sir,—The Committee of Conference on a Standard form of Contract, appointed at their last Annual Conventions by the several Associations above named, beg leave to present the accompanying specimen copy of such Contract as the result of their united labors in that behalf, and respectfully ask its adoption by you in your practice.

The object sought to be obtained by the Committee was to obtain a Form of Contract which could be received and adopted generally by architects and builders as a Standard Form, and in which the several provisions necessary to constitute an equitable agreement, as between the owner and the builder, would be incorporated. The Joint Committee were empowered by their respective Associations to prepare and adopt such a Form of Contract, and this work, as embodied in the accompanying printed copy, may be said to be the authorized Standard Form of said Associations.

The action of the Committee in this regard was as follows: After an exchange of views through correspondence, an arrangement was made to have the Committee meet in the City of New York. Accordingly such a meeting took place on the 6th of June, ult., and an organization was effected by electing a Chairman and Secretary. This meeting was adjourned from day to day, daily sessions and one evening session being successively held—until the labors of the Committee were essentially completed. The matter was then referred to a sub-Committee, to revise the manuscript for publication. It was afterwards submitted individually to the several members of the Committee, subjected again to another revision, and finally adopted as printed.

In order to preserve the Form from errors, alterations or interpolations, it has been copyrighted. It is the general intention of the members of the National Association of Builders to have it understood that in all cases where proposals for any work are submitted by them, such proposals are made with the understanding that the contract made upon this Standard Form is the one that is to be executed by them upon such proposals.

The Inland Publishing Company, 19 Tribune building, Chicago, Ill., has been licensed to publish the blanks, and any number of copies, with prices, etc., can be obtained from them on application. The blanks will be furnished at $1.10 per 100, $4.25 per 500, and $8 per 1,000, free by mail or express. Architects can have their names and the consequent pronouns inserted, as they may order, at small additional cost.

The members of the Committee of Conference, appointed by their several associations, are as follows:

Of the American Institute of Architects.	O. P. Hatfield, New York, N.Y. Alfred Stone, Providence, R.I.
Of the Western Association of Architects.	J. H. Windrim, Philadelphia, Pa. S. A. Treat, Chicago, Ill. W. W. Clay, Chicago, Ill.
Of the National Association of Builders.	J. F. Alexander, Lafayette, Ind. John S. Stevens, Philadelphia, Pa. Geo. C. Pressing, Chicago, Ill. John J. Tucker, New York, N.Y.

O. P. Hatfield, Chairman.

Wm. H. Saywnrd, Secretary.
164 Devonshire St., Boston.

New York, August 8, 1888.

FORM OF CONTRACT ADOPTED BY THE JOINT COMMITTEE OF THE AMERICAN INSTITUTE OF ARCHITECTS, THE WESTERN ASSOCIATION OF ARCHITECTS AND THE NATIONAL ASSOCIATION OF BUILDERS.

This agreement, made the——day of——in the year one thousand—hundred and——by and between——part of the first part, (hereinafter designated the *Contractor*;) and——part of the second part (hereinafter designated the *Owner*;)

Witnesseth that the contractor, being the said part of the first part, in consideration of the covenants and agreements herein contained on the part of the Owner, being the said part of the second part, do covenant, promise and agree with the said Owner, in manner following, this is to say:

1st. The Contractor shall and will well and sufficiently perform and finish, under the direction, and to the satisfaction of——Architect (acting as agent of said Owner), all the work included in the——agreeably to the drawings and specification made by the said architect, and signed by the parties hereto, (copies of which have been delivered to the Contractor), and to the dimensions and explanations thereon, therein and herein contained, according to the true intent and meaning of said drawings and specifications, and of these presents, including all labor and materials incident thereto, and shall provide all scaffolding, implements and cartage necessary for the due performance of the said work.

2d. Should it appear that the work hereby intended to be done, or any of the matters relative thereto, are not sufficiently detailed or explained on the said drawings, or in the said specification, the Contractor shall apply to the Architect for such further drawings or explanations as may be necessary, and shall conform to the same as part of this contract, so far as they may be consistent with the original drawings, and in event of any doubt or question arising respecting the true meaning of the drawings and specifications, reference shall be made to the Architect, whose decision thereon, being just and impartial, shall be final and conclusive. It is mutually understood and agreed that all drawings, plans and specification are and remain the property of the Architect.

3d. Should any alteration be required in the work shown or described by the drawings or specifications, a fair and reasonable valuation of the work added or omitted, shall be made by the Architect, and the sum herein agreed to be paid for the work according to the original specification, shall be increased or diminished as the case may be. In case such valuation is not agreed to, the Contractor shall proceed with the alterations, upon the written order of the Architect, and the valuation of the work added or omitted shall be referred to (3) three Arbitrators (no one of whom shall have been personally connected with the work to which these presents refer;), to be appointed as follows: one by each of the parties to this contract, and the third by the two thus chosen; the decision of any two of whom shall be final and binding, and each of the parties hereto shall pay one-half of the expenses of such reference.

4th. The Contractor shall within twenty-four hours after receiving written notice from the Architect, to that effect, proceed to remove from the grounds or building, all materials condemned by whether worked or unworked, or take down all portions of the work which the Architect shall condemn as unsound or improper, or as in any way failing to conform to the drawings and specifications, and to the conditions of this contract. The Contractor shall cover, protect and exercise due diligence to secure the work from injury, and all damage happening to the same by neglect, shall be made good by

5th. The Contractor shall permit the Architect, and all persons appointed by the Architect, to visit and inspect the said work or any part thereof, at all times and places during the progress of the same, and shall provide sufficient, safe and proper facilities for such inspection.

6th. The Contractor shall and will proceed with the said work, and every part and detail thereof, in a prompt and diligent manner, and shall and will wholly finish the said work according to the said drawings and specifications, and this contract, on or before the——day of——in the year one thousand——hundred and——(provided the possession of the premises be given the Contractor, and lines and levels of the building furnished him, on or before the——day of——in the year one thousand——hundred and——), and in default thereof the Contractor shall pay to the Owner——dollars for every day thereafter that the said work shall remain unfinished, as and for liquidated damages.

7. Should the Contractor be obstructed or delayed in the prosecution or completion of the work by the neglect, delay or default of any other contractor; or by any alteration which may be required in the said work; or by any damage which may happen thereto by fire, or by the unusual action of the elements, or otherwise; or by the abandonment of the work by the employees through no default of the Contractor, then there shall be an allowance of additional time beyond the date set for the completion of the said work; but no allowance shall be made unless a claim is presented in writing at the time of such obstruction or delay. The Architect shall award and certify the amount of additional time to be allowed; in which case the Contractor shall be released from the payment of the stipulated damages for the additional time so certified and no more; The Contractor may appeal from such award to arbitrators constituted as provided in Article 3d of this contract.

8th. The Contractor shall not let, assign or transfer this contract, or any interest therein, without the written consent of the Architect.

9th, The Contractor shall make no claim for additional work unless the same shall be done in pursuance of an order from the Architect, and notice of all claims shall be made to the Architect in writing within ten days of the beginning of such work.

10th. The Owner agree to provide all labor and material not included in this contract in such manner as not to delay the material progress of the work, and, in the event of failure so to do thereby causing loss to the Contractor, agree that will reimburse the Contractor for such loss; and the Contractor agree that if shall delay the material progress of the work so as to cause any damage for which the Owner shall become liable (as above stated), then shall make good to the Owner any such damage—over and above any damage for general delay herein otherwise provided; the amount of such loss of damage, in either case, to be fixed and determined by the Architect, or by arbitration, as provided in Article 3d.

11th. The Owner shall effect insurance on said——work, in his own name and in the name of the Contractor, against loss or damage by fire, in such sums as may from time to time be agreed upon with the Contractor, the policies being made to cover work incorporated in the building, and materials for the same in or about the premises, and made payable to the parties hereto, as their interest may appear.

12th. Should the contractor at any time refuse or neglect to supply a sufficiency of properly skilled workmen, or of materials of the proper quality, or fail in any

respect to prosecute the work with promptness and diligence, or fail in the performance of any of the agreements on part herein contained, such refusal, neglect or failure being certified by the Architect , the Owner shall be at liberty, after three days written notice to the Contractor , to provide any such labor or materials, and to deduct the cost thereof from any money then due or thereafter to become due to the Contractor under this contract ; and if the Architect shall certify that such refusal, neglect or failure is sufficient ground for such action, the Owner shall also be at liberty to terminate the employment of the Contractor for said work and to enter upon the premises and take possession of all materials thereon, and to employ any other person or persons to complete the work, and to provide the materials therefor ; and in case of such discontinuance of the employment of the Contractor , he shall not be entitled to receive any further payment under this contract until the said work shall be wholly finished, at which time, if the unpaid balance of the amount to be paid under this contract shall exceed the expense incurred by the Owner , in finishing the work, such excess shall be paid by the Owner to the Contractor , but if such expense shall exceed such unpaid balance, the Contractor shall pay the difference to the Owner . The expense incurred by the Owner as herein provided, either for furnishing materials or for finishing the work and any damage incurred through such default, shall be audited and certified by the Architect , whose certificate thereof shall be conclusive upon the parties.

13th. And it is hereby mutually agreed between the parties hereto, that the sum to be paid by the Owner to the Contractor for said work and materials shall be——subject to additions or deductions on account of alterations as herein before provided, and that such sum shall be paid in current funds by the Owner to the Contractor , in instalments as follows :

It being understood that the final payment shall be made within —— days after this contract is completely finished, provided, that in each of the said cases the Architect shall certify in writing that all the work upon the performance of which the payment is to become due has been done to satisfaction ; and provided further, that before each payment, if required, the Contractor shall give the Architect good and sufficient evidence that the premises are free from all liens and claims chargeable to the said Contractor ; and further, that if at any time there shall be any lien or claim for which, if established, the Owner or the said premises might be made liable, and which would be chargeable to the said Contractor , the Owner shall have the right to retain out of any payment then due, or thereafter to become due, an amount sufficient to completely indemnify against such lien or claim, until the same shall be effectually satisfied, discharged or cancelled. And should there prove to be any such claim after all payments are made, the Contractor shall refund to the Owner all moneys that the latter may be compelled to pay in discharging any lien on said premises, made obligatory in consequence of the former's default.

