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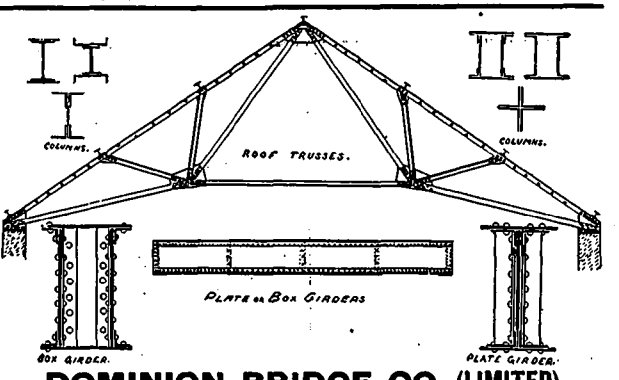

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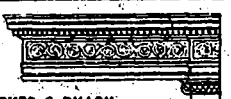
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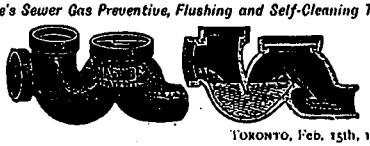

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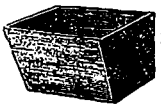

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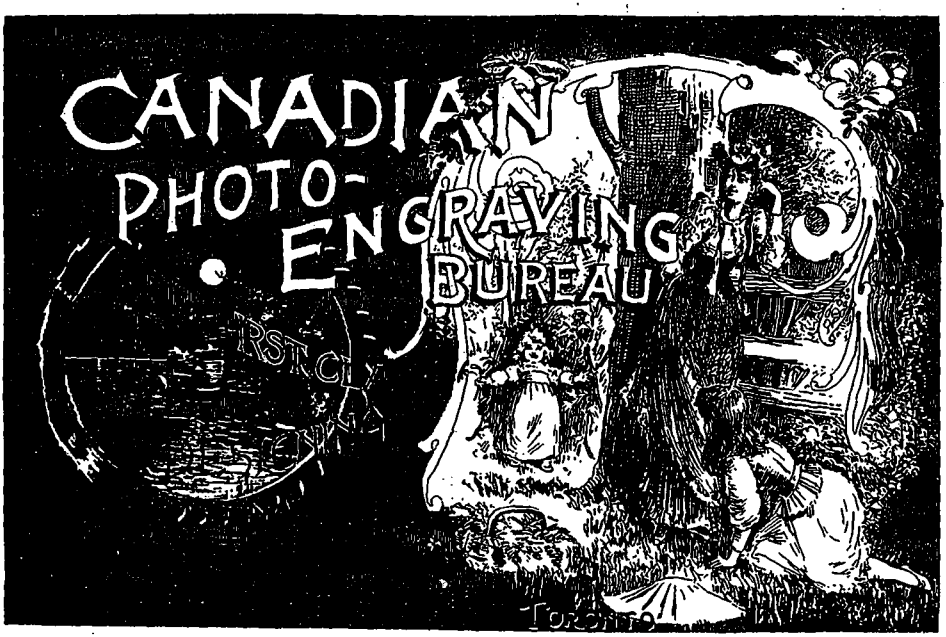

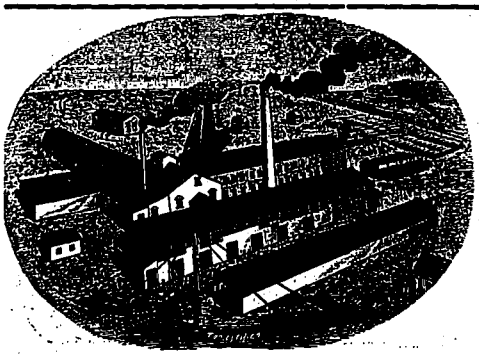

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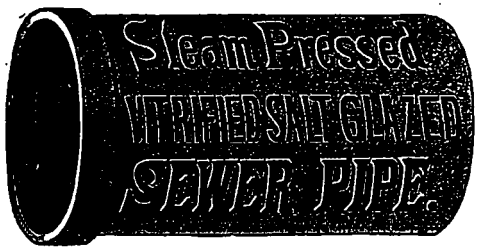

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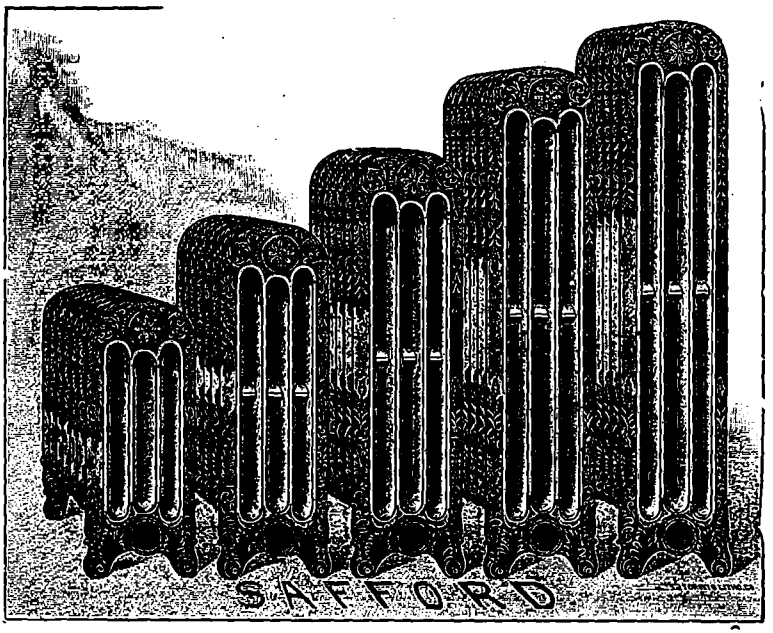

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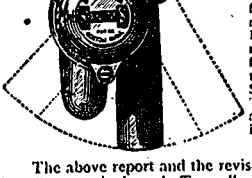
ON Thursday, March 10th, 1892, a test of the leading Traps of the country was made before a Committee of the Board of Health of the City of Rochester, N.Y., for the purpose of ascertaining their merits as anti-siphonic fixtures. The Traps tested were the S-Trap with the McClellan Vent, the Delehanty, the Sanitas, the Puro, the Bower and the Bennor traps. The first three traps were represented by their manufacturers. The last three were not so represented, but were tested under precisely the same conditions. The Committee made its report to the Board of Health, March 21st, and the following is an extract from their report:



TO THE BOARD OF HEALTH:—Your Committee begs leave to present to the Board the following report on the result of the test in relation to Trap Siphonage: The traps selected for the test were the BENNOR, the BOWER, the PURO, the common S-Trap with McClellan vent, the DELEHANTY and the SANITAS trap. These traps were all easily siphoned with the single exception of the SANITAS, which alone successfully resisted siphonage. In view, therefore, of the results of the experiments, your Committee respectfully recommends that Section 26 of the Rules and Regulations of the Board of Health of the City of Rochester, relating to Drainage and Plumbing, be revised to read as follows: All traps shall be protected from Loss of Seal, through evaporation, siphonage or air-pressure.... The SANITAS Traps may be used without venting. In case other Traps are used in connection with the fixtures above enumerated in this Section, they shall be connected with Vent pipes, in the manner hereinafter prescribed in these Regulations.

The above report and the revised rules were adopted by the Board of Health. The SANITAS is the only Trap allowed by the City of Rochester, without venting. As Architects in other cities are interested in saving their clients the needless expense and the dangerous complications of back venting, we invite their co-operation in getting the Anti-Siphon Traps allowed in their respective cities, without venting.

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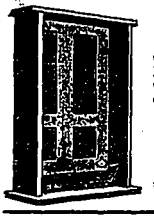

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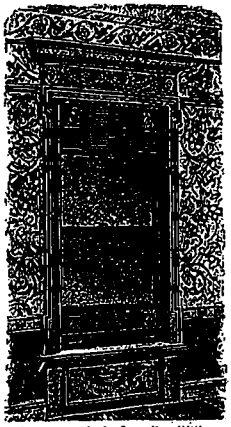

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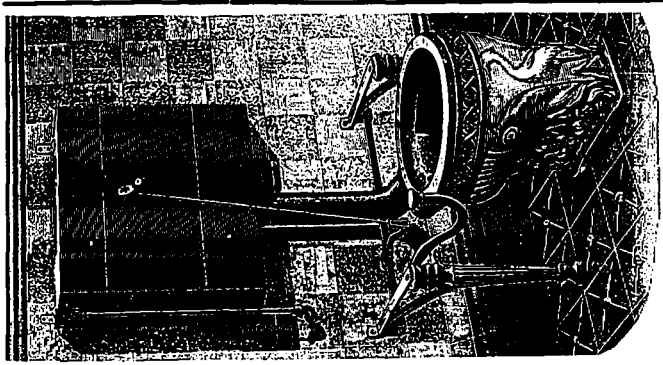

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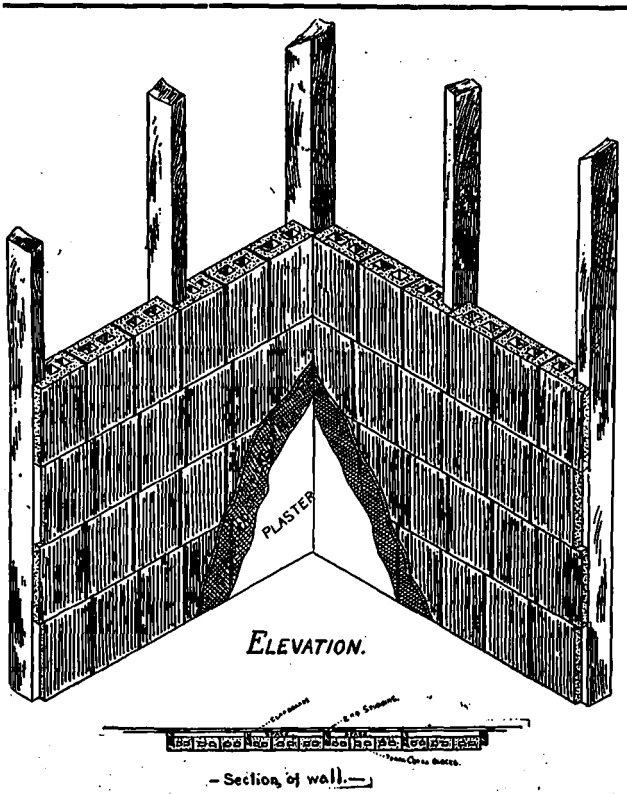

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Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

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THE twenty-seventh annual convention of the American Institute of Architects will be held at Chicago on July 31st, in conjunction with the World's Congress of Architects, referred to in our issue for May.

THE gentleman who for some years acted as quantity surveyor for many Toronto contractors, having recently removed from the city, there would appear to be at present a good opening for a competent man to set up business in this line.

