

PAGES

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(With a Weekly Intermediate Edition—The CANADIAN CONTRACT RECORD).

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THE term "joiner" does not mean a carpenter, says the Canadian Presbyterian. It means a man or woman who joins all the societies and associations in the community.

THE twenty-eighth annual convention of the American Institute of Architects will be held on the 15th, 16th and 17th of October in New York city. A number of valuable papers are promised for the occasion.

WE print in this number an interesting letter from Mr. G. F. Stalker, in advocacy of a change of method in the designing and erection of government buildings. The attention of our readers has already been called to the favorable reception of the Bill introduced in the United States Congress to provide for throwing open to competition among the leading architects of that country work of this character. This is the system which has prevailed for some time with satisfactory results in Great Britain. The subject is one in which Canadian architects should feel an interest, and which might fitly receive some consideration at the approaching annual conventions of the Province of Quebec and Ontario Associations of Architects. We would be pleased also to print the individual opinions of architects on the subject.

ON every hand there are indications of a revival of trade. The settlement of the American tariff question has had a beneficial influence on commerce in the United States, which is certain to extend to Canada. As the result of the free exportation of Canadian lumber into the United States market, we may expect to witness great activity in the manufacture of rough and finished lumber in Canada, and this must have a beneficial influence on every department of trade. During the depression through which we have been passing, manufacturers and merchants have reduced stocks to the lowest possible point. With increased purchasing ability will come a revival in manufacturing and other industrial enterprises. It is now too late to expect much improvement in conditions this year, but the indications for 1895 seem to be of a very encouraging character.

A PIECE of scaffolding work requiring more than ordinary care was put up in Toronto last month by Messrs. Dill & O'Hearn, contractors, for painting the spire of St. Patrick's church on William street. A scaffold more than sufficient for paint work was necessary to gild the large cross at the top. The height from the ground to the top of the cross is one hundred and sixty nine feet. The construction of the spire prevented access to the inside to a greater height than one hundred and ten feet. Here, through four small window openings, built up beams 6" x 12" were placed projecting level five feet, the inside ends made secure by blocking to the spire timbers. On these a platform was laid three feet wide all around. All the scaffolding material was hoisted up to this height with a rope and pulley outside. On the platform, directly over the beams, four corner poles were footed and blocked with diagonal braces to each other and back through the window openings. The balance of the work was carried up in the usual way with poles lashed together and stagings at every six feet of its height. The completed work was severely tested by a heavy storm on Sunday, Sept. 2nd, but stood uninjured. Considerable difficulty was experienced in laying the gold leaf on account of high winds, but this was overcome by pitching a tent twelve feet high on the top staging to cover in the cross while that part of the work was being done.

THE Commissioners of the London Exhibition of 1851, of whom the Prince of Wales is chairman, at a recent meeting decided to contribute £200 a year for five years in addition to a previous payment of £300, in aid of the maintenance of the department for investigating and testing the natural products of the Colonies and India at the British Institute. An English contemporary makes the statement that the Institute "does little but dine and wine its members and tea loungers at sixpence a head." If this be the case the grant in question is not likely to be of much benefit to the colonies.

A NEW application of iron frame and fire-proof construction is likely to find employment in building city residences. A New York architect, Mr. Manly N. Cutter, has recently secured estimates on three houses, showing that this method can be used with very little increase in cost, the difference being only about \$200 on a house worth nearly \$10,000. This difference would be fully made up by the increased floor space which the iron construction would afford. Mr. Cutter's estimates were based on wrought steel uprights, girders and floor beams, with a woven wire netting fastened to these for walls and floors. For exterior walls it is proposed to use 4 inch brick work outside and a terra cotta lining inside the netting; for party walls, terra cotta on both sides of the wire netting. Concrete floors between iron beams to receive the wooden covering, and ceilings plastered on metal lath. The roof would be constructed same as the floors, and the basement story built in the usual manner up to the cast-iron bed plates for the steel uprights.