14th. It is further mutually agreed between the parties hereto, that no certificate given or payment made under this contract, except the final certificate or final payment, shall be conclusive evidence of the performance of this contract either wholly or in part, against any claim of the Owner , and no payment shall be construed to be an acceptance of any defective work.

15th. And the said Owner hereby agree with the said Contractor to employ, and hereby employ to provide the materials and to do the said work according to the terms and conditions herein contained and referred to, for the price aforesaid, and hereby contract to pay the same, at the time, in the manner, and upon the conditions above set forth.

16th. And the said parties for themselves, their heirs, executors, administrators and assigns, do hereby agree to the full performance of the covenants herein contained.

In Witness Whereof, the parties to these presents have hereunto set their hands and seals, the day and year first above written.

In presence of

CONDITIONS OF "MEASURED DRAWINGS" COMPETITION OF THE ARCHITECTURAL GUILD OF TORONTO.

THIS competition is only open to students of not more than four years standing in the offices of members of the Guild, and a certificate to that effect signed by the architect in whose office the student may be, must accompany each set of drawings.

All drawings are to be sent in under "motto," or "cipher," *fac simile* of motto or cipher to be enclosed with certificates.

The drawings must be made in Indian ink, on white paper, to allow of the drawings being illustrated.

The subject of the competition is the "Eastern Entrance of the University Buildings," Toronto, and the following drawings are to be made :

1st. Plan to ½ inch scale.
2nd. Elevation, to ½ inch scale.
3rd. Section, to ½ inch scale.
4th. Elevation of capitals on south side with 12 inches of the column. and 18 inches of the arch, ¼ full size.
5th. Sections through arches and columns, ¼ full size.
6th. Drawings of the wrought iron work, ¼ full size.
7th. Drawing of one capital, full size.
8th. Drawing of wrought iron latch, full size.

All drawings to be addressed to Mr. S. G. Curry, *Mail* Buildings, Toronto, and to be sent on or before the 1st November, 1888.

Each competitor may submit less than the full number of drawings called for, but the decision will be made by allowing marks according to merit on each drawing, and any competitor omitting a drawing will lose the full marks allotted to that drawing. Marks will be allowed for neat and orderly arrangement of drawings on the sheets.

The competitor who receives the highest number of marks, will receive a prize, consisting of books to the value of $15.

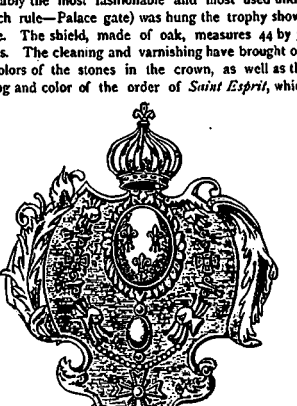
The award will be made by a committee of the Architectural Guild.

THE QUEBEC SHIELD OF 1759.

J M. LE MOINE, in his standard work on the old capital "Quebec Past and Present," thus describes the famous French shield, which the antiquarian researches of Mr. J. M. O'Leary, of Ottawa, have recentlynear theud :

THE JESUIT COLLEGE AT QUEBEC—1637-1878.

"On one of the city gates existing at Quebec in 1759 (probably the most fashionable and most used under French rule—Palace gate) was hung the trophy shown above. The shield, made of oak, measures 44 by 36 inches. The cleaning and varnishing have brought out the colors of the stones in the crown, as well as the gilding and color of the order of *Saint Esprit*, which



surrounds the *Fleur de Lys*. The scroll is colored green, and the inscription is in gold letters on a black ground.

In a topographical description of Hastings, in Sussex, England, published in the *Gentleman's Magazine* for 1786, is found the first mention of the shield, in the following paragraph :

"The Town Hall over the market place, is a modern building, erected in 1700. In a frame hung up in it, is a long list of its mayors, the first of which was sworn as such in the year 1560, before which time a bailiff was the chief magistrate ; the list commences in 1500. Near it the arms of France is fixed, largely carved on wood, and painted with proper colors, with embellishments, and was presented to the corporation by one of the officers (a jurat of Hastings,) who was at the reduction of Quebec, where it was fixed over one of the gates of that city, all of which is inscribed in a tablet under the arms."

In this same magazine for the year 1792 the following letters appear, bearing date the 20th January :

"The shield represented in plate III, figure 3, was taken from off one of the gates of Quebec in the year 1759, and was presented by General Murray to the corporation of Hastings. As this trophy commemorates so noble a conquest, and the inscription does honor to the General who made a present of it, the insertion of them in your magazine will oblige,

Yours, &c.,

"TILCONNENSIS."

"This shield was taken from off one of the gates of Quebec at the time that a conquest was made of that city by His Majesty's sea and land forces, in the memorable year 1759, under the commands of the Admirals Saunders and Holmes and the Generals Wolfe, Monckton, Townshend and Murray; which latter being appointed the first British Governor thereof, made a present of this trophy of war to this corporation, whereof he at that time was one of the jurats." ("Quebec Past and Present," pages 357-8.)

OUR ILLUSTRATIONS.

MONTCALM'S HEADQUARTERS AT BEAUPORT—1759.

THE old Seigniorial manor of the Duchesnay's at Beauport—the Marquis of Montcalm's headquarters, during the memorable siege of Quebec, in 1759, was until its destruction by fire in 1879, an object of unfailing interest to tourists visiting the famous falls of Montmorency, three miles to the east of it. Seigniorial stone manors in the Province of Quebec are getting scarcer every day. The ideas of modern comfort are ill suited for the inmates of these grim solid structures, with walls three feet thick, peaked gables and small grated windows, to protect them against Indian aggression in times bygone.

A circular plate of lead, much injured by fire, bearing an inscription, was found in its ruins in 1880 ; it contained some coins and the remnants of some documents which crumbled to dust when exposed to the air. The inscription, which gave rise to a lively antiquarian discussion, ran thus :

I. H. S. M. I. A.
LAN 1634 LE
NTE.
25 IVI LETIETE—PLA.
Premiere, P. C. Giffart.
Seigneur De. Ce. Liev.

The first line was made to read thus: "*Jesu hominum Salvatore, Maria immaculate auspice.*" Jesus the Saviour of men, under the auspices of Mary Immaculate.

The full particulars of this famous disquisition appear on pages 440-48 of "Picturesque Quebec." It seems to have been coeval with the first Seigneur of Beauport, surgeon Robert Giffard, who settled there in 1634, with his Perche le Norman colonists. Seigneur Juchereau (Duchesnay), its occupant in 1690, during the siege by Admiral Phipps, was ennobled by Louis XIV for his valiant defence of the place. For close on two hundred years the manor was occupied by the warlike Duchesnay family; a living descendant, the portly Lt.-Col. Theodore Duchesnay, Deputy Adjutant General of Militia at Quebec, was born there, as well as his sister, the late Madame Robert Le Moine, nee Emma Duchesnay.

The Duchesnay manor was sketched by the late Col. Benson Lossing, the historian of the American Revolution and of George Washington, and appeared in *Harper's Magazine* for January, 1859.

It was from this hoary tenement that the heroic General de Montcalm issued at six o'clock on the morning of the 13th September, to meet in deadly combat, his orthy foe, Major General James Wolfe, on the Plains of

Abraham, at Quebec, to decide the question of supremacy of leading two races on the continent of America.

THE JESUIT COLLEGE AT QUEBEC—1637-1878.

The vacant space between St. Anne and Fabrique streets, facing the Basilica to the west, represents the twelve *arpents* of land granted to the Jesuit Fathers in 1637, in the vicinity of Fort St. Louis, removed shortly after the conquest, and intended for the site of a college. As early as 1628, when Quebec contained but fifty souls, a sufficient sum to begin the structure had been tendered. A young nobleman from Picardy, in France, Rene de Rohault, son of the Marquis de Gamache, before taking orders as a Jesuit, had requested his father, the Marquis, to hand over his patrimony, 16,000 *ecusdor*, or gold half crowns, to the missions of Canada. It was subsequently rebuilt about 1720. One year later than its foundation in 1638, John Harvard bequeathed £779. 17s. 2d. to support the college then recently founded by the Legislature of Massachusetts, near Boston, at Newtown, which that year changed its name into Cambridge.

The learned Order continued to teach the youth of Canada the higher branches of education until the suppression of the Order by His Holiness, the Pope, in 1764. In 1763 it held military stores and supplies. In 1765 Governor Murray, by proclamation dated 4th June, 1765, had it surveyed and appropriated as a barracks for the English soldiers. It was then styled the Jesuit Barracks, and continued as such until the Imperial garrison of Quebec was withdrawn in 1871. It was sufficiently large to accommodate 1,000 soldiers, and comprised an extensive court, where the regiment in barracks was paraded each day at 10 o'clock a. m., sharp. In 1878 the spirit of vandalism rampant at that time in the ancient capital, after making an unsuccessful attempt to demolish the cherished fortifications and heavy walls of our Gibraltar, spent some of its fury on this venerable former seat of learning. The antique pile succumbed at last to dynamite, much to the regret of the citizens.

It is fronted on four sides with a court in the interior as well as a chapel seen in the plate.

It is contemplated to plant the site with trees in lieu of the magnificent denziens of the forest under which the devoted missionaries used of yore to meet for prayer or meditation, and to add a fountain and a wide avenue for traffic. It forms part of the Jesuit estates.

OLD ST. JOHN'S GATE, QUEBEC, (INSIDE) IN 1854.

IROQUOIS HOTEL, ST. HILAIRE, QUE.—J. W. AND F. C. HOPKINS, ARCHITECTS, MONTREAL.

WHY DO PROFESSIONAL MEN SEEK SALARIED POSITIONS?

A RECENT item in a Boston daily calls attention to three architects, each of whom, it was said should be able to earn $5,000 in his business, yet one had just closed his office to accept a government position at $2,500, and the other two were candidates for $1,500 places on the state police. Doubtless similar instances could be found in the ranks of the engineers, and in either case there does not appear to be any adequate general reason.