IT seems to have been finally decided by the architect of the new city and county buildings at Toronto, that the buildings shall be completed by day labor, under the immediate supervision of the architect and his clerk of works. This in the case of such an important work is a new departure, and the outcome of the experiment will be the subject of much interest to architects and contractors as well as to municipal corporations and other public bodies in this and foreign countries.

A NO less personage than the general manager of the New York *Herald*, announces by advertisement that he is prepared to receive proposals for plans of construction with estimated cost of a steel office building of from twelve to twenty stories, and that he will pay the sum of $500 for the plans selected as combining the greatest advantages, and $250 for the second best. This, considering its source, makes easily excusable the like exhibitions of ignorance on the part of persons residing in less highly civilized communities to which we have frequently referred. Surely the height of absurdity with regard to architectural competitions has now been achieved.

THE largest hydraulic testing machine in the world is said to be one designed by Prof. J. B. Johnson, consulting engineer in the Washington University at St. Louis. The purpose for which the machine was designed is for use in the experiments being made by the United States Government to determine the strength of commercial woods grown in the United States. The machine can be made to exert a pressure of 1,000,000 lbs. During some recent experiments at the above named University, a piece of timber capable of sustaining 8,000 persons was crushed like an egg-shell when placed in the machine. Brick piers two feet square, columns of granite a foot square, and sandstone three feet square were ground to powder.

THE volume of building operations for 1893 is less in the city of Toronto, as compared with the first five months of 1892, by half a million dollars. Contractors who have been in business in the city for twenty years state that never within their recollection were the conditions so unsatisfactory as at present. Work is being done cheaper to-day with wages at 36 cents per hour than when years ago the rate required to be paid was but little more than half this figure. Scarcity of contracts has engendered competition to an extent which makes it exceedingly difficult for honest work to be done at a profit. Moreover, the financial stringency is such that builders complain that after having fulfilled their contracts, much effort is often required before payment can be obtained.

THE time set for the reception of designs for the improvement of St. Lawrence Market, Toronto, will expire on July 1st. We are not aware what number of architects will respond to the invitation of the Committee of the Council having this matter in charge, but from the indefiniteness which marked the

advertisements soliciting designs we should not expect to see a satisfactory result attained. The subject of the competition is an interesting one. If the Committee would arrange under proper professional advice a competition under clearly defined and proper conditions, something highly satisfactory to the corporation and creditable to Canadian architecture would perhaps be the outcome. Considering however the strenuous efforts which the aldermen have been putting forth of late for the purpose of reducing sufficiently the estimated expenditure for the current year to bring the rate of taxation down to what will be regarded as a not too extravagant figure, it may be considered extremely doubtful whether the expenditure of any money upon an undertaking of this kind will at the present time be tolerated.

PLUMBERS whether rightly or wrongly have obtained the reputation of charging well for their services. The comic papers are accustomed to tell us that to allow the plumber to gain an entrance to one's house is equivalent to placing a mortgage on the property. In view of the manner in which the plumber's desire for profits has been magnified in the press it is not a matter of wonder that in the eyes of the public he should have come to be regarded as an individual whom it is well to keep clear of. It is the duty of the plumber to seek by every means to prove that he is not the extortionist which he has so often been pictured to be. One method of doing this is to watch closely the workmen, and see that they do not charge for more time than is required to do the work upon which they are engaged. Some workmen will bear watching. On more than one occasion recently the writer has seen journeymen plumbers and apprentices stretched out on benches in the public parks, with their kit of tools for a pillow, idling away hours of precious time, which of course is duly charged up to the customer. Such practices are largely responsible for heavy plumbing bills, and for the complaints of extortion preferred against the plumber. In his own interest as well as that of his client the plumber should first personally inspect the work, see what is required to be done, how much time is required to do it, and then give his workmen to understand what is required of them.

IT was perhaps rather a curious coincidence that at the very time the members of the Ontario Association of Architects were endeavoring to get their Bill amended for the better protection of the public against unqualified practitioners or "jobbers" of the profession, there should have been brought up Bills for the purpose of making close corporations of two or three trades. It certainly was unfortunate, for when the House had listened to the arguments of the undertakers, that on sanitary grounds no one should be allowed to bury but a select few who combined for the purpose of keeping the business in their own hands; and to the suggestions that only qualified milkmen should be allowed to sell milk, it became fearful that every separate trade would be seeking to hedge itself in with special statutes. By the time the Bill of the Ontario Association of Architects was reached, the House was in a regular panic, while misapprehension thickened the air like a fog. Under these circumstances the committee in charge of the Bill saw it would be useless to present it, as members of the House were not in a fit state of mind to weigh it on its merits; they therefore decided at the last moment to withdraw it. The O. A. A. therefore remains in *statu quo*, but the work that is being done by it is of too great value to be stopped; the efficient training of capable students is a matter which should be viewed with great interest by the public, and they should be glad to know that the examinations will still be held annually as heretofore, and none will be admitted to membership unless duly qualified.

THE opening of the tenders for certain street paving contracts in Toronto has lately been a subject for a great deal of talk and not a little "flying into print," while the irregularity of the proceedings has opened the door for a great deal of grumbling on the part of "home" tenderers, not upon the merits of the case only, but upon, so to speak, a side issue, namely, the admission of a tender from an "outsider." The tenders were publicly advertised for and ordered to be sent by registered letter through the post. That being the case, to admit a tender in any other way was utterly indefensible and unfair. As is well known, a tend was submitted —"handed in"—after the appointed time, and it was this one that secured the contract. When it was found that such had been the case, the only fair way of dealing would have been to advertise again, that all might have had an equal chance. It is a very great mistake to say that it is for the good of the city that outside tenders should not be admitted. Nothing could be worse than to exclude them; they have many advantages. Tendering is likely to be more honest if not confined to a few. Combines are by this means prevented. Though we should like to see local men doing the work, yet if their prices are so high that a firm from a distance can give us work as good for a lower figure, our "home" tenderers will learn that it is necessary for them to improve their plant and otherwise to put themselves in a position to give the best work for a more reasonable price. But, while favoring the admission of outside contractors on an equal footing with resident contractors, we emphatically protest against any advantage being according to them.

DEPUTATIONS representing twenty town and city municipalities waited upon the Ontario Government a month ago to ask for legislation which would enable them to grant exclusive telephone privileges for a period of five years in return for a percentage of profits of companies to whom privileges might be given. This step was taken in view of the judicial decision recently given affirming the illegality of such action on the part of municipalities. The petition of the deputation was opposed by the legal representative of an automatic telephone company, which was not a matter of wonder. It was altogether surprising and amusing, however, to see a delegation from the Toronto Trades and Labor Council present in opposition to the granting of the required legislation. The telephone has been properly termed a natural monopoly. One efficient telephone company in a town or city is more satisfactory to the public than two or more companies would be. The existence of more than one company makes necessary the renting by every telephone user of as many instruments as there are companies in order that he may be in a position to communicate with every other telephone user. This means additional expense and trouble. It means, so far as the companies are concerned, that they will be unable to make a fair profit, and consequently will not be in a position to pay any tribute to the municipality. Thus it is that with exclusive privileges granted to one company, telephone users get a better and more efficient service, the telephone company is able to make a fair profit, and the municipality is enabled to exact in return for the exclusive privilege, a considerable percentage of the net earnings of the company with which to lighten the rate of municipal taxation. Strangely enough, there are found people like the Trades and Labor Council, who, while always complaining of their condition, will refuse to allow anybody to assist them in paying their taxes. The legislature, like a wise parent, saw where these short sighted people's interest lay, and granted the municipalities the power they sought for.

A WALK through the older business portions of Montreal convinces one that there is need of very decided improvement in the business blocks there, to say nothing of the narrowness of the streets which, if it is possible, certainly should be attended to. as to the buildings themselves, we may expect to see in the course of a decade considerable changes. Many of the warehouses and wholesale houses are very old and quite unfitted for the business of the day, and consequently the rentals they bring in are very low, and though the majority present very solid stone fronts the interior upon inspection proves to be very much decayed. The handsome blocks of the Grey Nuns warehouses off St. Sulspice street throw the buildings of St. Paul street into the shade. Unless owners bestir themselves and modernize their buildings it is not at all unlikely that the principal business firms will move west. There is indeed a slow and general movement in this direction, and it would be a good thing for the city if, for instance, a few good streets, wide and roomy, were cut through Griffentown, displacing some of the hundreds of poor dwellings that swarm here and are somewhat deleterious to the city's health. The westerly movement is only a continuation of that which has been in progress for the greater part of the century. The quaint buildings to be seen in Hochelaga were vacated in favor of the newer St. Paul street and its surroundings, and these will probably be left for still further west blocks. A

feature among the residential streets has been the "tenement houses," which are now rather losing favor. A few years ago it was difficult to get anything else in a decent locality within a mile or a mile and a half from the centre of the city, a "self contained" house being a rarity. These "tenements" were in many ways most objectionable; two families under one roof, the one occupying the basement and ground floor, and the other, with its distinct entrance and staircase, occupying the upper two floors. In this manner a large population could be accommodated in a limited area, but since this was the only means of housing oneself it had to be put up with. So accustomed do people get to circumstances that owners experienced no difficulty in obtaining high rents for "half houses," while many of the best people were willing to occupy them. Now, however, it is hardly likely more of these will be built.

AN article appeared in *The Week* lately on the subject of "class legislation," which is considered by the writer even in the cases of legal and medical societies to be so absolutely unnecessary that any such thing is equivalent to placing the public in the position of "children and imbeciles." It is stated that "ordinarily it will be sufficient that the individuals practising any profession be held strictly responsible for the results of their own incompetency or malpractice"—or in other words it is sufficient to shut the stable door after the horse has escaped. Such is not the spirit of the age, however. We go now on the principle that "prevention is better than cure," and it is surely rather late in the day to argue it is unnecessary for the law to protect the public against imposture because it *ought* to be able to take care of itself. The article in question was prompted by the withdrawal of the Bill of the Ontario Association of Architects for the amendment of their Bill passed two years ago, but the writer betrays his political bias and sneers at reform because it is fostered by those who hold different views to his own. Most of the newspapers have shewn in this connection that this so-called "class legislation" is an absolute necessity, and in the interest of the public should be extended to architects. It is not a case of closing up the profession for the benefit of a few practising architects, but it is for the purpose of enforcing those who will have the lives of individuals in their hands, to prepare themselves by careful study and prove themselves capable by rigid examination to carry out buildings in a manner that shall conduce to the safety of the occupiers. "Official inspection" and "governmental licensing" has and constantly does show itself to be insufficient, insomuch as we continually hear of the collapsing of buildings, and know to our cost of the awful effects of of unsanitary houses and factories. There is a wide distinction between trade unionism and "class legislation," of which however, the writer of the article in question is wilfully ignorant. We notice the article only because of the mischief such thoughtless words may do among those who are easily lead by what they see in print, and as we have done so we would suggest to those who may have been influenced by it to use their own common sense and ask themselves how they would feel if through the incompetency of a so-called "architect" they became injured in limb or ruined in constitution for the rest of their lives—whether they would not prefer to have that guarantee that the building they intend to occupy is well built which "class legislation" in connection with the architectural profession would give.