ARCHITECTS will note with satisfaction every indication of a growing interest on the part of the general public in architecture. The great amount of attention bestowed on the Chicago World's Fair buildings, by visitors and the press, so enlivened public interest in architecture as an art, as to exert a permanent influence in the direction of a demand for good architecture in all kinds of buildings. The recent publication in some of the leading popular magazines of special articles and illustrations of architectural subjects is another strong indication of an increasing public appreciation of the importance of the subject. We are surprised to see in the Engineering Magazine the opinion expressed that it may be seriously questioned whether the publication of such articles is a healthy indication of a growing and widening taste in architectural knowledge on the part of the general public. Publishers of the great magazines are not in the habit of using material unless in their opinion it is of a kind for which there will be the best demand, and their judgment in this matter is to our mind a satisfactory proof of an awakening public interest in architecture. We should be glad to know what our contemporary would consider the kind of indications on this line to which value could be attached.

THE Dominion Parliament at its last session acceded to the request of the labor organizations that one day in each year be constituted a statutory holiday, to be known as "Labor Day". The object of the organized labor bodies in asking for this legislation was no doubt to direct public attention by this means to themselves and the issues for which they are contending. The idea from this standpoint is a good one. Apart from its advertising value in this respect, however, the holiday is not necessary, as there were previously more holidays on the statute books than the frugal workman desired. The wisdom and right of any particular class of the community to arrogate to themselves the title of "workingmen," is also called in question. Such a step is likely to accentuate the lines of distinction between employers and employees, which many had hoped would in future be less tightly drawn. It is hoped that this result may not follow, but that by mutual effort, conducted on reasonable lines, the employer of labor and the workman whose only capital is his ability to labor, will seek to bring about conditions which will be in the highest degree equitable and satisfactory. The labor organizations will also doubtless find it necessary in the future to seriously consider ways and means of bringing into more harmonious relationship to themselves the great number of non-union workmen. There is a growing bitterness of feeling between union and non-union workmen, which is the outgrowth of arbitrary action on the part of the former, and which, if not removed, will eventually bring about the entire overthrow of the labor organizations. In short, the times

demand the adoption of more reasonable methods on the part of all concerned in the solution in all its phases of what has come to be known as "the labor question."

WE print in this number of the ARCHITECT AND BUILDER the letter of another advertiser who has proved the value of this Journal as a medium through which to reach the purchasers of building materials. The abundance and value of the testimony which is being published month by month should convince the most skeptical manufacturer and dealer in such materials, that his business would be helped by a standing announcement in the pages of this Journal. Since the publication of the testimonial letters, in our recent issues, we have been authorized to insert the advertisements of several firms, some of whom were never previously represented in our columns and others who had become weary in well doing and had withdrawn their advertisements. Within the past week we received from a leading firm of architects in Montreal a letter in which they stated that they were inviting tenders for architectural iron work for a certain building, that they had written to the several firms whose advertisements they found in the CANADIAN ARCHITECT AND BUILDER, and requesting to know if we could furnish them with the names and addresses of other manufacturers in the same line. We hope that architects generally will follow the example of this firm, by writing us when requiring materials which they do not find advertised. On this subject the American Architect correctly says: "Architects need all the resources that can be offered to them in the way of novelties in rolled shapes of iron and steel, new modes of constructing fireproof floors and ceilings, new methods of beam protection, improved cements, new marbles, new qualities and colors of brick and terra cotta, and they want to know by simply turning over a leaf in the current number of their professional journal, not by trying to hunt up circulars or calendars, who are the principal terra cotta makers, where are the principal stone and marble quarries, who does concrete work and whether there is any recent improvement in such work, who does copper roofing, and whether it has occurred to any manufacturer, in these days of cheap copper, to furnish roofing plates of low brass or some similar alloy, which would be cheaper, harder and better than pure copper. Certainly if manufacturers and dealers in such materials expect to have their goods used on a large scale, they must be used through the architects, since all important building contracts are made in accordance with some architect's specification, and in order to have them used in this way they must be brought to the attention of the architects who write the specifications, in such manner that when the specifications are being written the name of the thing desired can be ascertained, and inserted in the specification, at a moment's notice."