There are, however, and always will be, men who are easily dissatisfied or discouraged. Such an one if he has no real love for his profession and no resolute determination to achieve success in it becomes quickly restless in the dull spells that almost invariably visit at some time the young practitioner, and resolving to secure something more definite in the way of income, he "seeks fresh fields and pastures new." This is perhaps no great loss to the profession, but it may sometimes happen that a young engineer or architect well qualified to do credit to his profession and himself is tempted by some temporary discouragement to give the whole thing up and try something else. This would be most unfortunate, for it is no less true in the world of business than in the sphere of which it was originally spoken that, "No man putting his hand to the plough and looking back" is fit for the rewards of success.

Ask those whose success you envy how they attained the positions you despair of reaching, and when you have learned what difficulties and discouragements they overcame, you may be ashamed to shrink from those which confront you.—*Engineering and Building Record.*

The well known Canadian sculptor, Mr. Phillippe Hebert, is at work on a bust of the late Sir George Cartier, and a vigorous sketch of a group of Indians for the Parliament Buildings at Ottawa.

The auther of the design for a monument to be erected at Ottawa to the memory of the sharpshooters who fell in the northwest rebellion writes from England that the founders have obtained an excellent casting, and the work will shortly be shipped to this country.

AN ENQUIRY.

EDITOR CANADIAN ARCHITECT AND BUILDER:

DEAR SIR,—Referring to the illustrations in No. 5 of the CANADIAN ARCHITECT competition for a $2,500 Town House, I want to ask if the North side of the house is correct as shown in the illustration? If it is, why should not the dormer in roof and chimney shown on east side on plans and perspective also be shown on the north elevation?

Yours respectfully,

A. D. WASTE,
Student.

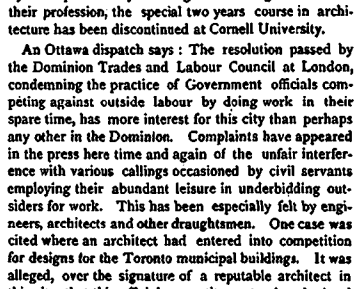
Toronto, Sept. 5, 1888.

[The north elevation as shown is perfectly correct. There is no reason why the chimney or dormer should or should not be shown. Some draughtsmen will show everything that is behind the picture plane, no matter how far back it may be—others will only show the features that are close up to it. There was nothing in these features which required to be shown for the purpose of explanation on the north elevation; if there had been, it would have been well to have shown them. Working drawings—by which we mean those which go into the hands of mechanics for their instruction—should be made as full and complete as possible; but drawings for the purpose of illustrating what is proposed to be done, may be treated very freely according to the whims of the draughtsmen.—THE EDITOR.]

About $150 worth of plans made by American Architects for Windsor buildings have been seized by the Windsor customs officer for non-payment of duty.

The American Institute of Architects will hold their twenty-second annual Convention at Buffalo on October 17th. An exhibition of architectural drawings will form a leading feature of the occasion.

To ensure the sending out of only students qualified



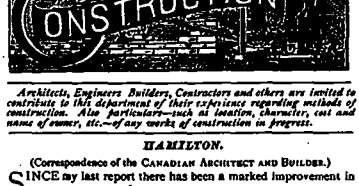
OLD ST. JOHN'S GATE, QUEBEC, (INSIDE) IN 1854.

by their preliminary training to take highest rank in their profession, the special two years course in architecture has been discontinued at Cornell University.

An Ottawa dispatch says: The resolution passed by the Dominion Trades and Labour Council at London, condemning the practice of Government officials competing against outside labour by doing work in their spare time, has more interest for this city than perhaps any other in the Dominion. Complaints have appeared in the press here time and again of the unfair interference with various callings occasioned by civil servants employing their abundant leisure in underbidding outsiders for work. This has been especially felt by engineers, architects and other draughtsmen. One case was cited where an architect had entered into competition for designs for the Toronto municipal buildings. It was alleged, over the signature of a reputable architect in this city, that this official competitor not only submitted designs, but also used the material of the department in which he is employed, and secured the assistance of fellow-employees in office hours for completing his work. Last session organized labor had a delegate at the capital watching legislation in its interest, and if the good practice is continued, he may be counted on to have light shed on these practices at the next sitting of Parliament.

The Rockwell Company proposes to furnish the town of Collingwood, Ont., with fifty natural gas lights, at $20 per light per year for a period of ten years. But suppose the natural gas supply should exhaust itself in less time than that?

It is announced that Hon. John Carling will shortly pay a visit of inspection to the quarantine stations. In view of the prevalence of small pox and yellow fever in certain districts in the United States, we hope that Mr. Carling will find every precaution being taken to guard against the entrance of these diseases into Canada.



Architects, Engineers Builders, Contractors and others are invited to contribute to this department of their experience regarding methods of construction. Also particulars—such as location, character, cost and name of owner, etc.—of any works of construction in progress.

HAMILTON.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

SINCE my last report there has been a marked improvement in the building line as evinced by quite a stir among the architects here in preparing plans for new buildings to be contracted for immediately. So far as I can learn the new buildings will be mostly brick dwelling houses in rows of from two to six, two stories and basement, costing on an average about $1200 each, but there will be a few small detached villa residences which may cost from $3,000 to $4,000 each. These buildings have mostly been contemplated in the spring, and would probably not have been built this year were it not that the effects of the spring strikes are fading away, and the price of building materials is lower. This latter is always an inducement, especially for speculative building. As it is now hoped that the building unions will profit by past experience and let well enough alone, we may reasonably look for a busy fall trade with bright prospects for the spring, and as the same state of affairs no doubt exists in other cities in Ontario, the "Ambitious City" will not be alone in rejoicing over a revival that will ensure plenty of work to her resident mechanics, removing the necessity for them to seek employment elsewhere as has been the case during the past summer, and that foreign labor will not be again imported to take the place of men who were compelled to refuse to work by the authorities appointed to control their actions.

In my last report I mentioned that upon complaint having been made it was assured that the Building Inspector's books would in future be kept systematically and correct, but I regret to say that the last month's record shows very little improvement in this respect. No doubt some of the buildings that were commenced have been recorded, but not in the way required by the by-law, which stipulates under a penalty that before commencing any building in the city limits a description of such building, the locality, the name of the proprietor and the probable cost of erection, should be entered. This has not been done in a single instance. Merely the description or class of building is given with the locality, without even the proprietor's name, the entry generally being made by the contractor for the stone and brick work, who merely signs his own name. Until an example is made, and the penalty enforced, it is doubtful if our building record will ever be so full and useful as that of the city of Toronto, which is certainly well and properly kept.

Here is the record for July as taken from the Inspector's book: Two brick dwelling houses on Bay st., Hammon; one brick dwelling house on Cherry st., James; one brick dwelling detached, Nelson, Ave., Hummill; one brick dwelling detached, Markland st., Dufton; one brick dwelling house, Park, near Hunter, Martin; four brick dwelling houses, Carl Avenue, Nicholl; one brick cottage on Wilson st., Martin; three brick dwelling houses, Market st., Sullivan; one brick detached house, Markland st., T. Meade; one brick detached house, Main st., Moore; three brick dwelling houses, Napier, Gregg; two brick stores on King st., east, Balfour.

QUEBEC.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

MESSRS. J. M. Cassels & Co. have just commenced the construction of a leather store on St. Valier street, to which they will remove their business in December next, from their Crown street store. The new site being in the heart of the great boot and shoe factories will be found much more convenient for their customers. The new building will be 130 feet long, with a depth of 40 feet, and three stories in height, and brick walls, with white brick trimmings. The contractor is Mr. Charles A. O'Leary; the architect, Mr. H. Staveley.

Hon. G. Bresse is also adding to his already immense shoe factory by putting up a wing running out from the centre of present building. The architect employed is Mr. E. Tanquay.

The whole of the front of the old Durham terrace, now forming part of the famed Dufferin terrace, is being rebuilt in stone, with massive buttresses, the whole being done by day's work under the direction of Mr. C. A. O'Leary. The work will occupy the remainder of this season and most likely the whole of next season. The officers of the Board of Works superintend the work.

OWEN SOUND.

(Correspondence of THE CANADIAN ARCHITECT AND BUILDER.)

THE following work has been let:—Two storey brick wing, with out stone trimmings, to county buildings, for a gaol governor's residence, cost $2,000; Chas. Crothers, contractor. Block of two three storey brick stores for Mr. C. Hall, 44 ft. frontage x 94 feet deep, cost $350, contractors, Malcolm & Green. Additions to store for W. B. Stephens, 30x27, one storey brick with cut stone front, cost, $1,000; contractors, Malcolm & Green. Two storey addition to store, brick, for J. M. Kelbourn, 24x38, cost $863; contractors, brick, W. H. Sinclair; carpenter, W. A. Green. Additions to residence of C. Eaton; day work; estimated cost, $1,000. Brick residence for Mr. J. M. Wilson, two stories, flat roof, size, 34 feet front by 40 feet deep, estimated cost $1,500. Additions, etc, to Hill street school premises, let to A. Wilson, contract, $533. Brick residence for Mr. Middlebro, two storey, cost $1,700.

The building trade here is fairly brisk in all its branches, and if all that is now contemplated goes on, will last late into the fall, or winter.

Plans being prepared for several small dwellings which will be estimated on later.

DESTRUCTIVE AGENCIES IN ENGINEERING STRUCTURES.

ALL structures, no matter of what material, are subject to physical and chemical agents which tend to destroy them from the very moment of their erection. In steel and iron we have materials in many respects so far superior to the stone or wood of former days that structures, such as bridges, ships, etc., built now-a-days would, using the old material, have been plain impossibilities; still the forces alluded to above are present and do their work.

An iron or steel structure left to itself, without care, and hence more sensitive to the action of these forces, will be, in an incredibly short time, destroyed or rendered dangerous or useless. With proper care, however, they may on the other hand, last for generations. The duty of the engineer and architect is, therefore, not only to secure strength and form, but also to so arrange, combine and protect the material, that the effects of the forces referred to hereafter will be counteracted, checked, or neutralized.