THE estimated expenditure of the City of Toronto for the year 1892 was $1,200,000; this year it is $1,700,000, an increase of half a million dollars. The Toronto Street Railway Company are taking advantage of this circumstance and of the demand of the citizens for a reduction of expenditure to endeavor to secure a change in their agreement with the city. They offer to put down and keep in repair the pavements on the track allowances on condition that they shall be relieved of the payment of the yearly rental of $800 per mile of track as provided for by the agreement. The citizens and their representatives in Council should have no difficulty in discerning in this proposal an attempt to repeat the act of the cunning Jacob towards his brother Esau, and should promptly refuse to give up great and permanent privileges in return for a temporary financial accommodation. The city has already completed more than two-thirds of the permanent pavements, at a cost of a little more than $400,000. It can surely finance and finish the balance of the undertaking and maintain its control of the streets. A comparatively small yearly amount in addition to the rental of $65,000 or $70,000 received from the Street Railway Company would be sufficient to pay the interest on the cost of the pavements, provide a sinking fund for the redemption of the debentures and defray the cost of repairs. So far as the latter item is concerned, it is not likely to prove a very large one. The contractors who construct the pavements will be required under a guarantee to keep them in repair for five years. A concrete foundation may be taken to last fully thirty years, which is the lifetime of the street railway agreement. In some of the busiest streets of London the surface of asphalt roadways last for fourteen or fifteen years. As there would be little traffic upon the track allowances, the surface would not require renewal for even a longer period than that mentioned; therefore, as we have said, the expenditure under the head of repairs is likely to be light. There are other than financial considerations involved, however. For years the city experienced difficulty and expense consequent upon almost constant litigation in the effort to compel the former lesees of the street railway to perform their share of the work of maintaining the streets. Under the new agreement the city has absolute control of the streets, and under no consideration should this control be surrendered.

THE NEW LEGISLATIVE BUILDINGS FOR BRITISH COLUMBIA.

THE Government of British Columbia are losing no time in proceeding with the erection of the new Provincial Legislative Buildings at Victoria. Advices from British Columbia state that the contract for the foundation has already been let at the price of $56,000. The prompt action of the government in this matter will nullify the efforts of the residents of the mainland to prevent the work from going forward and to secure the removal of the seat of legislation from Victoria. The present Government may be turned out of office by the dissatisfied electors at the approaching election, but it will then in all probability be too late to stop the erection of the new buildings.

ILLUSTRATIONS.

SECOND PREMIATED DESIGN FOR NEW LEGISLATIVE BUILDINGS AT VICTORIA, B. C.—T. C. SORBY, ARCHITECT, VICTORIA.

DESIGN FOR A BARONIAL MANSION.—ERIC MANN, ARCHITECT, MONTREAL.

DESIGN FOR A VILLAGE CHURCH.—GREGG & GREGG, ARCHITECTS, TORONTO.

DETAILS FOR A SMALL HOUSE.

ONTARIO ASSOCIATION OF ARCHITECTS.

A MEETING of the Council was held on June 1st. The report of the committee appointed to obtain legislation amending the Act of Incorporation was received, and the Council approved of the action of the committee in withdrawing the bill of amendment. A circular letter has been issued by the President to the members of the Association stating the circumstances which made necessary the withdrawal of the bill.

* * *

Application to members for the annual fee was postponed until the success or failure of the attempt to procure amendment of the bill had been settled. The Council has decided to keep the fee as low as possible for the next year or two. A schedule has been sent to all members and the Registrar hopes that as the fee is now so small there will be a prompt response that will offset the delay in making the application and that he may be able to return all fees to the Treasurer on July 1st.

* * *

The curriculum for the examinations of 1894 was approved by the Council and has been issued to all students.

* * *

As many students have changed their addresses without notifying him of the change, the Registrar would be glad to receive from every student a post card stating the student's correct address. If by this means it is discovered that any copies of the curriculum have been misdirected second copies will be sent correctly addressed.

* * *

The Registrar begs to remind members of the Association that he has copies of the form of indenture approved by the convention of 1892 and will issue them to all members who require them.

CORRESPONDENCE.

[Letters are invited for this department on subjects related to the building interests. To secure insertion, all communications must be accompanied by the name and address of the author, not necessarily for publication. The publisher will not assume responsibility for the opinions of correspondents.]

Editor CANADIAN ARCHITECT AND BUILDER.

In a recent issue of your weekly edition, the CANADIAN CONTRACT RECORD, "Data for Steam Fitters," 1st item is not correct. A gallon of water contains 276 48, and the weight 10 lbs. The gallon given in the paper is the old wine gallon and used in the States only. You had an item copied from some other paper last year in reference to the sun taking the temper out of steel tools exposed in shop windows, and I submitted it to a well known firm, makers of fine steels, and they confirmed my own opinion that it was perfect nonsense.

Yours truly,
JOHN H. BIRKETT,
Kingston, Ont.

BRICK EFFLORESCENCE.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—We have read with much interest the article in your April issue on the above subject, which is one of considerable importance to brick manufacturers, architects, builders, and every person in any way interested in building.

We must agree with you that the effect produced by the appearance of this effiorescence on the walls of fine buildings, is very displeasing, and it is most desirable that every means should be tried for its prevention.

A variety of opinions seem to exist as to the cause of the efflorescence. So far as our knowledge goes there is no process at present in use which will entirely prevent it. Under certain circumstances it is said that a certain chemical preparation if mixed with the clay will serve to prevent its appearance, but we question if it will do all that is claimed for it.

After having been engaged for twenty-three years in the manufacture of different kinds of bricks, we find that some of the buildings erected with our material will never show efflorescence, while in the case of others, the opposite is true.

There are no bricks made in America to-day which will not effloresce under certain conditions of the atmosphere (except virtified brick) but while we cannot altogether prevent it we should make use of such means as we have of checking it.

We would be glad to hear more on this important suciect from some of your readers.

Yours truly,
THE BEAMSVILLE PRESSED BRICK CO.

PERSONAL.

M. Alfred Wood, until recently a designer for Mr. David Roberts, architect, Toronto, is reported to have fallen heir to a very large estate in England.

Mr. B. O'Bryne, late inspector of works on the new legislative buildings at Toronto, is superintending the erection of the asylum for the insane at Brockville, Ont.

Mr. Milton Cathro, a prominent contractor of Toronto, was married on the 7th inst. to Miss Caroline Oswald. Mr. Cathro and his bride left shortly after the wedding ceremony for an extended visit to Chicago and the Northwest. We extend to them our congratulations and best wishes for a happy future.

A severe calamity has fallen upon Mr. Edward Burke, architect, Toronto, whose only son met with an accident which resulted in his death on the 6th inst. The lad, who was about twelve years of age, while riding a bicycle on one of the principal thoroughfares, came in contact with some material which projected from a waggon, and was thrown to the pavement with such violence as to cause a fracture of the skull, resulting in his death a day or two later. The deepest sympathy of many friends is being extended to Mr. Burke and his family in view of the unexpected and severe loss which they have sustained.

AN interesting experiment with shingles was tried a short time ago, says a writer in an English journal. A green 6-inch shingle, fresh from the saw was measured and weighed, care being taken to get both exact. It was found that it weighed 7 ounces. It was then dried and again weighed and measured. It had shrunk nearly ½ inch, while the weight had decreased from 7 ounces to 3. It was then submerged in water 24 hours, and the size had not changed a particle, while the weight had increased about one ounce, demonstrating the superiority of cedar shingles over others, as when once dry they will neither shrink with excessive heat nor pry one another off the roof in wet weather.

QUESTIONS AND ANSWERS.

[Readers are invited to ask through this department for any information which they may require on lines consistent with the objects of the paper. Every effort will be made to furnish satisfactory answers to all such inquiries. Readers are requested to supply information which would assist us in our replies. The names and addresses of correspondents must accompany their communications, but not necessarily for publication.]

W. A. F., Hamilton, writes:

Do you know of any acid or wash that will clean Ohio stone that has been built up for nearly 40 years and is very much discolored?

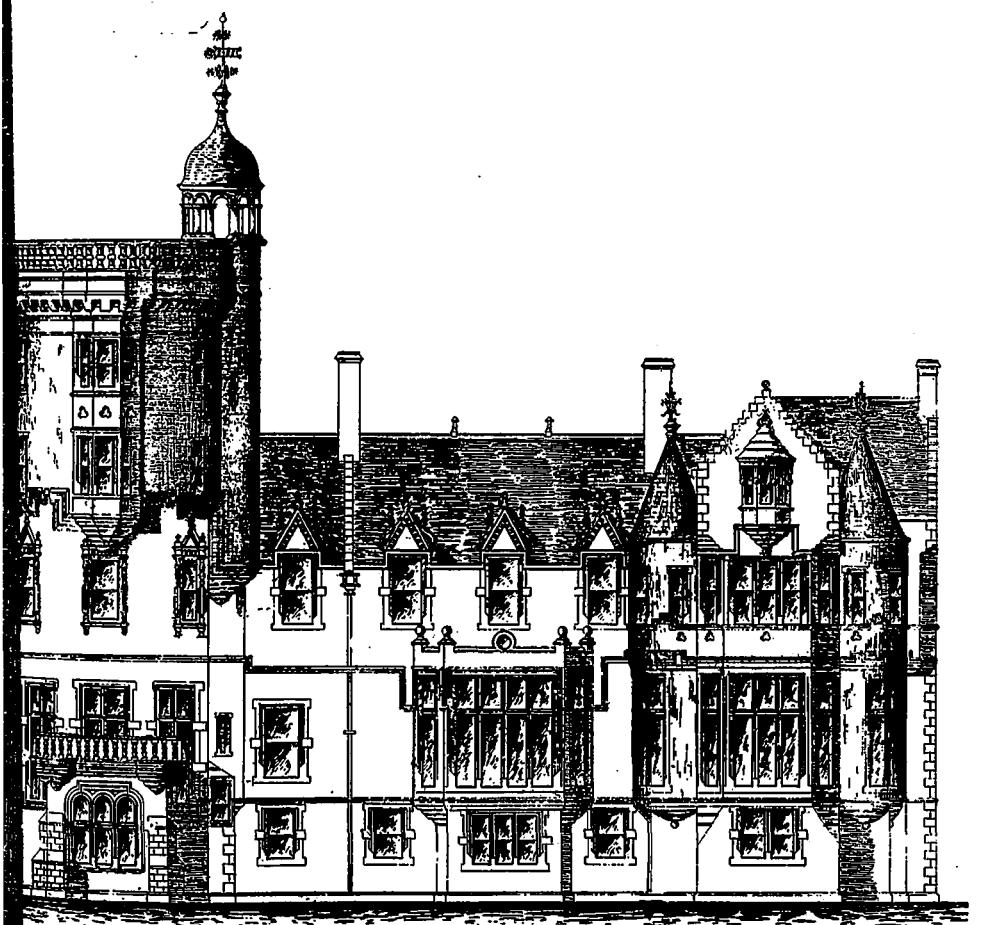
ANS.—We have no knowledge of any acid or wash which might be effectually used for this purpose, and enquiries made amongst quarry men and stone dealers of large experience met with the reply that the only satisfactory method of cleaning the discolored surface of stone is by re-dressing.