SOME of our neighbors in the State of New York have taken alarm at the scope of the various plans on foot to utilize the water power of Niagara Falls, and at the unlimited character of the licenses already granted to divert water from the Falls for this purpose. A committee of the constitutional convention of the State of New York now sitting, has presented a report dealing with this matter, which is being opposed by representatives of the power companies. It is to be hoped that the subject will be thoroughly thrashed out. Certainly on investigation it does seem as if there were some grounds for the action which has been taken, and a doubt whether we have not gone a little too fast and too far in granting franchises. It is difficult to get reliable figures on the flow of water over Niagara Falls, but taking those given in the Encyclopædia Britannica—18,000,000 cubic feet per minute, with a fall of 164 feet on the American side and 150 feet on the Canadian side—the gross power would be a little more than 5,250,000 H. P. With such an enormous power to draw from it would seem that we might cut and come again without risk of any appreciable effect upon the natural beauty of the Falls. But on examining the franchises granted a little in detail it appears that if they are availed of to the full extent of the projectors' anticipations, that there would result a serious impairment of the volume of water now passing over the Falls. The present tunnel on the American side is only 100,000 H. P. capacity, but the full projected power on that side is stated to be 500,000 H. P., which at the present available head of 140 ft., would require about 200,000,000 cubic feet of water gross. On the

Canadian side, by agreement approved by the Ontario legislature, the power company has the right to take water for a power station occupying a tract of land not to exceed 100 ft. by 1200 ft. The present station on the American side which is of 50,000 H. P. capacity, measures 68 by 200 ft., therefore the limit of the Canadian concession would be about 300,000 H. P., or about 1,200,000 cubic ft. of water. These two principal undertakings would therefore amount to 3,200,000 cubic feet, which the electric railway on this side, the old hydraulic canal on the other side, and existing private and town rights on both sides, would easily swell to 3,600,000 cubic ft., or 20% of the natural flow as given in the *Encyclopædia Britannica*. One fifth reduction in the volume of Niagara Falls, would involve a ruin of their natural beauty, which would be a disgrace to us as one of the custodian nations of this wonder of the world. Such a catastrophe is only a possibility, and a remote possibility. Unless further powers are granted, on the Canadian side, the concession is probably limited to less than the amount estimated above, by the provision in the agreement that the water shall be led off by the natural channel between Cedar Island and the mainland. But even the possibility of such a catastrophe in the far future, fully justifies the action which has been taken in New York. No shadow of excuse could be urged for destroying Niagara Falls for the enrichment of a few capitalists and a locality. We are far from the time when any pressure of the population on our national resources could justify such utilitarianism.

WE often hear the statement that it is a favorable time to carry out building enterprises during periods of general business depression, such as we have lately experienced, on account of the low prices for material and the eagerness of men for work enabling contractors to tender much lower than usual. There is much truth in this, and it is a perfectly natural condition, but contract prices are in many cases cut lower than there is any reason for within the limits of legitimate business. No building should be erected for less than its value, which should include the cost of all material and labor with a reasonable profit for the contractor. The whole question of prices for building work of ordinary kind seems to be in a badly mixed condition. People have grown into the habit of expecting too much for their money in this kind of work and are inclined to believe it can be done for whatever they choose to pay if they can only get hold of a contractor who will tender as low as possible. Evils too numerous to mention are the result, and if they are lessened or cured it must be by effort on the part of the more intelligent contractors. Briefly we wish to notice a few of the conditions which might be improved by the right kind of effort. When prices are too low in any business there is sure to be an attempt to lower the quality of material or workmanship, and nowhere is this plainer to be seen than in the building trades. Every contractor worthy of the name should stand for first-class work and fair prices. If the contractor for one trade does really good work and the work of another trade forming part of the same job be inferior, the good work must suffer by its proximity to the bad. Contractors can generally ill afford to carry out work for less than value, but it is most likely to be the one who is least able to stand a loss who will cut prices. Nor is the loss to him alone, but because he is unable to handle his work in a business-like way, all other trades are liable to be interfered with and put to actual loss. Contractors should be quite as particular as to who they are associated with as co-contractors on a job, as they are in the selection of their own foreman or other help. There are many items which the contractor should include in estimating besides the cost of material and labor, such as the use of capital invested, risks by accident, bad weather, fluctuation in prices, wear and tear of plant, his own time, etc. After these are allowed for, he should have a profit of at least ten per cent., but we believe comparatively few contract prices are sufficient to leave even this moderate margin. No cure-all remedy can be applied to every case of the low price disease, but if contractors were well organized and working under some carefully prepared code they would be able to remove the greater part of these difficulties. In this way only their combined influence can be made available, and much could be done to prevent the business being handled at unreasonably low prices.