The more common causes of decay and destruction are vibration, corrosion and galvanic action. The first of these does not fall within the limit of this article, but may occasionally be referred to. Galvanic action may set in from different causes. For instance badly arranged materials of different kinds, various degrees of hardness; as a consequence of corrosion setting up a galvanic couple; presence of a conducting fluid between different metals, and as a result of riveting, hammering, etc.

Corrosion will follow as a result of exposure of the material to the different influences of the atmosphere, or to that of water, either fresh or salt; or to the presence of certain gases, or carbon, or to the difference in the chemical constitution of the metal, lack of homogeneity, the presence of combined air and carbonic acid in water, partial or total exposure, from variations in temperature, non-uniformity in the cooling of steel, the material being exposed to conditions of wet and dry alternately, the presence of free oxygen in water, galvanic action and from various other causes.

The vibrations referred to, although they are common to all structures, do not become dangerous so long as the structures are properly designed; and inasmuch as there is no practical danger before the rigidity of the work is threatened, and as such a danger cannot very well arise if the scantlings are duly proportioned and properly connected, these questions naturally belong to the construction and not to the protection of the structure. If the stresses are sufficient in intensity to produce distortion in the material beyond the elastic limit, then the danger commences, as in such a case the crystalline arrangement in the metal will be affected, that is, an alteration will take place in the crystalline axis."

Corrosion and galvanic action are so intimately connected that it may be wise to consider these two forces as tending toward the same results.

The corrosion of steel and iron is different in air, in water, and when in contact with foreign bodies, and the acceleration of the corrosion is also different in each case under different circumstances. Different metals suffer different losses under the same conditions. The loss in weight per month per square foot of surface in pounds in salt water is:—for steel, 0.0216; iron, 0.0203; zinc, 0.0069; copper, 0.0061. The corrosion will increase if the metal is in contact with certain foreign substances, as, for example, iron in contact with brass and submerged in salt water will lose 3.42, with copper 4.95, with lead 5.50, and with tin 8.60; the corrosion of iron by itself being taken as 1.000. Metals containing this or similar substances will of course tend to accelerate the corrosion of iron relatively. Some alloys are however, more powerful than their components.

It is said that fresh water corrodes wrought iron more rapidly than cast, but the reverse seems to be the case in salt water. The corrosion increases somewhat with the carbon, and steel should, therefore, under precisely the same circumstances, suffer a trifle more than iron. Salt water will transform cast iron into a plumbaginous substance in a very short time if not effectively protected, and cast iron pipes laid under ground near the sea where the earth is salt have been found to be destroyed in an extremely short period. White or light grey castings stand this destruction much better than do dark castings. Iron, as well as wood, seems to suffer most if the metal is alternately exposed to water and air, the cause of this, as far as the metal is concerned, is undoubtedly due to the fact, that in such a case there will be a greater percentage of carbonic acid mixed with air present, and also because the material is partly acted upon by the water and partly by the wind, both accelerating the circulation. As a preventative against corrosion of iron laid in salt water or even in the air, pure coal tar is very commonly used; the metal is heated and then coated with the tar. Pure asphalt and common Swedish tar are also employed. The corrosion of iron in common water is mostly due to the presence of dissolved air and carbonic acid, the acid forming spots on the metal which presently become more oxidized by the effect of the air and decomposed water; the proto-carbonate acting as a medium, the whole surface will soon be covered, and as the metal is electro-positive to its own oxide a voltaic couple is set up between the first formed sesquioxide and the, as yet, unaffected surface, spreading the disease with a force inversely as the square of the distance from the first affected spot.—*American Engineer.*

Mr. H. N. Willoughby, of Carleton Place, has secured the contract for the new Town Hall at Arnprior, Ont., of which A. W. Bell, of Almonte, was the architect. When finished this will be one of the handsomest public buildings in the Ottawa Valley.

It has been ruled that if a builder's work is improperly executed, and the employer can show there has been no beneficial service, he can deduct or bring a cross action. Liability depends entirely on the evidence that can be brought to show that the orders of the architects were not obeyed.

An English woman who has noticed the inconvenience to which men attending the theatres are in the habit of putting themselves and other people by going out between acts, makes the suggestion that theatre seats should be so constructed that they could be sunk through a trap in the floor into a saloon below.

MURAL DECORATION AT THE CAPITOL.

AN interesting account of the decorations on the walls of the Senate has recently been published in the Washington *Star*. It pointed out that down in the basement of the Senate the walls are the most elaborately decorated of any in the Capitol. The restaurant, the barber shop, the stationary room and the less desirable committee rooms are on that floor. The walls in other parts of the building are frescoed more sparingly and in larger design. But these are deep-toned and present a panorama of fine paintings. The figures are nearly all small, and they cover almost like mosaic work the walls and arched ceilings. Over some of the doorways there are large figures, and here and there are panels representing small busts of distinguished statesmen, as Washington, Franklin, Webster, Marshall and Clay. But the greater part of the painting represents birds of varied plumage, and here and there a native animal. Then there are other birds not familiar to these parts. Passing through the corridors one is surrounded by an ornithological carnival. A fine scroll forms a sort of frame-work of relief. Interspersed throughout the design are bunches and sprays of native plants and flowers, and here and there a snake common to this clime coils his way up among the scroll-work. Chipmunks, squirrels, common field mice, flying-squirrels, beavers, mole, weasel and other animals appear in natural attitudes. Clusters of grapes, cherries, plums, peaches pears and other native fruits, with here and there an ear of Indian corn, complete the design.

The work was begun about ten years before the war. Brumidi and a number of other famous frescoe artists were engaged upon the work. When the war broke out the heavy appropriations had to be stopped, and the work intended for the whole capitol, as outlined by the work on the walls of the Senate basement, virtually abandoned. Since the war no one has had the courage to propose an appropriation to carry out the original design.

At present there is being nothing done with the belt of historic frieze work in the rotunda. Costagini, the artist, has been in Philadelphia for some time, and it will be several weeks before he resumes his work in Washington. It is proposed now to erase one of the panels that has been completed and substitute for it another subject. The objectionable panel represents the death of Tecumseh.—*Building.*

FLOWERS ON PANELS.

FLOWERS will always be prominent as subjects of decoration, conventionalized or otherwise. They suitably fill both regular and irregular spaces, separately or in groups, ordinarily with leaves and stems. They also admit of high or low toned colors, of flat or shaded treatment. All the technical skill the painter possesses may be turned to account in their portrayal. Of late they have been extensively used for the adornment of door panels, all the more attractive when each panel presents different groups of flowers.

Much of the success of decorative flower painting depends on their artistic grouping, which includes the avoidance of overcrowding or confusing one flower with another. Every flower should be defined with sufficient exactness to enable the spectator to tell at a glance what it is. It is always a safe plan to group the light colored flowers on one side and the dark ones on the other. The effect of roundness may thus be got with color even in a flat treatment.

Pricking and pouncing and then painting in the flowers, ornaments, etc., is the method a highly skilled painter would adopt, because it would afford him the opportunity as he went on of exercising his fancy by putting in here and there a flower, bud or leaf just as he pleased, not being restricted to working within the lines of the original design. To a skilled flower painter this is one of the great charms of the work. But for flat treatment and outlining afterwards a stencil is the most widely useful.

Flowers are of course susceptible of a variety of treatment. They may be worked at times with advantage in gold, with a black outline, on a golden brown or citron ground in conjunction with other low-toned colors, or an azure or sky blue ground made from white, ultramarine and blue, with a little white, added. The flowers may also be painted and shaded in their natural colors without outlining, the corner ornaments or vases being in subdued pinks, greens, grays and yellows. The method in which there is the least danger of failure is the flat treatment with outline, excellent grounds being a dull cream or yellow or Indian red with ultramarine added to give it a rich bloom. In naming these grounds we assume that care will be taken that the colors selected to be placed on them will be harmonious. The finishing of the flowers in flat tints does not preclude the putting in of the different colors of their several parts. Good effects too may often be attained by painting even brilliant flowers in low toned hues, using only two or three shades of the same color or even only using one color for the general surface and outlining and putting in the detail with another color. The stencil pattern need only be outlined when stencilled in one color. Well selected neutral colors with a black outline on a dark ground always look rich and good. Where vases and ornaments are introduced these will look well gilded and outlined in black; in such case the clustered flowers will be improved if touched up with gold. As most ordinary doors have two top and two bottom panels of different sizes, some difficulty is apt to be encountered in so arranging the designs for all that they will approximate in general form.

The majority of the stencil brushes should be small. Small pieces of papers may be used to prevent one color encroaching on another, the paper being held with one hand. Two larger sized stencil brushes for blending or gradating two colors one with another will be required: a clean piece of deal board should be on hand to dab the stencil brush on after it is charged with color, which takes off the superfluous color that might otherwise when working produce ragged edges. To ensure sharp good work it is always safest to use an almost dry brush, and spend the time in carefully dabbing or rubbing the color on, instead of working with a brush full of color.

The painting of flowers and leaves in two shades of the same color, the shadowed side comparatively dark as compared with the light, will produce an appearance of roundness without departing from the flat treatment.

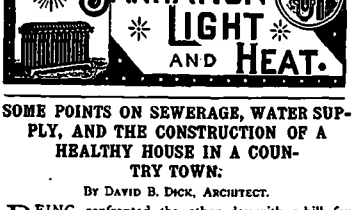
We would suggest as an excellent selection for the panels of a door the flowers emblematic of Spring, Summer and Autumn, Winter being represented, in place of flowers, by the ivy, the misletoe with its berries, the holly, ruddy hips and haws, grasses and ferns. Vases, if any, should be introduced only on the lower panels. On any additional small panels at top fanciful subjects might be introduced.—*Painters' Magazine.*

The use of white lead in the composition of floor paints is to be avoided, as it softens the wood. Ocher, raw umber and sienna are not injurious. The best finish for a floor which is to be much used is oil and wax, or a composition into which each of these ingredients enter.

The following is regarded as a good receipt for a floor varnish: Place 10 pounds of linseed oil in a pan, heat it to 300°, stirring it meanwhile. Mix with it, little by little, two pounds of pure white borate of manganese, finely powdered. Now head 100 pounds of linseed oil in a boiler until it is ready to boil over, pour in the former compound and boil together for twenty minutes. Then filter the mixture through cotton cloth, and apply one or two coats as desired, and a final coat of shellac if an extra polish is wanted.