DESIGN IN METAL-WORK.

UNDER the auspices of the Technical Institution Committee, Mr. W. A. S. Benson recently gave an address on "Design in Metal-work" in the Mayor's parlor, at the Manchester Town Hall. Mr. Benson said the two primary conditions that the designer had to acquaint himself with were that metals were fusible, and that they were malleable. It was the combination of these two qualities that distinguished them from other materials so far as structural considerations went. The designer must not forget the nature of metal. As to its strength and tenacity, which enabled thinner sections to be used, that was a mechanical consideration. Then its lustre, so different from any glaze or resinous polish, altered the effect produced by the actual form, so that very different mouldings were required from such as looked well on terra-cotta or oak timber. The brilliant reflective power of polished metal gathered up the lights into points and rings and lines, so that nothing but habitual observation and experience enabled one to forecast the effect of any given form. Nor should it ever be forgotten that when the nature of the work was such that a polished surface could be maintained in high perfection, no beauty or profusion of ornament could compensate for the loss of the mirrorlike beauty of the material itself. The beautiful art of embossing deserved more than mere mention, and that none the less because the very perfection of our technique has gone far to destroy its artistic value. There was perhaps no decorative process which so directly responded to the taste of the craftsmen, which demanded so accurate a feeling for line, for surface and for relief, soft and flowing and yet precise. It was lamentable to see how a piece of genuine Queen Anne or early Georgian silver stood out from the productions of the modern smith, though they in turn were surpassed by many older works. There was no good reason why we should not produce such work again. It only wanted brains and goodwill in the purchaser and the producer. Of course there were some arts which had had their day. We no longer required Damascened sword-blades or etched-steel cuirasses, but we actually did produce, and some paid for, embossed wares by the hundredweight, and it seemed a pity it should not be good. Three elements went to design. First, the physical properties of the material; secondly, there was the tradition or history of man's mastery of it, and thirdly, the need which the product had to serve. The good designer got these three things thoroughly engrained in his mind, and the result was that his work looked as if it had grown. The road to artistic wisdom lay in external nature rather than in authority and tradition. The endless variety of beautiful lines, colors and contours to be found in the growth of vegetation, in animal forms and in the sweep of sea and land and heaven above and around us must ever remain the standards of beauty for man, and in the loving observation of these would be found the ultimate education for that seeing eye which was the final court of appeal in matters of taste.

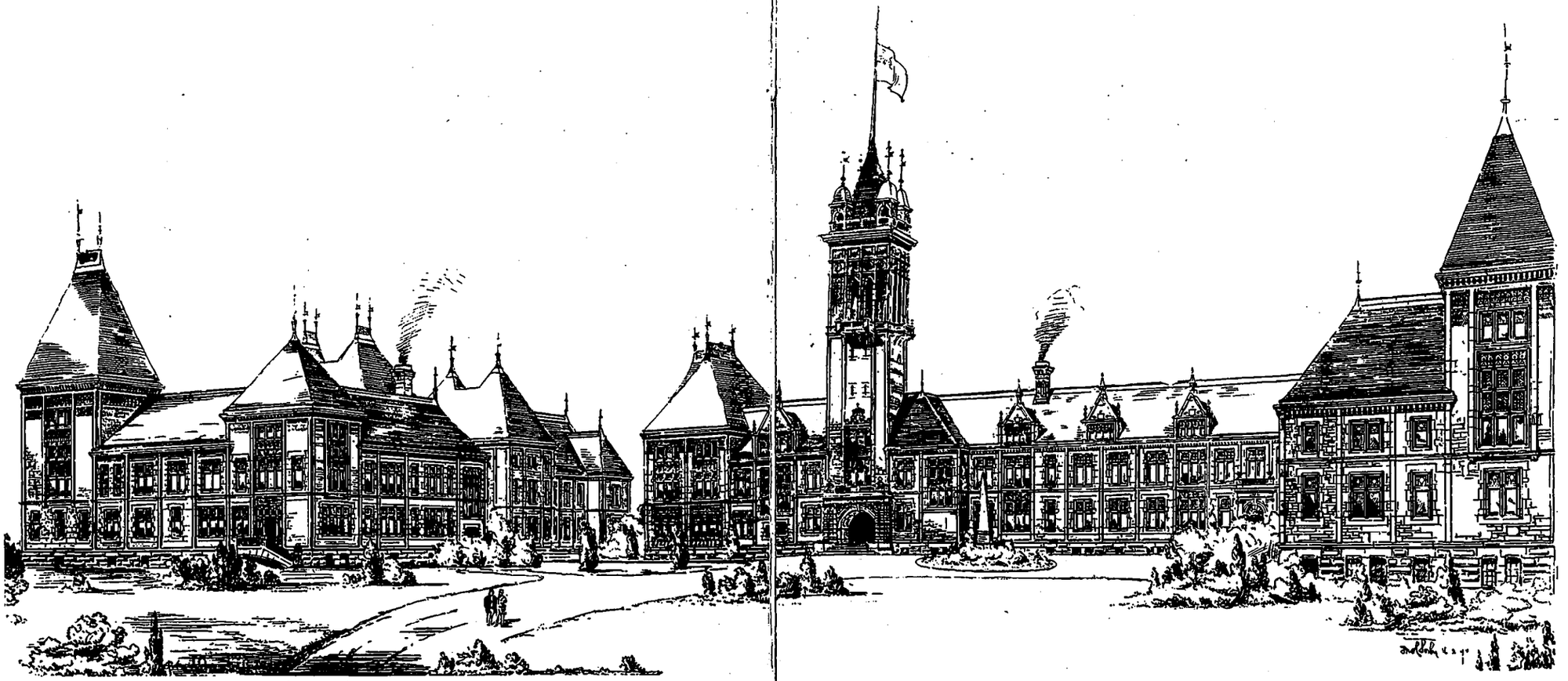
A GOOD RED DIP.—One of the best red dips known consists of the following:—6 lbs. of red oxide of iron, 3 lbs. of Cornwall stone, ¼ lbs. of borax, ½ lb. of barytes. Lynn sand can be used in the place of barytes, and scarlet red in the place of oxide of iron. In preparing the above, mix them well together, then calcine them in a pot or saggar. They can then be ground together into a slip. Take one quart of stain to ten of the clay slip, varying it according to the strength of the clay, to bring up the bright red. For large articles, paint the stain on with a brush when they are black hard-

DESIGN
ERIC



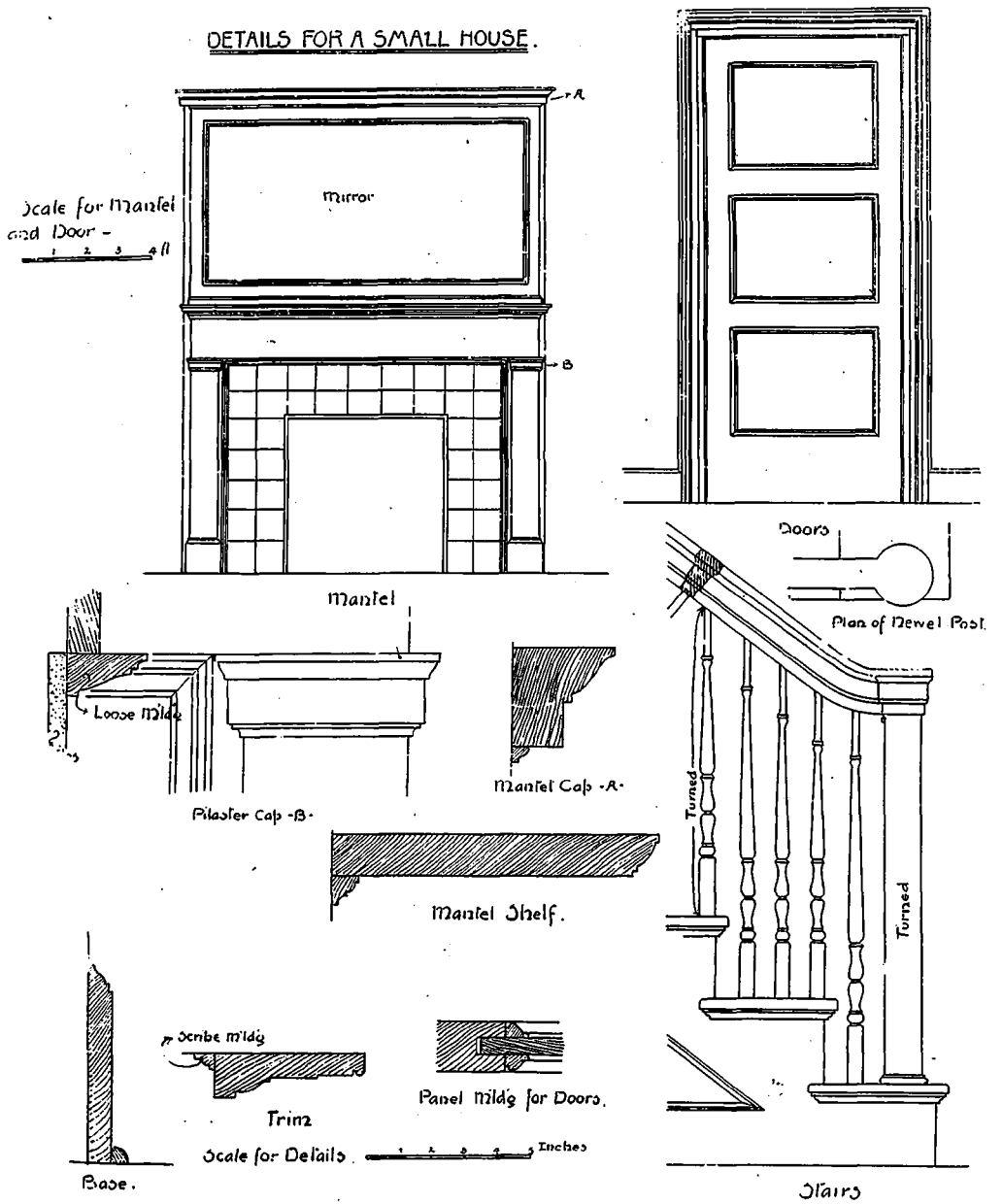
MANSION.

REAL.



Second Premiated Design for New Legislative Buildings at Victoria, B. C.