ILLUSTRATIONS.

CHURCH AND PRESBYTERY OF THE PARISH OF THE SACRED HEART, MONTREAL.

The church was built in 1882 from plans by Mr. Jos. Venne, architect, now of the firm of Perrault, Mesnard & Venne, who are now building the presbytery adjoining it. It is of Montreal limestone, roofed with slate; and with a plain and tastily decorated interior. Plans are now being prepared by the above firm for stained glass windows to adorn the aisles and chancel windows, representing the rood of the Holy Cross. The highest spire, on Plessis street, rises to a height of 220 feet above the sidewalk. The presbytery adjoining the church, now in course of construction, is in the style of Francois II, and is also built of Montreal limestone and covered with slate. The interior will be finished in Columbia cedar and nicely decorated.

UNION STATION, TORONTO.—STRICKLAND & SYMONS, ARCHITECTS.

This new station, which is now being constructed by the Grand Trunk Railway Company for the joint use of that Company and the Canadian Pacific, will, when completed, be one of the most convenient and best arranged stations in Canada. There will be two large train sheds, one for the use of eastbound and the other for westbound trains, with three tracks through each shed. The platforms will have an average length of about 1,000 feet, and there will be ample room to accommodate as many as twelve trains, averaging eight cars each, at the same time.

The approach to the station from the city will be by means of an entrance from Front street, the level of which is sufficiently high above the rails to enable passengers to pass from the street over the tracks to any platform, by means of bridges, and without having to ascend any steps, the various platforms being accessible from the overhead rooms and bridges descending to them.

The passenger who is leaving by train enters the station at the main entrance on Front street, opening into a spacious and lofty entrance hall, fifty feet square and thirty-five feet in height, on one side of which are ranged the ticket offices, and upon the opposite side the baggage counter, across which he can claim his baggage, and have it checked for its destination. This entrance hall is being finished in red sandstone, imported from Scotland, and pressed brick work, the floor being laid in marble, the whole presenting an appearance equal in artistic elegance to that of the main waiting room of most of the large modern stations on the American continent.

Having taken his ticket and checked his baggage, the passenger will proceed through a handsome arcade, with shops on either side, where travellers' requisities can be purchased, or where he can pass any leisure time he may have before leaving, to advantage.

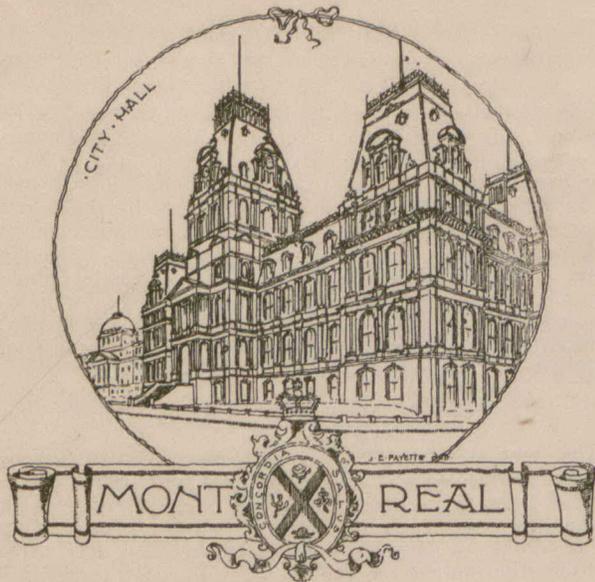
The arcade opens at its southern end into a magnificent waiting room, eighty feet square and forty-five feet high. The floor will be of marble, and the walls to a height of ten feet will be of the same material, highly polished; above that it will be finished in carved red sandstone and pressed brick, and lighted from upper story windows on all sides. There will be a colored glass dome in the centre of the ceiling. First-class waiting rooms, lavatories, and ladies' retiring rooms open from this room on the east, and a luxurious restaurant and smoking room on the west. At the south end of this waiting room the eastbound train shed is reached, and across it is being constructed a closed bridge, twenty-six feet in width, fitted up so that when required it will serve as an overflow waiting room. From this bridge access down to the platform is obtained by various convenient stairways, and still farther to the south across the westbound train shed; and this bridge open to the shed gives access by stairways to other platforms.