The London *Oil and Colorman's Journal* furnishes the following method of preparing a valuable varnish known as milk of wax: Melt in a porcelain capsule a certain quantity of white wax, and add to it while in fusion an equal quantity of spirits of wine, of sp. gr. 0 830; stir the mixture and pour it upon a large porphyry slab. The granular mass is to be converted into a paste by the muller, with the addition from time to time of a little alcohol, and as soon as it appears to be smooth and homogeneous water is to be introduced in small quantities successively, to the amount of four times the weight of the wax. The emulsion is to be then passed through canvass in order to separate such particles as may be imperfectly incorporated. The milk of wax thus prepared may be spread with a smooth brush upon the surface of the painting, allowed to dry and then fused by passing a hot iron (salamander) over its surface. When cold, it is to be rubbed with a linen cloth to bring out the lustre. It is to the unchangeable quality of an encaustic of this nature that the ancient paintings on the walls of Herculaneum and Pompeii owe their freshness at the present day.

We have heard rumors to the effect that ex-Mayor Howland and several other Toronto gentlemen are considering the scheme of incorporating a joint stock company with large capital with the object of tendering for the construction of large buildings in Canada.



SOME POINTS ON SEWERAGE, WATER SUPPLY, AND THE CONSTRUCTION OF A HEALTHY HOUSE IN A COUNTRY TOWN.*

By David B. Dick, Architect.

BEING confronted the other day with a bill for what seemed to be a large amount for emptying an ancient pit on the site of a new building, I remarked to the excavator that it must have been a very large pit to have held so much. He replied that the quantity of stuff usually taken out of a pit did not depend so much upon its size as upon the way in which it was constructed. The remark was suggestive. If, of two pits that under similar circumstances might be expected to contain the same quantity, one is found to have in it a much smaller quantity than the other, the question would naturally suggest itself, "what has become of the surplus?" An examination of the nature of the materials and method of construction of the two pits would probably result in the discovery that one was water tight while the other was not; or more probably that one was less leaky than the other.

It is an old saying, "Out of nothing, nothing is expected to be got," ("*Ex nihilo, nihil fit.*") But in the construction of the leaky cesspool, a good deal has been put in and still very little taken out. What then has become of it? Ask the physicians in the neighborhood where they have been called upon to attend cases of typhoid, intermittent fever and diphtheria, then follow up the clue thus obtained and there will probably be very little difficulty in discovering where some of it at least has gone. Chemical analysis of the drinking water in the wells or springs from which the supply was obtained for the houses in which the patients lived, will probably change a strong suspicion into a positive certainty, and further investigation will ascertain the channels through which the missing portion of the contents of the cesspool has found its way into the sources of water supply. The idea is too abominable to be willingly accepted as a proved matter of fact. Very likely the sceptic will assert that the natural and proper method of disposing of excreta is to return it to the soil, and probably he will quote Scripture in support of his position, addacing the command given to the Jew, to have a paddle on the end of his weapon to aid him in accomplishing that desirable end. And, in fact, the contention is true, and therefore the premises are perfectly correct, but the conclusion drawn from them is utterly wrong.

It is true that the excreta should be returned to the soil but there is a right way of doing this, which is safe, and a wrong way, which is highly dangerous. The safe way and the rational way is to spread the stuff on the surface of the ground or convey it into the soil at such a distance below the surface that the roots of the growing plants will seize hold of the poisonous matter and by the skillful chemistry of nature convert it into plant nutriment, and so into healthful food for man and beast. The wrong and dangerous way is to dilute the excreta until it liquidizes and then allow it to soak away down far below the plant roots until the ground is saturated down to the level of the ground water, when the liquid flows away with the natural underground streams which feed the wells and springs. It is out of sight and out of mind until the investigations of the physician compel the most sceptical to see that as effect invariably follows cause, so sickness invariably results from the use of water which has been thus poisoned. It is true every one who uses the water does not fall ill of malignant fever, just as it is true that a certain quantity of poison may be taken with impunity and the constitution may even be habituated to its use. But it is also true that the dose of poison which a strong healthy person might take with impunity, would be sufficient to kill a weakly person. And so with the contaminated water, the robust person whose constitution is able to resist the effects may use it for a time without apparent evil results, while those of enfeebled condition may succumb to it at once.

This question of the best methods of safely, if not profitably, disposing of waste water, is one which every community has to face, and the more rapid the growth of the community, the more urgent becomes the need to find a satisfactory answer to it. On the sea coast, it is seldom thought necessary to consider any further than the best means of conveying it to the sea. If carried out to deep water at some point where the currents will carry it out to sea and not throw it back on the shore, this is probably as safe a method of disposing of it as any. It is certainly unprofitable, but that must apparently always be a matter of secondary importance in the consideration of this question. The first and most important thing is to prevent it from becoming a source of danger to health. Inland towns, however, have not this ready means of getting out of the difficulty. It may be said without hesitation, that it is unsafe to throw sewage into any running stream. If the town which throws it in does not suffer, those that are lower down must be sacrificed. Many a once clear and beautiful trout stream has been turned into a current of abomination in which even the coarsest fish could not live. Neither is it safe to throw it into a fresh water lake, however large. Having no tide, there is seldom current enough to carry the stuff away without polluting the water for a considerable distance from the mouths of the sewers. This plan is rendered still more objectionable by the fact that the supply of what is supposed to be pure water is usually drawn from the very lake into which the sewage is poured. This is indeed to do deliberately what is so often done unintentionally in the case of the leaky cesspool, in the hope that, if sufficiently diluted, even sewage may become a harmless beverage. The fallacious nature of the hope has been so often proved, that probably no municipal body would now deliberately inaugurate such a system in a new place. The people of many towns are almost at their wits' end to know how to undo the evil which has thus been brought upon them by the ignorance or carelessness of their predecessors.

Many growing inland towns have now reached a stage at which the question must be faced. They have gone on as long as they dare go on with the old plan of cesspools and wells, and while the authorities are sometimes sadly puzzled to know what they ought to do, they are in this happy position that they can begin at the beginning and inaugurate a proper system without being handicapped by the presence of an old and insufficient system which is incapable of improvement, but in which so much money has been sunk that any proposal to abandon it is sure to arouse a storm of opposition. It may be safely asserted that there is no town or village in the country thus situated for which competent engineering skill cannot devise a safe and suitable system of water supply and sewerage. The two things necessarily go together. Either one without the other is almost useless. If one only is provided, the need for the other is soon so strongly felt that it also must be supplied. When water works only are introduced, the people will not long be content to draw water from a street hydrant, and so soon as the water is introduced into the houses, the necessity for a drain becomes apparent.

Whether the system of dry earth or water carriage for the removal of excreta be adopted, the necessity for a system of drains remains the same, because the quantity of water used for washing and other necessary purposes is so great that no dry earth system can deal with it. It has also to be borne in mind that even when solid matter is got rid of by the dry earth system, the liquid waste remains, and, if not carried away before decomposition begins, is just as much a source of danger as the other. As regards garbage, such as refuse vegetable matter, there is only one safe way of dealing with it, and that is to burn it. By the exercise of a little care and good management, this may be done in every kitchen in the ordinary stove without burning an additional ounce of fuel, and at such times as not to interfere with the use of the fire for any domestic purposes. It is only necessary to keep the garbage in a vessel on the back of the stove for a few hours when it will become dry enough to burn readily.

The dry earth system may be advantageously used whenever there is a bit of land to be cultivated, and when thus used, it may even become profitable, because the used earth can be kept in any dry place until it is wanted. Every one is familiar nowadays with the dry earth system in some form or other. It consists simply in deodorizing the excreta by covering it with a little dry loam or other suitable material. In most cases, however, where a complete system of sewerage is laid, it is preferable that the solid matter of sewerage proper should be disposed of in the same way. The subject of the best method of the disposal of sewage is too large a one to be entered upon here. It may, however, be said in passing, that the small pipe system with the storm water excluded, used in connection with a sewage farm, or at least a piece of ground properly prepared for filteration, will probably be found to be the most suitable for most small inland towns.

Many people have an idea that they may have as many baths, wash basins, and sinks in a house as they like, and that these cannot be a source of danger so long as there is no water closet. There cannot be a greater mistake. One fixture is just as safe as another if properly connected with the drains; and, on the other hand, the most innocent looking fixture, even if it is only intended to take away the drip from the drinking fountain in a public reading room, is just as much a source of danger as a w. c., if it is not properly constructed and connected.

The end of good plumbing is to provide a means of conveying soil into the sewers without allowing any air from the drains or soil pipes to pass into the building either through the fixtures or through leaks in the pipes. Any plumbing that does this and is strong enough to continue to do it permanently under fair usage, is good plumbing. Any plumbing which fails in any of these points, is bad plumbing. Good plumbing cannot be done cheaply. The multiplication of fixtures beyond the limit of actual necessity becomes a luxury, therefore, when it is proposed to introduce plumbing into a house, not a single fixture should be put in more than can be good of its kind and fitted up with the best of workmanship. The ruin of good workmanship in plumbing as in every other kind of handicraft, is the dictum so many people lay down that they are determined to have a certain number of fixtures or what not, but that they will only pay so much for them. There can be no greater folly. The sensible way of going about the matter is to consider how many fixtures it is desirable to have, and then put them in, if there is money enough to make a first-class piece of work. If not, then reduce the number to that which the available funds will warrant.

Within the last few years there has been a radical change in the principle of plumbing. Formerly the idea prevailed that sewer gas could be bottled up in the soil pipes and yet not find its way into the house. Plumbing fixtures were scattered all over a house wherever convenience or fancy dictated. Tile pipe drains were run underneath the floors to every fixture or soil pipe. These drains were seldom water-tight at the joints. The soil leaked out and saturated the ground underneath the house, where it decomposed and gave off poisonous gases, which were sucked up through every crevice in the floor boards and behind the skirting and wainscotting whenever a fire was burning in the house. A fire cannot burn unless it is supplied with air, and it will suck air from every chink so long as it continues to burn, for if the room were air-tight, the fire would go out. This source of danger was seldom thought of, and sometimes it was intensified by building a drain of brickwork many times larger than was necessary. If the tile pipes were seldom tight, it is safe to say that the brick drains never were. They were also too large to be self cleansing, that is to say, the small quantity of water flowing along the bottom had not force enough to sweep away the soil, which collected in the bottom as in an elongated cesspool, breeding pestilential vapours as dangerous as those of the street sewer.