T. C. Sorby, Architect, Victoria.


DETAILS FOR A SMALL HOUSE.
Scale for Mantel and Door -
Mirror
A
B
Mantel
Doors
Plan of Newel Post
Loose Mldg
Pilaster Cap -B-
Mantel Cap -A-
Mantel Shelf.
Turned
Turned
Scribe Mldg
Trim
Panel Mldg for Doors.
Scale for Details
Inches
Base.
Stairs

ARCHITECTURAL DISGUISES.

Concealment of structural materials and forms is one of the characteristics of our modern architecture, says the *Building News*. We have passed from an age of imitation to one of disguises. Formerly it was the fashion to make stucco marble, and graining the natural figure of real wood. Even the groined stone vaults of the churches were represented by the plaster imitations, as in that of St. Luke's, Chelsea. Art apostacy could not have been carried further, for these imitations lost sight of the constructive in all the materials that were so represented or misrepresented. The jointing of stone work and vaulted masonry depended upon the whim of the stuccoist; there was a want of reality apparent which quite demoralized the art of masonry. To a like extent carpentry, and especially joinery, suffered from the customs of painting and graining everything, for good jointing and clean finish were impossible when woodwork was painted a stone color, or grained to imitate oak or mahogany.

But this era of misrepresenting constructive materials has passed away—let us hope for ever, and honesty of construction has taken its place. For a brief period the reaction from imitation led to excesses, for we remember the time when naked brick and stone walls, and unpainted woodwork were looked upon as virtues, and when everything in the shape of casing was pronounced an abomination. Church roofs and wooden benches of the 13th century simplicity and skeleton organs divested of all casings were the order of the day. We have now recovered from these bursts of enthusiasm, and are settling down to rational doctrines in architecture, as we are in church and house building. We have begun to see the difference between mere imitation and clothing; that a covering is not necessarily bad architecture. Still, there are modes and rules to be observed. The increase of new materials and appliances has brought with it a new danger which the architect has to guard against, and to which we may briefly draw our readers' attention.

First, there is the inducement to cover a plain, inexpensive material with one of greater value in the same manner as common metals are electro-plated with silver and gold. Even the ancient Romans resorted to the practice of veneering their buildings with slabs of marble. Secondly, the desire to economise has encouraged the manufacture of materials for the purpose of encasing construction. The first motive, if it does not go so far as to deceive the eye, is reasonable. Take, for example, a wall-lining: if it represents by joints and masonry a stone wall, it is certainly dishonest; but if it is merely fixed to the surface in slab-like pieces, and does not pretend to be anything more than a surface incasement, we cannot find fault with such a mode of wall enrichment. A number of projecting piers or pilasters covered by a marble veneer would be misleading and wrong in design, but a flat, superficial mode of panelling would be quite legitimate. A plaster ceiling "jointed" to represent solid voussoirs and ribs is obviously wrong in principle, and plaster in such a position should be treated as plaster panels by painted or fresco decorations, and in no case show masonry jointing. A more legitimate motive to cover a structural material is to give it a more presentable or comfortable surface, as that of encasing a brick wall with plaster or an iron column with wood, and this motive power opens a very wide field for the use of all kinds of non-conducting and artistic surfaces. But in this application there is decidedly need for caution. There is the danger of sacrificing the real structure or material, as, for instance, in making the design for an iron column suitable for a wooden or a marble one; in short, of thinking of the encasing material rather than of the actual support. In this way the sin of imitation or misrepresentation is likely to be revived if architects are not on the alert. Let us take a few examples. Iron columns and stanchions are frequently used to support the upper walls of large banking premises. These are generally incased either in plaster or wood, and we have seen these casings made to agree with the wall or dado work by covering the iron column with panelled work, making them square or octagonal, instead of honestly treating the column as a support and arranging the casing independently of adjoining woodwork. We often see walls lined by materials which are designed or manufactured to ignore the idea of a wall lining. The panels, instead of being large and square, are in a profusion of small sizes, irregular in shape, set diamond wise, intended to display the joiner's art, or the fabric itself, whatever it may be. All this is contrary to art. Marble veneers, wood parquetry, glass, keramic decoration are all open to this objection. We found fault with stucco or plaster walls painted and jointed to represent marble: an almost similar objection would apply to a casing which ignored the walls and its piers.

Ceiling decoration, including in this description skylights, the incasing of girders, and other structural things, is a disguise which is often carried to an excess. The whole construction of the floor, or roof—whatever it may be—is so far disguised by plaster or papier-mâché decorations, that the design of the roof is lost sight of. The whole structure is changed. Is this architecture? Certainly not, if we accept the definitions. Is it architectural to introduce hugh plaster coves to flat roofs carried by beams or girders, so as to give the ceiling a semi-domical shape? Imagine a large room with a flat over it made to represent inside a vault of plaster. Yet this kind of construction is often met with. We see an ugly external skylight, so covered and shaped internally by decorative adjuncts as to totally alter its constructive form; or an iron girder transformed into a flat arch or incased in plaster several feet deep to give it the appearance of an entablature supported on end columns which carry nothing. These are every-day instances of how we disguise our large buildings, town halls, city banks, and residential blocks. We do not say these sorts of materials are inadmissible when they are made to incase timber or iron, so as to present an internal covering: but let it be done honestly, without going out of the way to falsify the invisible means of construction. We can understand, for example, the incasement of an iron column or a plate-iron girder by materials which present more suitable surfaces internally, such as plaster or papier mâché, or wood and keramic decoration; but there is a right and a wrong way of doing it, both in the application and mode of decoration.

The fashion of disguising structural features, and especially iron, is developing in several ways. Some time ago iron was boldly used in columns, roofs, and other structures, and the material was left untouched. Several applications of iron are to be met with. We have, for example, lately seen an iron staircase in which the strength and rigidity of wrought iron has been given in shape of strings and risers, which are covered with wood. The iron plate string shaped to the curve of stairs is sandwiched between wood strings, the outer one of mahogany, and the risers of iron riveted to the string have tenk on the outside. The St. Paneras Iron Company have, we understand, carried out several of these staircases, one of which we described last week. There is no reason, artistic or otherwise, why strength and rigidity should not be given to these and like structures by the use of iron as a skeleton frame work. An iron frame economises space, and where curves are required, as in a wreathed staircase or in theatre-gallery construction, the value of iron is undoubted, and many of our threatres, such as the Alhambra and the Empire, have their galleries and dress circles constructed of iron imbeded in concrete. Disguises of this kind are legitimate and harmless enough if they do not assume too much, such as imitating stone or marble.

The consideration of economy in the employment of materials that take up little room and cost less than making a structure solid is sound as a principle, if only builders and architects knew what real economy was. They have often, however, confounded cheapness with it, and have encouraged the use of materials which are anything but economical in the long run, or have done what is quite as reprehensible—reduced the working strength of their iron girders and columns, and have made up their apparent size by using cheap substitutes as a covering.

All kinds of patented compositions have been introduced as concealments of structure of recent years. Wood has been manufactured into a variety of ways for wall and other linings; all manner of plastic materials have been used for similar purposes, even leather and paper and wood-fibre have been pressed and embossed into a variety of forms; Anaglypta, leather papers, and other like materials, have come largely into use in decorations, and we have substitutes for cement, stone, and marble—all of them excellent in their way—intended to cover, protect, or decorate our buildings. But, in the multitude of these inventions and appliances, there is a danger of disregarding solid, honest construction, and in sacrificing good design to superficiality, and artistic ornament to spurious and unmeaning repetition.

ELECTRIC KALSOMINING MACHINE.

ONE of the queerest applications of electricity at the World's Fair, says the *Western Electrician*, is the attachment of a motor to a machine that is doing a large share of the painting—or kalsomining, to be strictly correct—on the interiors of the great buildings. It was discovered some months ago that it would be very difficult, even with a small army of men, to do all the necessary painting by hand, and so C. Y. Turner, who is interested in the painting contract, devised an apparatus which, with the assistance of two men can apply as much kalsomine in a day as forty men with brushes. The painting machine consists essentially of an electric motor, a rotary pump, a barrel of kalsomine, a line of hose and a flat nozzel. The nozzel consists of a gas pipe about a foot long, pounded flat at one end so as to leave an opening about an inch across and wide enough to insert a sheet of card board. The pipe is attached to a long piece of rubber hose, the other end of which is dipped into a barrel of paint. A rotary pump run from a countershaft operated by an electric motor forces a current of air and particles of paint through the hose. The force of the air scatters the paint in a fine spray as it comes from the gas pipe. A painter simply seizes the gas pipe, holds it about eighteen inches from the surface he is decorating, the electric motor is turned on and the work is done. Mounting two men with this device upon a movable platform scaffolding, the work of a gang of men for a fortnight can be accomplished in one day. The motor used is of the Edison type, of five horse power capacity. The arrangement has been in successful operation for some time. The color used for the interior of the electricity building is a very delicate blue, and it is evolved out of several component parts. A deep Prussian blue is the pronounced color taken as the basis. Dutch pink, which is not pink at all, but rather a reddish yellow, is another component, and these two are tempered with white in the proportion of 360 pounds of whiting, four and one-half gallons of Prussian blue. All the great iron arches in the roof have been painted by brushes. Half a dozen men are still plying brushes above the galleries, but in other proportions of the building hose lines are playing on the woodwork. The effect of the things is very pleasing, and the work is now nearly completed.

SOME NOTES ON PEN DRAWING.

IN this age of the perfection of pictorial reproduction and of the multiplication of illustrated magazines, it is not surprising, writes Albert P. Willis in the *Architectural Era*, that architects along with other classes should endeavor to use these means of placing their work before the public. Looked at merely from a business point of view it introduces them, for better or worse, to a wider circle of critics than would ever see their products in stone or brick. This is perfectly legitimate and were the work well done nothing more need be said; but some of it is as poor in execution as anything ever honored by the name of illustration. If architecture is a fine art, as every day we are coming more and more to believe it to be, its practitioners must be seen by other lights than through an atmosphere of plans, estimates and contracts. Their works must appeal to us as things of beauty, and their illustration in the press must be artistically presented as our knowledge and experience will permit. If architects deem it necessary or tempting to illustrate at all, surely such illustration should not do injustice to the building itself.

It is admitted that the purpose of a drawing should govern its production; now as the purpose of a pen or wash drawing cannot be purely descriptive, plans and elevations could fill that office better. It must be pictorial; it must endeavor to present a building in an attractive manner; to give us a composition with the building as the central and striking feature.

Some architects, I fear, find themselves unable to do this, and perhaps, hand the work over to one of the 'T-square' trained office men, as incapable as themselves.

DESIGN FOR A VILLAGE CHURCH.—GREGG & GREGG, ARCHITECTS, TORONTO.

Let us rejoice, however, that our best firms, in such a predicament, employ an artist or illustrator and with most excellent results, as Blum's drawing of the Alcazar at St. Augustine, for instance, will prove.

If the architects want to do the work themselves they at least should become acquainted with the methods of well known illustrators. There is a score of artists in this country who in the last few years have had occasion to illustrate architecture, and while they know nothing about its technical features their numerous drawings in *Harper's*, *Scribner's* and *Century* bear testimony to the excellent work done. The means employed have been various, but none I think have given better results than pen and ink. For clean, sharp, crisp drawing and for the expression of detail it cannot be surpassed.