These platforms extend both east and west, and the bridges are as nearly as possible in the centre of their length, so that the distance from the stairways to the cars is made as short as possible, no matter where the train is standing. All the platforms are being laid with asphalt, and those which extend beyond the ends of the train sheds will be covered with umbrella roofs.

The exterior of the building, of which the principal front is on Front street, is being constructed of Credit Valley brown stone from Messrs. Carroll & Vick's quarries, and red brick, and will have a very handsome elevation. The lofty tower will form a noticeable feature in the landscape. The upper floors of this building will accommodate the general offices of the Grand Trunk and Canadian Pacific Railway Companies.

Mr. Edmund Wragge as Chief Engineer, and representing the Grand Trunk and Canadian Pacific Railways, has the general supervision of the entire work, Messrs. Strickland & Symons, of Toronto, being the architects.

A practical paperhanger says that the best way of removing solid bronze or gold papers, through which water does not quickly penetrate is to apply two or more coats of very thin paste, then to use a paint burner, taking care to employ the latter cautiously, and following up immediately with a scraper. The burner will not set fire to the paper, as the paste and wet paper will not burn, but it is well to have a pail of water handy in case of need.



(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.

The next annual meeting of the above Association is announced to be held in this city on Thursday, Oct. 4th and 5th, inst., in the rooms of the Association, New York Life Building. The following is the programme of the proceedings:—

THURSDAY, OCT. 4TH.—10.00 a.m.—Annual meeting, election of officers and routine business in rooms of Association; 5.30 p.m.—Reading of papers in same place; 8.00 p.m.—Opening of exhibition of drawings and conversazione.

FRIDAY, OCT. 5TH.—1.30 p.m.—Visit to the Redpath Library, Erskine Church, Chapel of the Sacred Heart, Power House of the Montreal Street Railway.

A photographic group of the members of the Association resident in Montreal is being prepared by Messrs. Wm. Notman & Son for which forty-two signatures have been procured and which will be presented to the members resident in Quebec, at the annual meeting.

The Association will hold an exhibition of architectural drawings in connection with their annual meeting in the galleries of the Art Association, Phillips Square, from the 4th to the 11th day of October.

The Council of the Association are associated in the holding of this exhibition by the Art Association of Montreal, who have kindly granted the use of their gallery for the purpose, and have promised their assistance and co-operation in promoting the exhibition.

The drawings are to be pen and ink or colour perspectives or elevations of modern original designs or sketches in ink or colour of old work, and in all cases the drawings are to be suitably framed.

Drawings are to be addressed to the Art Association, Phillips Square, and delivered there not later than the 29th September, and removed immediately after the close of the exhibition, the delivery and removal to be at the expense of the exhibitor.

The Council will take every care of the drawings while in their custody but they will be unable to effect an insurance upon them or be liable for damages that may occur.

Messrs. J. Venne and A. T. Taylor have been appointed by the Association a committee in association with Messrs. Wm. Brymner and N. Bourassa and one member appointed by the Art Association, to select and hang the drawings sent for exhibition.

It was resolved at a recent meeting of the Council that the members of the Council along with Messrs. J. W. Hopkins, V. Roy, A. Raza and A. F. Dunlop be a general committee to make arrangements for the exhibition and conversazione.

AMERICAN PUBLIC HEALTH ASSOCIATION.

The above Association will assemble in annual convention in this city from the 25th to the 28th inst. The Association is representative of the United States, Canada, and Mexico. Dr. E. P. Lachapelle, of this city, has the honor of being President of the Association this year. A number of papers on sanitary and hygienic subjects will be presented at the approaching meeting.