(TO BE CONTINUED.)

* Paper read by David B. Dick, Architect, Toronto, at the Convention of Executive Health Officers of Ontario, at Lindsay, Ont., August 14th, 1888.

FIGURES OF THE TOWER BRIDGE.

THE following technical description of the new bridge, which is rising east of the city under the direction of the corporation, and comparison with London Bridge, will interest, we believe a considerable portion of our readers: Total length of bridge, 940 feet; total length of bridge and approaches, 2,640 feet; opening span width, 200 feet; opening span headway, when opened, 135 feet; opening span, headway, when shut, 29 feet 6 inches; side spans, width, 270 feet; side spans, headway, from 20 feet to 27 feet; width between parapets, opening span, 50 feet; width between parapets, side spans and approaches, 60 feet; steepest gradient of approaches, 1 in 40, (steepest gradient of approaches of London Bridge, 1 in 7;) depth of foundations, 60 feet below Trinity high water mark, 27 feet below bed of river; sectional area of waterway, 20,040 square feet, (London bridge, 19,300 square feet;) depth of water in opening span at high water, 33 feet 6 inches; depth of water in opening span at low water, 13 feet 6 inches. Estimated quantities of materials in the bridge and approaches—Bricks, 31,000,000; concrete, 70,500 cubic yards; cement, 19,500 tons; granite and other stone, 235,000 cubic feet; iron and steel, 10,500 tons. Machinery, etc.—Two steam pumping engines for hydraulic machinery, each 360 horse power, eight large hydraulic engines and six accumulators, for hydraulic lifts in towers for passengers; size of each leaf of opening span, 50 feet wide by one 200 feet long; weight of each leaf of opening span, including roadway and counterbalance weighs, 700 tons; estimated cost, £750,000.—*The London City Press.*

Messrs. Patterson & Hall have just completed and put in operation at Midland, Ont., what is claimed to be the most complete planing mill in the Dominion. The machinery consists of a double cylinder lightning matcher, capacity from twenty to thirty thousand per day; No. 0 sticker, capacity 10,000 lineal feet per day; 26 inch double surfaces, capacity 40,000 feet; re-sawer, and gang rip, capacity 20,000. Power is supplied by a 45 h. p. engine, and 45 h. p. steel boiler. The mill is supplied with the best modern labor-saving and fire protection devices. It is the intention to supply the Ontario market with every description of dressed lumber, mouldings, etc.

CANADIAN PORTLAND CEMENT.

REFERRING to a notice which appeared in our columns a few weeks ago, of a large deposit of carbonate of lime and clay suitable for the manufacture of Portland cement, which was found in the County of Grey, a few miles from Owen Sound, we are informed that Mr. Wm. Robinson, C. E., of Owen Sound, has visited Europe with a view of more thoroughly testing the quality of cement produced from this deposit, and comparing it with that of English manufacture. After two month's absence he has returned highly pleased with the results of the several tests made with this cement in Europe. The tensile strength of the cement produced in the test kiln by Mr. R. J. Doyle, Owen Sound, the owner of the deposit, and tested in the laboratory of Mr. Frederick Ransome, C. E., London, Eng., was very high, registering 675 lbs. per square inch at 7 days setting, the average of all the tests being 540 lbs. per square inch. The English Government standard is 350 lbs.

Mr. Robinson in examining the records of the Society of Civil Engineers and Architects in England, found the average strength of cement of English manufacture to be 391 lbs. at seven days setting.

The general tests made by Mr. Robinson in England with English and French Engineers, show our native material to be capable of making cement of even higher grade than the average European Portland cement, there being only three tests in Europe which have exceeded in strength that burned in Mr. Doyle's kiln.

The Company have already commenced excavations for the erection of buildings capable of manufacturing about 400 bbls. per day, and expect to be in full operation by May, 1889. This we understand will be the first Portland cement factory on the American continent.

WIRE LATHING.

A TEST was recently made at Hamilton, Ont., of a new kind of wire lathing, the invention of Messrs. B. Greening & Co., manufacturers of wire work. The inventors simply propose to substitute for lathing a sort of wire screen. This is fastened to strips of crimped iron. The strips are an inch wide, and when fastened to the joists edgeways they keep the screen and plaster an inch from the wood, and render the walls fire-proof. The new material and method was subjected to intense heat over a furnace without cracking the plaster or scorching a joist placed an inch above the plaster. The new material will be manufactured by the Greening Co.

Messrs. Greening & Co. had a sample of their invention at the Toronto Exhibition, where it attracted much attention.

WHAT PIPES ARE USED FOR.

THE increasing requirements of modern civilization, says the *Scientific American*, are well illustrated by the extent and variety of underground pipe systems now employed in large cities. Thus there are in actual operation: Pipes for conveying and delivering illuminating gas. Pipes for conveying and delivering fuel gas. Pipes for conveying and delivering drinking-water, and for fire purposes. Pipes for conveying salt water for street sprinkling and for fire purposes. Pipes for draining and carrying off sewage and surface water. Pipes for delivering hot water under high pressure, for heating purposes and power. Pipes for delivering cold water under high pressure for power. Pipes for delivering live steam under pressure, for heating purposes and power. Pipes for delivering compressed air, for purposes of power and ventilation. Pipes for producing power where required, by vacuum or suction, and for ventilation. Pipes for conveying letters and packages, by compressed air and by vacuum. Pipes for regulating clocks, by compressed air. Pipes for conveying mineral oils Pipes for electrical wires for electric lighting, electric railways, telephones and telegraphy. And pipes for power ropes for driving machinery and moving street-railway cars.

mater

Messrs. Close, Falconer & Close, of Woodstock, Ont., are making square flat tiles for sidewalks.

The plant of the Barnum Wire and Iron Works is being removed from Windsor to their new factory at Walkerville, Ont.

While at the office of Messrs. Close, Falconer & Close, brickmakers, a few days ago, says the Woodstock, Ont., *Times*, we were shown several samples of bricks made in various parts of the world. Among the lot was a most interesting relic of olden times, a brick made in Holland in 1699, nearly two hundred years ago. It was used in the construction of a building near New York, at one time the headquarters of General George Washington. It is much smaller than the bricks now made, but it is far superior; the bright red clay of which it is composed is almost as hard as stone.

BRICKLAYING IN FROSTY WEATHER.

CANADIAN builders will be interested in some statements recently made on the above interesting subject by Messrs. Agnew and Hennessey to a reporter of the St. Paul *Pioneer Press*. Both Mr. Agnew and Mr. Hennessey are veteran builders with considerable experience in the conduct of brickwork after the commencement of freezing weather. They completed the upper part of the St. Paul *Globe* Building during December while the mercury ranged from —15° to × 15°, and consider that part of the wall as sound as any in the city. Mr. Agnew stated that they used salamanders, slaked the lime with hot water, and heated the bricks and laid them in hot mortar and good adhesion was secured. He said that a man could lay only about half as many bricks per diem in cold as in warm weather, and that a thaw during its erection would be injurious to a wall built in winter weather, but that continuous freezing was not at all injurious for bricklaying or plastering. Alternate freezing and thawing he considered likely to burst and crumble the mortar, and objected to building stone foundations during freezing weather.

CANAL LOCKS.

THE depth of a lock must be such that a barge navigating the lower section can float freely into it when the sluice-gates are closed and the flood-gates open, and the height of the flood-gates must be such that when closed, and the water admitted into the lock from the upper level, it shall not overflow them. The position of a lock is just at the termination of a level where the ground begins to fall. It is for every reason desirable to construct a lock of masonry so that the wash of the water caused by opening the sluices, shall not augment its capacity. Sometimes when the traffic is heavy, as upon the Regent's Canal, in London, the locks are made double—that is, side by side, separated by a strong pier of masonry—and a flood-gate or valve is placed in this pier, by which communication can be made between the two locks. By this arrangement a saving of water is frequently effected, as instead of allowing an entire locklul of water to pass into the lower section, half of it can be passed into the adjoining lock, should that happen to be empty at the time. Great care is needed in constructing the retaining walls and piers of locks. As a rule, the thickness of a wall intended to support the lateral pressure of water should not be less than half the height of the water which presses against it. The surface of the masonry should be set in cement, and the bonding should be arranged so as best to withstand the thrust of the closed gates.—From *Cassell's Technical Educator* for September.

It has been found that four inches of contact with, or overlapping on, supports, give to beams their greatest strength and firmness.

We observe that Messrs. Isaac Usher & Son, of Thorold, secured the silver medal offered by the Toronto Industrial Exhibition Association for best sample of cement.

The strength of beams is in direct proportion to their thickness, inversely as their length, and as the squares of their depth, thus: A joist four inches thick is twice as strong as a two-inch joist; if twelve feet in length it has double the strength of one of twenty-four feet, while doubling the depth, as from six to twelve inches, increases the strength fourfold. It is assumed of course that all other elements of strength are equal in each instance of comparison.

A new hot water heater, the invention of Mr. Edward Gurney, has just been placed on the market by the E. & C. Gurney Company, of Toronto. In our advertising pages the manufacturers show illustrations of the new device, for which they claim many points of superiority as compared with heaters heretofore in use. The limited space at our command prevents a full description of this new heater in this number, but full information will be cheerfully supplied by the manufacturers.

Messrs. F. P. Currie, W. McNally, A. Bremner and Wm. Currie, of Ottawa, and others, are applying for incorporation for the "Beaver Drain Pipe Company of Montreal," with a capital of $100,000, for the manufacture and sale of drain pipes and all fire clay goods, and building bricks, etc. A site has been selected in the vicinity of the city, and the business is to be conducted on a large scale, one of the interested parties being at present in Scotland purchasing the most modern machinery for the conduct of the business.