In looking over a list of pen draughtsmen whose works are worthy the study of the architectural student, the difficulty lies in selecting the few representative ones; Pennell, Brennan, Blum, Cox, Gregg, Meeker, Fenn and some others claim recognition. They are all able men who well know the limitations of their art. Some of them are close students and large borrowers of the methods of the great Spaniards, Fortuny, Rico and Vierge, but that should not detract from their prestige.

Pennell's illustrations of the English cathedrals, which appeared in the *Century* in 1888-89, give him the first claim for consideration. The beauty of his drawings lies in the grace and economy of line, the exquisite expression of atmosphere, the large use of whites, the sparing and concentrated use of blacks Between his and Rico's work there is a striking similarity, making allowance of course for the difference produced by the brilliant sunlight of Spain and the cooler lights of England and America. He works mostly on Whatman's hot pressed or some paper with a slight grain. This, in the reproduction, gives a slightly broken line, very good for soft effects. Ordinarily he uses a Gillot's "Crow Quill," 659, which he claims is almost a living thing, so responsible is it to the touch and so wide in its field. Occasionally, however, we find him using other and heavier pens, to suit the occasion. His lines are broad and open with little cross hatching. The forms are defined either by outline without shade or shade without outline; only occasionally combining the two. The very scarcity of his blacks makes their occurrence extremely telling. Texture and local color are almost eliminated, and the general effect seems to be gotten by the juxtaposition of a great variety of grays. When he has occasion to use single outlines he is careful to break them frequently.

These, as nearly as can be formulated are Pennell's methods. At times he forsakes them to try new things; occasionally we find him using lithographer's crayon to scumble in his shadows at other times he combines the pencil with the pen. But whatever the experiment, whatever the work, we will see the same masterly knowledge of drawing and chiaroscuro, the same patient toil over detail which yet does not obtrude itself. It may be interesting to know that Pennell seldom uses the camera, sketching directly from the building. Though we have been unable to print any of Pennell's works, through the kindness of the *American Architect* and the *Engineering Record* we are enabled to show drawings by two men, Gregg and Meeker, whose methods differ so radically from each other and from Pennell's as to be extremely interesting and instructive. The former is a jurist, if such a term may be applied to the art. He discards local color and texture, and seldom uses the outline without breaking it into dots, and never cross lines. The shade lines which are apt to be slightly wavy, by their direction give no clue to the inclination of the surface. Gregg has certain well defined effects in view, which he attains in the most direct manner at the expense of all else. His work is open and devoid of tricks, his results are soft and clear.

The second artist, Meeker, while working with more feeling for artistic effect, yet has not that singleness of purpose which characterizes Gregg in his work. The latter discards everything but mass and shadow, the former pays little attention to cast shadow, but devotes himself to the material of his walls, the stone jointing, etc. His darks are used rather to show windows, emphasize the carving and to indicate difference in color than to give the larger elements of the building their proper relief. The different materials used also make considerable difference in the result. Gregg uses an Esterbrook or Gillott pen, making a medium line, whose direction is studied. Meeker seems to use a "Crow Quill" on a perfectly smooth paper, which allows the pen to wander over it with perfect freedom. With him the

direction is of no consequence. Both men confine themselves more to one kind of pen than Pennell does. Meeker's work in the ensemble, though lacking the modelling of Gregg's, still has more snap and life, especially his grass and trees. The conflict of aims in his drawings is the result, I think, of the too frequent use of the photograph. There are other treatments with the pen, such as are used by Wilson Eyre or Kirby, but the work of the latter appeals to me more as outline drawing, as architectural suggestions or memoranda, than as finished drawings.

There is one Englishman, Herbert Railton, whose work may be studied with profit. His style is peculiar to himself. There is a sparkle about it which in the single drawing is charming, but, alas, when seen in the aggregate this very excess of glitter becomes monotonous. His frequent and unsystematic use of blacks, which he evidently put in with a toothpick or brush, and his spotty and broken lights, are in the mass unpleasing. The rapidity with which he works gives a peculiar hooked radiating character to his lines, and this stroke does yeoman service for walls old or new, surfaces smooth or rough, grass or trees. If the effect is not dark enough he does not hesitate to crossline, being careful to subordinate the second series of lines to the first, thus keeping a predominating tendency to the lines. In this I think he has the advantage over Pennell.

In these few remarks I have made no effort to go deeply into the subject of pen illustration. This has been so ably done by Pennell in his book on pen draughtsmen that it seems superfluous to attempt to do more.

WHAT IS A CONTRACT?

A contract, says *Metal*, is a deliberate engagement between competent parties, upon a legal consideration, to do, or not to do, some act. In its widest sense it includes records and specialties, but the term is usually employed to designate only simple or parol contracts. By parol contracts it is to be understood, not only verbal and unwritten contracts, but all contracts not of record nor under seal. This is strictly the legal signification of the term contract, inasmuch as that reciprocity of consideration, and mutuality of agreement, which are necessary to constitute a parol agreement, are not requisite in obligations of record and in specialties.

Contracts are divided into three classes: first, contracts of record, such as judgments, recognizances and statutes staple; second, specialties, which are contracts under seal, such as deeds and bonds; third, simple contracts, or contracts by parol.

A parol contract, then, is any contract not of record, nor under seal, whether it be written or verbal. Certainly the facility of proof are all the advantages gained by reducing such an agreement to writing; the liabilities of the respective parties are not changed. Every contract is founded upon the mutual agreement of the parties, and that agreement may be formally stated in words, or committed to writing, or it may be a legal inference, drawn from the circumstances of the case, in order to explain the situation, conduct and relations of the parties. When the agreement is formal, and stated either verbally or in writing, it is usually called an express contract. When the agreement is matter of inference and deduction, it is called an implied contract. Both species of contracts are, however, founded upon the actual agreement of the parties, and the only distinction between them is in regard to the mode of proof, and belongs to the law of evidence. In an implied contract, the law only supplies that which, although not stated, must be presumed to have been the agreement intended by the parties. The law always presumes such agreements to have been made, as justice and reason would dictate, and assists the parties to any transaction to an honest explanation of it. But a promise will not be implied, contravening the express declarations to the party charged, made at the time of the supposed agreement, unless such declarations be at variance with some legal duty, and then the law will imply a promise to perform that duty.

Wherever a party avails himself of the benefits of services done for him, although without his positive authority or request, the law supplies the formal words of contract and presumes him to have promised an adequate compensation. So also where a person engages to do any work or perform any service, he is understood to engage that he has sufficient skill and ability to fufil his contract, and also that he will use all the means necessary to accomplish it. So, also, if a man having a title to certain property silently permits another to deal with that property as his own, in all transactions between such person and others, acting in the confidence that the property belonged to him, the true owner would be bound.

Thus, if a man stand by and knowingly sees his own property sold and either encourages the sale or does not forbid it, the law implies a contract between him and the vendee, and accredits the actual seller as his agent; and this rule obtains on the clear ground that if one of two innocent persons must suffer a loss, where one had misled the other, he who has been the cause of the loss ought to bear it. But in all cases, the circumstances must be such as to unequivocally imply a contract between the parties, and evidence may be given to rebut such a presumption. Nor is this rule restricted to cases where the true owner of property knowingly permits another to make sale of it, without interference or objection, but it extends also to cases where a party, being ignorant that he has any title, does or says anything in the premises which actually misleads the purchaser to his injury; for however innocent he may be of a fraudulent intent, he ought to suffer the consequences of his own act, whatever loss or injury must accrue to one or the other party. Yet, if his mistake would not occasion absolute injury, or did not operate to deceive, he will not be bound thereby. So whenever there is a uniform usage in a particular trade the parties are presumed to have contracted in reference to such usage, unless it be expressly excluded by them, or unless it be inconsistent with the actual terms of their agreement. It must, however, be a general usage, or a universal custom which is brought home to the knowledge of the party, or it must be the special course or habit of dealing of one of the parties, recognized and assented to by the other, or no such presumption will arise. In such cases, the usage is understood to form a portion of the contract, and to exclude a rule of law inconsistent with it.

If, in a written contract, the words of recital or reference manifest a clear intention that the parties shall do certain acts not expressly stipulated, the courts have therefrom inferred a covenant to do such acts and have sustained actions of covenant for their non-performance, in like manner as if the instrument had contained express covenants to perform them.

HOUSE MOVING.

THE *Scientific American* says:—The ferry-house located at the Brooklan terminus of the thirty-ninth street ferry, between the Battery in New York and South Brooklyn, is a brick structure 52 by 110 feet. This building was located at the foot of Thirty-ninth street. The Brooklyn City Railroad Company required increased facilities in that part of the city, and in consequence of this the ferry-house was removed from its original site 150 feet westward and 25 feet northward, and when the job is completed the building will stand 17 inches lower than it stood on the old site. This work was done in about one month, without injury to the walls, and at much less expense than would have been involved in tearing down and rebuilding.

The building was placed on a rigid framework and its walls were shored and braced by tie rods and cross timbers, and it was moved on ways consisting of a framework of heavy timbers provided with diagonal guides which caused the building to move sidewise as well as endwise, the frame upon which the building rested being provided with shoes sliding diagonal guides. The abutments against which the moving screws rested were heavy timbers secured to the ways by means of chains. After the screws which abut upon the timbers had been run out their full length, they were returned to their original positions and the timbers moved forward and again made fast, when the operation was repeated.

This job was done by B. C. Miller & Sons, of Brooklyn. N. Y., who moved the Brighton Beach Hotel bodily in 1889, after the damaging encroachment of the sea on the beach. The building was 465 feet long and 150 feet deep, three storeys high and weighed 5,000 tons. It was moved 239 feet back of its original position upon 112 platform cars by means of six locomotives.

The appointment of a building inspector is being advocated by one of the Kingston aldermen, who states that at present buildings are sometimes erected of fragile material and weak construction.

STRENGTH OF CONCRETE.

A PAPER recently read before the Society of Architects, London, by Mr. H. W. Chubb referred to the use of concrete as a material in building fireproof structures. The specimens of concrete which Mr. Chubb mentioned as having been tested by Mr. J. J. Webster, M. I. C. E., had been specially prepared. The following table shows their composition, together with the results which were obtained :

Nature and Proportions of Materials in Concrete Briquettes.	Average weight per cubic foot.	Breaking weight per square inch at 60 deg. Far.	Breaking weight per square inch after being heated and quenched.	Average loss per cent. of original strength after heating and quenching.
	lbs.	lbs.	lbs.	per cent.
Neat Portland cement	124.6	554.6	117.2	60.8
1 part cement, 1 part sand	120.9	448.0	93.0	80.0
1 part cement, 3 parts sand	111.2	100.8	18.7	81.4
1 part cement, 5 parts sand	109.7	74.6	15.0	79.8
1 part cement, 4 parts iron furnace slag	165.08	108.1	23.06	69.3
1 part cement, 1 part pumice stone	64.8	94.58	38.3	59.5
1 part cement, 4 parts broken fire-brick	95.04	84.4	30.5	50.9
1 part cement, 4 parts coke breeze	71.65	69.9	39.06	57.1
1 part plaster of Paris, 4 parts broken fire-brick	89.6	66.8	10.3	75.0
1 part plaster of Paris, 4 parts pumice stone	55.6	57.4	3.4	94.7
1 part plaster of Paris, 2 parts furnace slag	148.0	223.3	6.9	96.8
1 part plaster of Paris, 2 parts broken fire-brick	106.9	167.5	15.7	90.0

DOORWAYS.