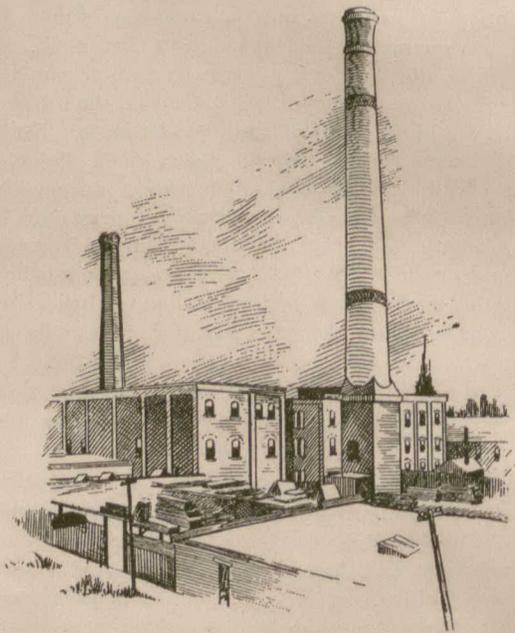
THE CITY BUILDING BY-LAW.

In a recent issue, the Insurance and Finance Chronicle of this city published an article criticising the existing city building by-laws which it states are entirely inadequate for protection against fire. Although it must be recognized that our building by-law contains many defects, as the building inspector admitted when interviewed on the subject, they nevertheless possess many points that if observed would I think greatly add to the security of our flimsily built tenement houses and their contents. There are no set sizes as to dimensions of dwelling blocks it is true, but section 12 of by-law No. 107 passed in 1877 requires that when "rows or blocks of dwelling houses, stores or warehouses, are built, each tenement, store or warehouse shall be separated by a division wall of brick or stone, subject as to elevation and thickness to provisions of sections 11, 14, and 15 of this by-law," and moreover, section 11 therein referred to calls for the carrying of these fire walls over roof and for coping with incombustible material. If all buildings were built strictly in accordance with this by-law the block of tenements could no longer bear that name, but each tenement or store on its horizontal projection would be a distinctly separate and complete building, with no lateral communications whatever. Although architects are aware of the existence of this by-law, I saw a building recently going up on St. James street west, containing two stores on the ground floor with two tenements above; these two tenements and stores were simply divided by a common wooden studding partition all the way up from cellar to roof. In that same building also, I noticed that instead of putting in a trimmer around the chimney for supporting the joists, the joists ran right into

the chimney and came within five inches of the interior of the flue in spite of the by-law which distinctly forbids this. Numerous other infractions could be cited, amongst which may be stated the building of a single flue to a chimney used by more than one tenement or store, notwithstanding the by-law provides for a separate flue to each tenement or store. The latter infraction is almost of daily occurrence, responsibility for this conditions of affairs should be traced and a reform instituted. It is a well known fact that very often a building permit is only obtained when the building is almost completed. As to the thickness of brick walls, it is amply provided for in the table set forth in the said by-laws. A part of the present by-law which I think ought to be amended is the clause permitting the building of tenement blocks of wooden plank or frame, enclosed with brick. This section of the by-law says that such buildings shall not exceed two stories and a mansard roof in front, and three stories in rear, the highest point of the roof not exceeding 34 feet from the level of the foot-path. It is obvious that it is quite ineffective to have fire walls dividing each tenement if the exterior walls are allowed to be built of three inch plank. It is in this class of buildings that improvements should be made, and no buildings in the future should be allowed to be built of plank or frame. The Building Inspector has prepared a new by-law which is based on the existing building by-laws of the largest American cities, and which I hope will effect an improvement in the class of buildings heretofore put up in this city, and especially the poorer class inhabited by the working people. This by-law is now in the hands of a committee of the Province of Quebec Association of Architects, to whom it has been sent by the Fire Committee for suggestions. Let us hope to see it adopted and properly enforced at an early date.

NEW CHIMNEY AT TORONTO RAILWAY COMPANY'S POWER HOUSE.

WE present to our readers herewith an illustration of what is claimed to be the tallest chimney in Canada, its height being 250 feet. It has recently been completed at the power house of the Toronto Railway Company, under superintendence of Mr. James Hill, and was commenced during the early part of last March. Excavations were made to a depth of 18 feet, at which point solid rock was struck. The concrete foundation, 40 feet square, is built on the rock, and was tapered up till it stood 24



feet square at the surface of the ground, where the chimney proper was begun. For the first fifty feet the chimney is square, the top which is 18 feet 3 inches in diameter, being capped with cast iron. The inside diameter is 12 feet. A ladder made of U-shaped irons is provided as a means of ascending, the ends of the irons being anchored in brick. The smoke from a 10,000 horse-power of boilers can easily be carried by this chimney. An excellent view of the City of Toronto is afforded from its pinnacle.