A Tonawanda, N. Y., inventor, Frank Batt, has just received a patent for a trimming machine, designed to make dimension and fancy butt shingles at such a rate that they will not cost much more than the ordinary sort, which have to be taken with rough, square ends, and of such widths as the maker may happen to turn out. Inventive genius has been laboring with this problem since dimension shingles came into general use, and it has several times been said that the great desideratum in this line has been found. One Pacific coast inventor was mentioned in the papers a while ago as having devised a machine that would take in ordinary shingles at one end and turn them out at the other dressed and shaded and pointed in any way desired. With all this success it would seem that a fancy shingle roof ought soon to be within reach of every farmer in the country.—*Lumber*.

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

FERGUS, ONT.—A system of waterworks is being considered here.

PICTON, ONT.—A by-law has been carried voting $30,000 for waterworks.

PRINCETON.—A new Roman Catholic church to cost $6,000 is to be built here.

VICTORIA, B. C.—The Presbyterians will erect a new church at a cost of $40,000.

PORT ELGIN, ONT.—Tenders are asked for the erection of a new public school building.

STRATHROY, ONT.—Messrs. Bixell & Son ask tenders for the erection of a lager beer brewery.

ST. LAMBERT, QUE.—Plans have been made by J. M. Walbank for a sewerage system.

TEESWATER, ONT.—A by-law to raise $9,000 for a system of waterworks will be submitted.

DESERONTO, ONT.—Changes are to be made in the method of lighting the Presbyterian church.

REGINA, N. W. T.—Tenders will be asked for the construction of a new drill shed to cost $30,000.

SHELBURNE, ONT.—A majority of twenty-four carried the by-law for $12,000 for waterworks recently.

MERRITTON, ONT.—A by-law granting $10,000 to extend the waterworks system has been carried.

INGERSOLL, ONT.—The town has decided to have a system of water works, and an electric light plant.

TORONTO, ONT.—The Council has decided to purchase additional plant for the high level pumping station.

BELLEVILLE, ONT.—Funds are being raised by subscription towards the erection of a new armory and drill shed.

HALIFAX, N. S.—An inspection of the water works is to be made with a view to their enlargement and improvement.

KINGSTON, ONT.—The Government has made an appropriation and selected a site for a dry-dock to cost about $500,000.

ST. THOMAS, ONT.—The trustees and congregation of the Central Methodist church will erect a new edifice to seat 1200.

MONTREAL, QUE.—Four new warehouses are to be constructed at Hochelaga, to accommodate the increased lumber and coal trade.

ST. HENRI, QUE.—The city council has adopted the by-law providing for the construction of sewers, as well as that authorizing the issue of $100,000 debentures.

STRATFORD, ONT.—It has been decided to build a new fire hall the cost not to exceed, $3,500.—The City Council have decided that the City Hall shall be heated by steam.

OTTAWA, ONT.—Mr. Hamel, C. E., will report to the Public Works Department on the feasibility of constructing a bridge across the Ottawa, below the Deschenes rapids.

OWEN SOUND, ONT.—Preliminary sketches are under way for a three storey hotel, 105 feet frontage, brick, with stone trimmings, complete with all modern improvements. Also for a few brick dwellings costing from $1,500 to $1,800.

GODERICH, ONT.—Tenders are called for the erection of the new post office, customs house and inland revenue office here, the plans and specifications for which are on view at the clerk's office.—This town will adopt the electric light.

A coating of ships feet, coal tar, pitch and batten is said to constitute a most successful preventative against the ravages of the teredo on piles.

The Board of Works of London, Ont., has inaugurated an era of doubtful economy by recommending that the river bank be lined with tin shavings as a substitute for a breakwater.

Geo. M. Pullman, of palace car fame, is erecting himself a granite palace home on one of the Thousand Islands in the St. Lawrence. The money has generously been contributed by citizens of the United States in small sums, collected by porters.—*Lowell Journal*.

A German trade journal advocates the following method for testing the quality of roof slates: The samples of the slate to be tested should be carefully weighed, and then put into boiling water for a quarter of an hour. The water must, however, be fairly free from lime, saltpetre and ammonia. The slates are then re-weighed and those that show the greatest increase in weight are those most capable of resisting deterioration.

BUILDING MATERIALS.

LUMBER.

CAR OR CARGO LOTS.

1¼ and thicker clear picks, Am. ins..	$34 00@35 00
1¼ and thicker, three uppers, Am ins.	40 00
1¼ and thicker, picking, Am ins.....	30 00
1 x 10 and 12 dressing and better....	20 00 22 00
1 x 10 and 12 mill run.....	15 00 16 00
1 x 10 and 12 dressing.....	15 00 16 00
1 x 10 and 12 common.....	12 00 13 00
1 x 10 and 12 spruce culls.....	10 00 11 00
1 x 10 and 12 maple culls.....	9 00
1 inch clear and picks.....	24 00 26 00
1 inch dressing and better.....	18 00 20 00
1 inch siding, mill run.....	13 00 15 00
1 inch siding, common.....	12 00 13 00
1 inch siding, ship culls.....	10 00 11 00
1 inch siding, mill culls.....	8 00 9 00
Cull scantling.....	8 00 9 00
1¼ and thicker cutting up plank.....	22 00 25 00
1 inch strips, 4 in. to 8 in. mill run..	14 00 16 00
1 inch strips, common.....	11 00 12 00
1¼ inch flooring.....	15 00
1⅛ inch flooring.....	13 00
XXX shingles, sawn.....	$2 40@2 50
XX shingles, sawn.....	1 30 1 50
Eastlake painted iron shingles, per square, (10 feet).....	4 50
Eastlake painted tin shingles, per square.....	4 50
Eastlake genuine galvanized iron shingles, per square.....	7 00
Imitation brick siding, per square.....	3 50
Special siding, per square.....	3 50
Lath, sawn.....	1 80

YARD QUOTATIONS.

Mill cull boards and scantling.....	10 00
Shipping cull boards, promiscuous widths.....	12 00
Shipping cull boards, stocks.....	13 00
Scantling and joist, up to 16 ft.....	14 00
" " 18 ft.....	15 00
" " 20 ft.....	16 00
" " 22 ft.....	17 00
" " 24 ft.....	19 00
" " 26 ft.....	20 00
" " 28 ft.....	22 00
" " 30 ft.....	24 00
" " 32 ft.....	26 00
" " 34 ft.....	28 50
" " 36 ft.....	30 00
" " 38 ft.....	32 00
" " 40 ft.....	35 00
Cutting up planks, 1¼ and thicker, dry	25 00 30 00
" board,	18 00 20 00
Dressing stocks.....	16 00 18 00
Picks, American inspection.....	40 00
Three uppers, American inspection...	50 00
Cedar for block paving, per cord.....	5 00
Cedar for Kerbing, 4 x 14, per M....	12 00

B. M.

1½ inch flooring, pressed.....	25 09 30 00
1½ " flooring rough.....	14 00 15 00
1½ " dressed.....	23 00 25 00
" " undressed.....	14 00
" dressed.....	16 00 20 00
" " undressed.....	12 00 14 00
Beaded sheeting, dressed.....	18 00 20 00
Clapboarding, dressed.....	18 50
XXX sawn shingles, per M.....	2 75 3 00
Sawn lath.....	2 25
Red oak.....	20 00 25 00
White.....	25 00 30 00
Basswood, No. 1 and 2.....	18 00 20 00
Cherry, No. 1 and 2.....	50 00 60 00
White ash, No. 1 and 2.....	25 00 30 00
Black ash, No. 1 and 2.....	20 00 25 00

BRICK.—₱ M.

Common Walling.....	$ 7 50
Good Facing.....	10 00
Sewer.....	9 50

Stone:

Common Rubble, Per Toise, delivered	14 00
Parge flat " "	18 00
Foundation Blocks, " Cubic Foot..	35

Slate: Roofing (₱ *square*).

" green.....	5 00 6 00
" " unfading.....	5 00 6 00
" purple.....	5 50 6 00
" red.....	10 00
" black, Lehigh.....	3 50 4 00
" " Chapmans.....	
" unfading black, Monson, Me.....	5 50 8 00
" black slate.....	7 50
Tiles, American, ₱ M.....	
N. Peach Bottom, warranted unfading	

Sand:

Per Load of 1¼ Cubic Yards.....	1 25

PAINTS. (In oil, ₱ lb.)

White lead, Can.....	6 6 50
" zinc, Can.....	6½ 8 50
Red lead, Eng.....	5½ 6½
" venetian.....	2½ 3½
" vermilion.....	90 1 00
" Indian, Eag.....	10 12
Yellow ochre.....	6½ 12
Yellow chrome.....	15 25
Green, chrome.....	7 12
" Paris.....	30 40
Black, lamp.....	17 25
Blue, ultramarine.....	15 25
Oil, linseed, raw (₱ *Imp. gal.*).....	56½
" " boiled, "	59
" " refined, "	60
Turpentine, "	55 59
Varnish, coach, "	
Shellac, "	
Putty.....	2¾ 3
Whiting, dry.....	75 1 00
Paris white, Eng., dry.....	1 25 1 50
Litharge, Am., "	6¼ 8
Lienna, burnt.....	15 20
Umber, "	8 12½

CEMENT, LIME, etc.

Lime, Per Barrel of 2 bushels, Grey..	90
" " White	1 00
Plaster, Calcined, New Brunswick..	2 20
" " Nova Scotia.....	2 10
Hair, Plasterers', per bag.....	1 00
Cement, Portland, per bbl.....	3 00
" Thorold, "	1 50
" Queenston, "	1 50

HARDWARE.

Cut Nails:

American Pattern, 1¼ inch, per keg....	4 40
" " 1⅛ to 1¼ inch, per keg	3 65
Canadian Pattern, 1¼ inch, per keg...	3 90
" " 1⅛ to 1¼ inch, per keg	3 40
" " 2 to 2¾ inch, "	3 40
" " 2¾ to 3¼ inch, "	3 15
" " 3 inch and larger.....	2 90
Steel nails 10c. per keg extra.	
Finishing nails, 1 inch, per keg.....	6 05
" " 1¼ inch, "	5 30
" " 1½ " "	5 05
" " 2 inch and larger.....	4 80

Iron, etc.