A VERY important feature of the house in more than one respect is the doorway. It is in fact a most prominent part of the structure, says *Trefoil*, and only too many are the possibilities between making it a work of art like the masterpieces of Ghiberti on the Baptistery in Florence, or leaving it a mere aperture in a monotonous expanse of wall, which reminds us forcibly of the hole in the fence or the crude entrance of a tent, from which the door doubtless took its origin.

In many instances the entire effect of an otherwise pleasing structure is hopelessly marred by the treatment accorded the doorway, and more than one facade is reduced to the commonplace by the utter neglect or the architectural decoration to which the door, if any part of the building, is most legitimately entitled. To the eye, the doorway and the roof line are the critical points in a building, and the good treatment of either will do much toward remedying the defects of a poor design.

It will hardly do, however, to blame the architects for the stagnation of public taste for half a century in regard to architecturally meritorious doorways. In this country, particularly among a class of owners that, above all others, might have done so much to bring about the much needed revolution of an architectural sense, art has been subjected to rules and restrictions that might aptly apply to card etiquette, but the effect of which upon architecture can only be deplored. When a doorway essentially ugly has come to be considered the only proper thing by a vast number of people in the community, the era of the studied commonplace can be said to have reached the climax.

This was pre-eminently the case some twenty years ago. Our revolutionary forefathers in this respect had better taste; they followed the classical ideals they had with a zeal that gave us, if not a new style, at least a strong impulse toward something good. The decadence was, however, rapid. In 1850 doorways were mere holes in the wall, and thereafter followed a perio l of barren ugliness and dull respectability, an era of unredeemed bad taste, from which the newer departures in architecture, and its more general appreciation, are beginning to save us.

DECORATION AND FURNITURE

FLOWER DECORATION.

DECORATION by means of natural flowers has from time immemorial been recognized as the most beautiful and effective method it is possible to conceive, the one and only disadvantage it possesses being its necessarily temporary character. It is this feeling that lead to the introduction of floral design cut in solid materials, of which we have such exquisite examples in the architecture of the thirteenth century. But all attempts at live flower decoration heretofore carried out appears to be eclipsed and thrown into the shade by the display in the Assembly Hall of the World's Fair upon the occasion of its formal opening by the President of the United States. A model of the Washington capitol-made of *white flowers* was the central feature, the grounds in which the building stands being represented by real plants in miniature. The stage of the hall was banked up with palms and cut flowers while the head stairway was covered with a drapery of white and gold, festooned with smilax and tiny lamps. Pillars were traceried with smilax and flowers, while overhead canopies of white and gold hung with flags completed the gorgeous and tasteful scene. It is said that $10,000 was expended in this decoration of an hour.

Says "Goth" in the *Building News*: An art-critic complains of our modern stained glass. Greatly as we have progressed, there is yet a vast gulf between the effect of some old glass and that produced to-day. It may be that, like wine, stained glass improves with age: on many tints there can be no doubt that time has a mellowing effect. The quality that always seems to me to be wanting nowadays is the sparkle and scintillation of old glass such as we find in some of the Continental cathedrals. I suppose that the real secret of the matter is that we cannot get away from the idea that a stained-glass window is, and should be, a picture; whereas, considered sa a decorative feature, it should be subordinate to the architecture and contribute to the general effect. Then there are two schools—on the one hand the advocates for dark effects and heavy coloring in broad masses, and on the other the more delicate style in which light and light tints play an important part, and the color is concentrated into little points with jewel-like effect. Considering the technical difficulties of the art, there is no need to despair, for, relatively, it has advanced as much as other handicrafts.

USEFUL HINTS.

A correspondent of the London *Ironmonger* furnishes a recipe which is easily tried and probably efficacious. He writes as follows: People often want to know how the steaming of windows can be obviated. I am told it is done in these parts with a solution of glycerine. Fifty-five grammes (about 2 oz.) of glycerine dissolved in one litre of diluted alcohol (about two-thirds alcohol and one-third water). After this solution has become quite clear moisten linen or leather with it and rub the window on the inside. It keeps the glass clear from freezing and steaming.

RESISTANCE OF MASONRY ARCHES.—The Austrian Society of Engineers and Architects is now engaged in a series of very important experiments on the resistance of masonry arches. Sufficient is now known of the strength and elasticity of stone and cements, says *Engineering*, London, to render the theory of the elastic arch applicable to masonry arches which have been and still are designed purely by empiricism, so that in many cases very little is known as to the actual stresses carried by the structures, and there is no doubt that the factor of safety is in many cases excessive. The experiments to be carried out will afford data as to the permissible working stresses, and the design and arches will therefore be simplified. One group of experiments will be devoted to researches of the elastic and resistant properties of the materials to be used in constructing the arches to be experimented on

DURABILITY OF TERRA COTTA.—During the discussion following the reading of certain papers on terra cotta before the Royal Institute of British Architects Sir Henry Doulton said: "As to its durability, I may perhaps mention two examples which occur to me as within my own observation. The figure of Britannia on the top of the Exchange at Liverpool was made a hundred years ago at Lambeth, and also the figure of St. John Crosby, which was made, when I was a little boy, at Lambeth. These, especially the figure of Brittania, though exposed to adverse influences, are as perfect to-day as on that of their erection. There happened to be two large statutes on the triangular piece of ground opposite St. Thomas Hospital, brought here recently, also made at Lambeth, which are ninety-six years old, and which have been quite untouched by time. There is, of course, terra cotta and terra cotta; but there is no reason why terra cotta should not be absolutely imperishable.

MANUFACTURES AND MATERIALS

QUALITY OF ROOFING SLATES.

THE following are the general conclusions reached as the result of a series of tests of roofing slates, as given by Mr. Mansfield Merriam at the September, 1892, meeting of the American Society of Civil Engineers:

1. Slates containing soft ribbons are, by common consent, of an inferior quality, and should not be used in good work.

2. The soft roofing slates weigh about 173 pounds per cubic foot, and the best qualities have a modulus of rupture of from 7,000 to 10,000 pounds per square inch.

3. The stronger the slate, the greater is its toughness and softness, and the less is its porosity and corrodibility.

4. Softness, or liability to abrasion, does not indicate inferior roofing slate, but on the contrary it is an indication of strength and good weathering qualities.

5. The strongest slate stands highest in weathering qualities, so that a flexural test affords an excellent index of all its properties, particularly if the ultimate deflection and the manner of rupture be noted.

6. The strongest and best slate has the highest percentage of silicates of iron and aluminum, but is not necessarily the lowest in carbonates of lime and magnesia.

7. Chemical analyses give only imperfect conclusions regarding the weathering qualities of slate, and they do not satisfactorily explain the physical properties.

8. Architects and engineers who write specifications for roofing slate will probably obtain a more satisfactory quality if they insert requirements for a flexural test to be made on several specimens picked at random out of each lot.

9. Although the field of this investigation is probably not sufficiently extended to fully warrant the recommendation, it is suggested that such specifications should require roofing slates to have a modulus of rupture, as determined by the flexural test, greater than 7,000 pounds per square inch.

THE KENT FREESTONE QUARRY.

The Moncton, N. B., *Times* states that the formation of a joint stock company is in contemplation to develop the Kent freestone quarry situated on the Moncton and Buctouche railroad. This quarry, opened a few years ago, consists of 30 acres, on the bank of the Cocagne river. The depth of stone to the level of water in the river where the quarry is now being worked is 60 feet, and further up the stream the quarry shows a solid body of stone 125 feet deep. Lack of capital has up to the present hindered the proper development of this quarry, as well as some others in the same province.

The capital stock of the Gurney Foundry Co., Toronto, has been increased from $40,000 to $350,000.

The business of the Toronto Furnace Co. will in future be carried on by the Toronto Furnace and Crematory Co., which has lately been incorporated with a capital stock of $40,000.

The Steel Clad Bath and Metal Co., of Toronto, who a year or so ago established a factory for the manufacture of the specialties at Detroit, Mich., have lately shipped to England the necessary plant for a factory which it has been decided to establish there. This is certainly an evidence of commendable enterprise.

CREDIT VALLEY BROWN STONE

From Carroll & Vick's No. 6 Quarry, Credit Forks, Ont.

SANDSTONE, fine grained, reddish brown. Contains quartz, and a little felspar and mica. The stone is in beds of four feet and under, and can be handled in pieces up to five tons. Quarry 300 yards from Railway.

Specimen.	Section under Pressure	Height.	Crushing Load.	Crushing Stress per sq. in.	Average Crushing Stress per Square Inch
	Ins.	Ins.	Pds.	Pds.	Pds.
A	.....	.....	.....	.....	
B	2 7/8 × 3	2 7/8	131,000	15,188	
C	2 15/16 × 3	2 7/8	130,000	14,751	
D	3 × 3	2 7/8	133,000	14,777	14,905

14,905 pounds is the average crushing strength per square inch of our Credit Valley Brown Stone.

The highest standard of test attained by any pure Sandstone in America.

IN confirmation of the facts above stated, we have pleasure in directing your attention to the accompanying table, showing the result of the test of our stone, in connection with the series of tests of building stones conducted in 1892 at the School of Practical Science, Toronto, under the direction of a committee of the Ontario Association of Architects.

By referring to the results of the tests above mentioned, it will be seen that the average crushing stress of the majority of Canadian and American sandstones is far below that of ours, the difference in our favor ranging *from 75 to 50 per cent.*

The Credit Valley Brown Stone, owing to its modest tone, harmonizes beautifully with red or cream colored brick.

It has been reported that there is difficulty in obtaining Credit Valley Brown Stone. To correct this mistaken notion, we wish to state to architects and the public that we have 40,000 cubic feet of stone ready to ship on the shortest notice, which can be followed up with an unlimited supply. Last year we made extensive additions to our plant and opened up new quarries and mines, and will supply promptly all orders given to us or our agents.

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Quarries: Credit Forks, Ont. Office: 84 Adelaide St. West, TORONTO.

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PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.

The SEMI-ANNUAL EXAMINATION for admission to study and for registration will be held in the rooms of the Association, No. 186 St. James Street, on

TUESDAY AND WEDNESDAY,

the twenty-seventh and twenty-eighth days of July, at 10 a.m. each day.

Intending candidates are required to give one month's notice to the undersigned. The fees are:

For admission to study..... $10.00

For registration..... 25.00

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USEFUL HINTS.

BOARD MEASUREMENTS.—Boards are sold by superficial measurement, at so much per foot of an inch or less in thickness; adding one-fourth to the price for each quarter of an inch thickness over an inch. It sometimes happens that a board is tapering, being wider at one end than the other. When this is the case (if it be a true taper), add the width of both ends together, and half their sum will express the average width of the board. Again, if the board does not taper regularly, take the following course to find its area:

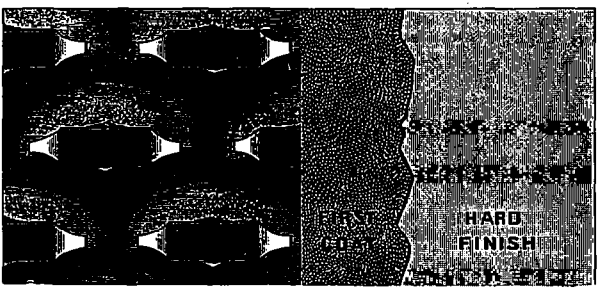
1. Measure the widths at several places equidistant.

2. Add together the different breadths, and half the two extremes.

3. Multiply this sum by the straight side of the board and divide the product by the number of parts into which the board was divided. It is usual in measuring rough lumber, to pay no attention to fractions of an inch in the width of the stuff. If the fraction is more than half an inch it is counted as an inch; if less than half an inch it is not counted. Thus, a board 10¾ inches wide would be measured as 11 inches wide; if only 10¾ inches wide the board will pass only as 10 inches.—*National Builder.*

PAINTS AND SHINGLES.—The *Timberman* very wisely remarks that it has always seemed singular that in the use of paint to preserve wood exposed to the weather, the fact that a shingle roof was omitted from the catalogue was invariably the rule. This idea of oversight was one of the things in which custom becomes habit, and because every one else did so, all the rest followed suit. It is safe to presume that the custom of leaving the shingle roof unpainted originated in its angular form being less exposed to the after effects of rain and snow. A little thought will show the folly of such a conclusion when remembering the frail nature of a shingle and the slight fastening it has. If paint would be useful to any weather exposed surface it would certainly be so on the roof. The fact goes without telling, and in the present style of suburban residences, the roof receives its share of paint along with the rest of the building, thus at once combining the useful with the beautiful. It is certainly singular that painting of roofs has not always prevailed, and it adds much to the finish and character of the building to see the roof painted. When the thin, slender nature of the shingle is taken into consideration, it will be plain to every one that sun cracks will easily go through the shingle, and to that extent render it worthless. The only way to overcome this is to paint and always keep the shingles painted.

Hayes' Patent Steel Lath



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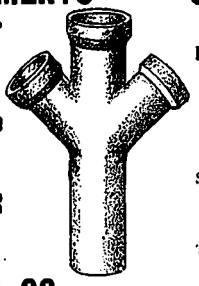

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Average tensile strength of 25 to 50 briquettes each, 1 in. square, made of neat Cement consistency of mortar.	7 days	371.04	319.04	192.96	357.12	303.52	93.12	54.20	69.60	23.52	
	30 "	523.70	445.96	242.32	523.44	447.00	190.80	130.28	111.72	55.32	
	3 months	519.12	549.20	310.84	551.84	448.20	349.56	257.88	214.00	134.24	
	6 "	654.52	626.20	394.76	589.72	531.20	308.24	326.40	311.80	178.68	
	9 "	666.16	646.36		629.36	601.20	406.88	353.56	370.20	199.76	
	12 "	686.76	648.60	not given.	644.00	615.96	428.28	367.96	383.12	221.00	not given
Average tensile strength of 25 to 50 briquettes of each Cement, 1 in. square, neat Cement rammed in mould.	7 days	376.12	467.70	395.80	434.72	343.32	196.18	206.92	172. 2	69.92	
	30 "	482.22	512.50	379.40	532.40	423.88	271.08	131.02	164.16	60.77	
	3 months	537.94	541.30	420.60	688.20	510.24	417.58	314.76	293.92	153.16	
	6 "	614.74	623.40	427.60	636.84	542.88	472.16	393.36	400.32	230.82	
	9 "	637.74	611.12	408.20	648.52	546.08	484.84	389.98	389.32	264.09	
	12 "	649.24	628.40	446.12	640.56	533.12	508.86	456.32	390.03	278.82	not given

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		60 days.	*270.40*	240.10	187.	
		90 days.	*297.50*	248.80	193.10	
	Test with 8 per cent. salt in water for tensile strain.	30 days.	*189.60*	172.40	110.80	
		60 days.	*201.40*	183.10	115.50	
		90 days.	*243.60*	224.40	130.00	
	Test with 2 per cent. salt in water for tensile strain.	30 days.	*396.90*	160.20	126.80	
		60 days.	*203.50*	183 50	138.	
		90 days.	*217.10*	230.80	150.40	
	Test with 12 per cent. salt in water for tensile strain.	30 days.	*323.10*	164.40	197.60	
		60 days.	*331.70*	175.80	207.30	
		90 days.	*344.30*	189.30	218.50	

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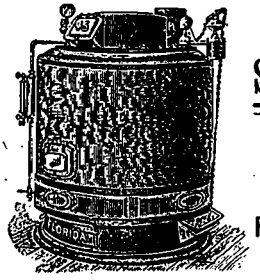

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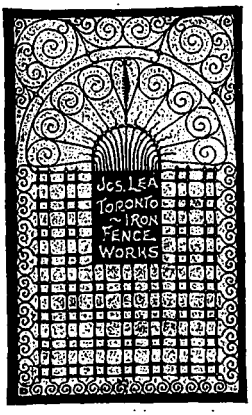

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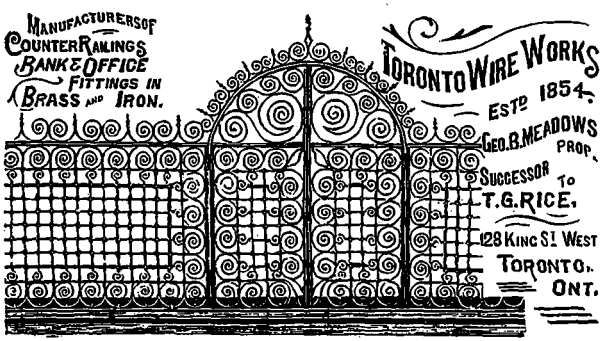

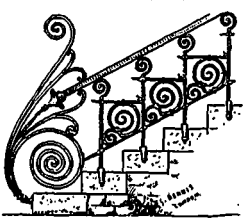

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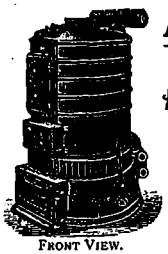

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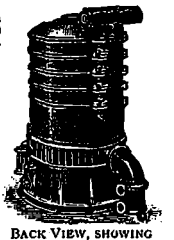

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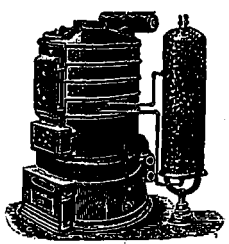

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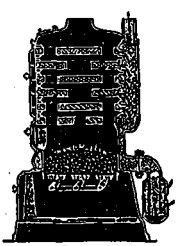

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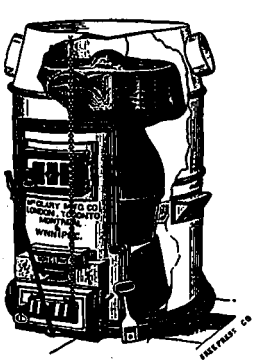

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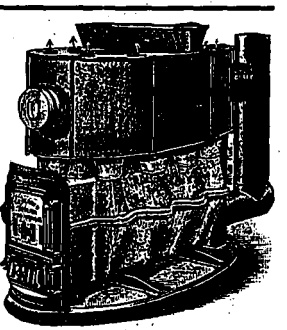

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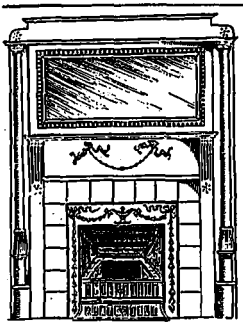

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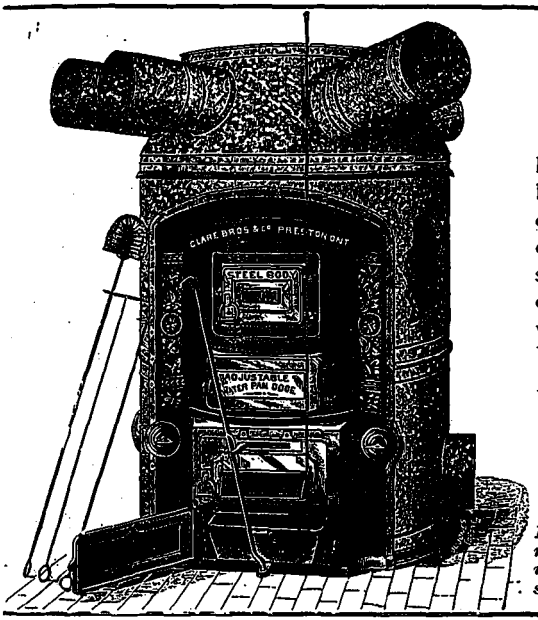

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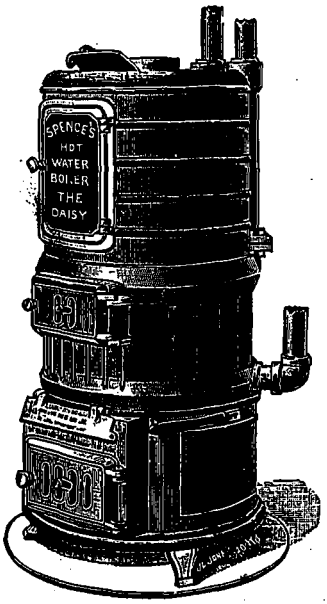

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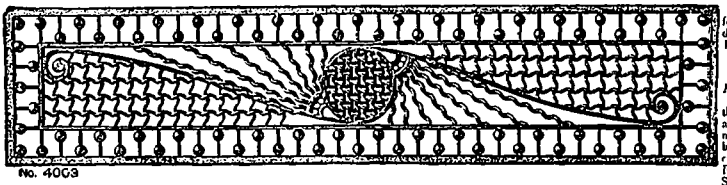

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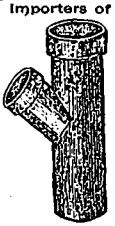

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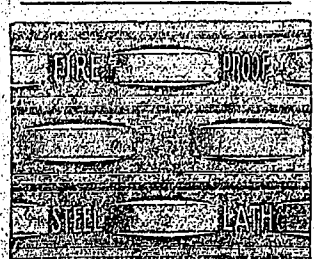

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