Refined, ₱ 100 lb. or ordinary size....	2 25 2 35
Common, ₱ 100 lbs.....	2 00 2 10
Patent metals, ₱ lb.....	0 00 0 11
Anchors, ₱ lb.....	0 05½ 0 06
Chain cables, ₱ lb.....	0 05 0 06
Rigging chains, per lb.....	0 05 0 05½
Galvanized Iron Roofing, per square..	5 00

MONTREAL PRICES.

Lumber, Etc.

Ash, 1 to 4 in., M.....	$13 00@20 00
Birch, 1 to 4 inch, M.....	16 00 25 00
Basswood.....	13 00 20 00
Walnut, per M.....	55 00 95 00
Butternut, per M.....	25 00 40 00
Cedar, flat.....	00 00@ 00 00
Cherry, per M.....	65 00 90 00
Elm, Soft, 1st.....	15 00 17 00
Elm, Rock.....	25 00 30 00
Maple, hard, M.....	20 00 24 00
Maple, Soft.....	16 00 20 00
Oak, M.....	40 00 80 00
Pine, select, M.....	35 00 40 00
Pine, 2nd quality, M.....	23 00 25 00
Shipping Culls.....	14 00 16 00
Mill Culls.....	8 00 10 00
Lath, M.....	1 75 1 85
Spruce, 1 to 2 inch, M.....	10 00 13 00
" Culls.....	4 50 6 00
Shingles, 1st quality.....	2 00 3 00
" 2nd "	1 25 2 00

Cement, etc.

Portland Cement, per barrel.....	$ 2 45@ 2 75
Roman "	2 75 3 00
Fire Bricks, per M.....	22 50 25 00

Cut Nails:

Hot-cut Am. or Can. pattern, 3 inch and above.....	2½
Hot-cut Am. or Can. pattern, 2¼ inch and above.....	2 65
Hot-Cut Am. or Can. pattern, 2¼ and 2 inch.....	3 10
Am. pattern, 1¾ and 1½ inch hot-cut	3 25
1¼ inch	4 10
Can. Pattern, cold-cut, 1¾ and 1½ inch	3 10
" 1¼ inch.....	4 60
Finishing Nails, per 100 lb. keg, 1¾	6 25
Finishing Nails, per 100 lb. keg 1½ to 1¼ inch.....	4 25
and 1¼ inch.....	$ 3 25
Finishing Nails, per 100 lb. keg, 1 inch and up.....	3 65

Paints, etc.

White Lead, pure, 25 to 100 lb. kegs.	6 00
" No. 1.....	5 25 5 50
" No. 2.....	4 75 5 00
" No. 3.....	4 50 4 75
" dry.....	5 25 5 75
Venetian Red, English.....	1 50 1 75
Yellow Ochre, French.....	1 25 3 00
Whiting, London, washed.....	0 50 0 60
" Paris, "	1 15 1 25

Oils:

Linseed, raw.....	0 53
" boiled.....	0 57
Olive, pure.....	90
" machinery.....	0 85
" extra, qt., per case..	3 00
" pts., "	3 40
" ½ pts., "	2 70
Spirits turpentine.....	0 55

ST. JOHN, N. B.

Lumber.

Spruce deals, Bay Fundy Mills.....	8 00 8 25
Spruce deals, City Mills.....	8 50 9 50
Aristook P. B., Nos. 1 and 2.....	40 00 45 00
No. 3.....	30 00 35 00
No. 4.....	22 00 25 00
Aristook P. B. shipping.....	15 00 16 00
Common.....	12 00 13 00
Spruce boards.....	7 00 8 00
Spruce scantling (unst'd).....	7 00 8 00
Spruce, dimensions.....	11 00 14 00
Pine clapboards, extra.....	5 00 40 00
No. 1.....	25 00 30 00
No. 2.....	20 00 20 00
No. 3.....	11 00 12 00
Laths, spruce.....	1 25 1 35
Laths, pine.....	5 50 8 00
Palings, spruce.....	5 50 8 00

Notice to Iron Bridge Builders.

SEALED TENDERS addressed to the undersigned, and endorsed "Tenders for Chaudiere Bridge," will be received at this office until Friday, the 5th day of October next, for replacing the present roadway of the Suspension Bridge across the Ottawa, at the city of Ottawa, with an Iron Truss Bridge, in accordance with a specification incorporated in and forming part of a form of tender, a copy of which, together with a plan of the present structure, will be supplied to Iron Bridge Builders only, on application to the Chief Engineer.

Tenders must be accompanied by plans, specifications, strain sheets of the structure proposed to be constructed, and also a description in detail of the mode or manner in which it is to be erected and put in place, as no interference with the present bridge or the traffic across the same will be permitted, except as stated in the specification; and they—the tenders—will not be considered unless made on the forms supplied, and signed with the actual signatures of the tenderers.

An accepted bank cheque, payable to the order of the Minister of Public Works, equal to *five per cent. of amount of tender* must accompany each tender. This cheque will be forfeited if the party decline the contract, or fail to complete the work contracted for, and will be returned in case of non-acceptance of tender.

The Department does not bind itself to accept the lowest or any tender.

By order, A. GOBEIL,
Department of Public Works, } Secretary.
Ottawa, 10th September, 1888.

TIMBER SALE.

THERE will be offered for sale at Public Auction, at the Court House, in the Town of Port Arthur, on Wednesday, the nineteenth day of September, at the hour of 2 o'clock p.m., the Pine Timber of not less than eight inches in diameter at the butt, on the Eagle Lake Reserve in the Province of Ontario.

CONDITIONS OF SALE:—Bonus cash at time of sale, and dues to be paid before removal of timber on all timber cut on the limit in accordance with tariff or dues of this Department, also an annual ground rent to be paid of $4.00 per square mile, and a license fee of $4.00. The purchaser to remove the timber within three years from date of sale. Also the purchaser to deliver free of charge to the Indians on the said Reserve, thirty thousand feet of lumber suitable for building houses.

For further particulars please apply to John McIntyre, Esq., Indian Agent, Fort William, or to the Department of Indian Affairs, Ottawa.

No other paper to insert this advertisement without authority through the Queen's Printer.

L. VANKOUGHNET,
Deputy of the Supt. Genl. of Indian Affairs.

Dept. of Indian Affairs,
Ottawa, 22nd Aug., 1888.

SEALED TENDERS addressed to the undersigned, and endorsed "Tender for Post Office, Goderich, Ont.," will be received at this office until Monday, 25th October, 1888 for the several works required in the erection of Post Office, &c., at Goderich, Ont.

Specifications and drawings can be seen at the Department of Public Works, Ottawa, and at the office of the Town Clerk at Goderich, Ont., on and after Wednesday, 5th September, and tenders will not be considered unless made on the form supplied and signed with actual signatures of tenderers.

An accepted bank cheque, payable to the order of the Minister of Public Works, equal to *five per cent of amount of tender* must accompany each tender. This cheque will be forfeited if the party decline the contract, or fail to complete the work contracted for, and will be returned in case of non-acceptance of tender.

The Department does not bind itself to accept the lowest or any tender.

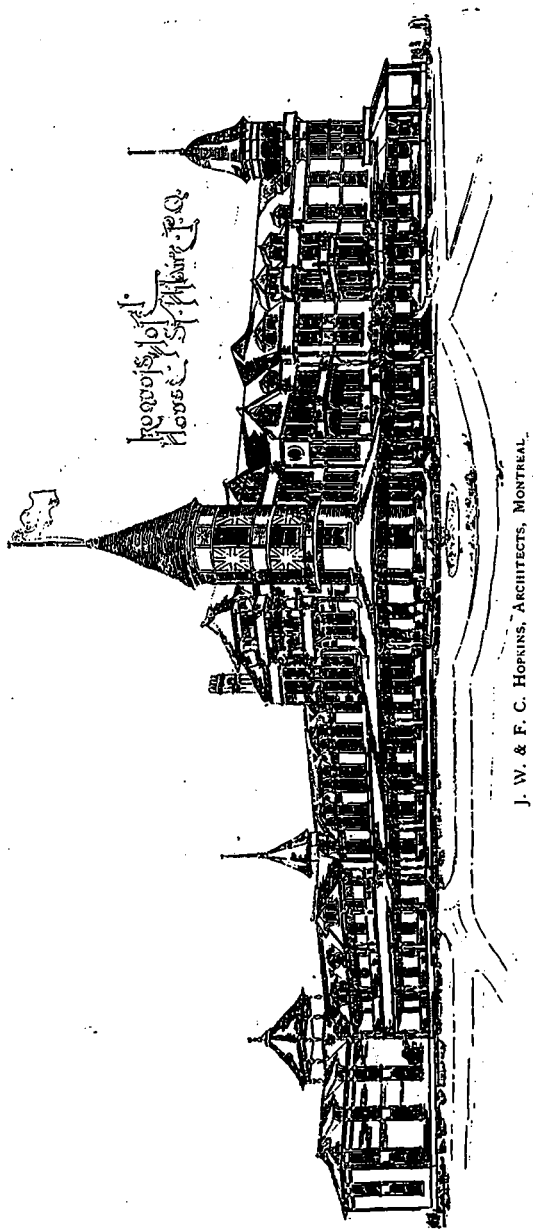
By order, A. GOBEIL,
Department of Public Works, } Secretary.
Ottawa, 31st August, 1888.

SEALED TENDERS addressed to the undersigned, and endorsed "Tenders for Elevators, &c., New Departmental Building, Ottawa," will be received until Monday, 17th September, next.

All necessary information can be obtained at this Department on and after Monday, 20th inst.

Each tender must be accompanied by an *accepted* bank cheque made payable to the order of the Honorable the Minister of Public Works, *equal to five per cent.* of the amount of the tender, which will be forfeited if the party decline to enter into a contract when called upon to do so, or if he fail to complete the work contracted for. If the tender be not accepted the cheque will be returned.

The Department will not be bound to accept the lowest or any tender. By order,
Dept. of Public Works } A. GOBEIL, Secretary.
Ottawa, Aug. 14th, 1888.



J. W. & F. C. Hopkins, Architects, Montreal.