In answer to an inquiry as to the treatment of the internal walls of a hospital ward, a correspondent to the British Medical journal says that of course a great deal depends on the material of which they are constructed; but if they are plastered there can be but little doubt that a hard oil paint, or paint coated with varnish, forms the best finish, as it can easily be dusted or washed. As regards color that will depend to some extent on the amount of window space; where there is plenty of light one can afford to make the walls of such a tone as to be restful to the eyes; a very common defect in hospitals is making the walls too light. Ordinary hanging pictures are certainly inadmissible; if they were properly dusted, which they never are, they would be knocked to pieces in three months. If pictures are desired, certain spaces should be reserved for the purpose, and the pictures should be pasted to the wall and varnished over. The same should be done with all tables of rules and regulations which one so often sees hanging on cards. They should all be pasted to the wall and varnished over, the object being that the wall and all upon it should be cleaned at one sweep.



UNION RAILWAY DEPOT, TORONTO, CANADA.
STRICKLAND & SYMONS, ARCHITECTS, TORONTO.

THE BUILDINGS OF THE DOMINION.

By G. F. STALKER.

UNDER this caption I wrote an article which appeared in the January number of the CANADIAN ARCHITECT AND BUILDER. The principal object of that paper was to advocate the advisability of establishing a system of competition for designs for our national buildings. It is satisfactory to know that the ideas expressed at that time have met with favor by some of our architects, and that there is a possibility of such action being taken as will bring about the desired change.

In the meantime the question has been taken up and definite proceedings instituted for the accomplishment of a similar object in the United States. In a recent number of the American Architect, and in the July issue of the Forum, articles appeared on the subject with reference to the buildings erected by the government of the United States. And, better still, on June 16th of the present year, a bill was introduced into the House of Representatives, "To provide for the securing of plans and for the erection of the public buildings of the United States."

I am not vain enough to imagine that the articles and the bill referred to are the result of my January paper; but it is very gratifying to find oneself in such good company, and voicing opinions in keeping with the spirit of the times. The crusade which is going on everywhere against monopolies must, in the end, be successful. And success will be swift and certain when resolute action is taken in regard to the breaking down of restrictions that have been placed around an art which can boast of ages of liberty. The experiment has been tried, both on this continent and in Europe, of satisfying the architectural aspirations of nations by limiting the designs for national buildings to the skill of one man, and it has failed in every case. The causes of the failure have not been the same in each instance, but the result has been the same—failure. And if the present system is continued in Canada, we have before us the prospect of a continuance of architectural failures in our national buildings.

If the causes which have produced such unsatisfactory results can be ascertained, it may be suggested, a better era might be inaugurated by their removal, which would not necessitate an entire change of system. The writer of the article referred to in the Forum maintains that the causes of the failures in the United States are, mainly, the incapacity of the government architect; and, in addition, the impossibility for any man to give sufficient time to the preparation of his designs, and at the same time attend to the routine work of what must, of course, be a large department of the public service.

With the first cause of failure in the United States, we, in Canada, are in no way concerned. No one can lay any such charge against our present government architect. It would, in fact, be almost an impertinence to place him in the same category with the majority of architects who have occupied similar positions in other countries. And, more than that, his special fitness for the position makes it a matter of the greatest delicacy for us in this country to agitate for a change of system.

But the second cause of failure is of universal application. More than one architect has resigned his position on account of it; and every architect worthy of the name has found it almost impossible for him to give time and study to the proper and more congenial part of his work as architect, while keeping pace with his routine duties. And there is no way out of this difficulty. The mere multiplication of assistants and clerks will not overcome it, while it will materially increase the cost of working the department. So long as the one man system is maintained, the chief architect will find it necessary for him to give by far the greater portion of his time to routine business, a vast amount of necessary and important work of which the general public are profoundly ignorant; while for that portion of his duties of which the public take cognizance, and by his success in which, in their judgment, he has to stand or fall, he has to snatch a few odd hours from the worry and irritation of accounts and departmental cross-purposes.

When the designs for our national buildings are, of necessity, under the present system, produced in such an atmosphere, it is surely no great matter of wonder that there should be an imperative demand for a change! If no other reason could be submitted than this, it would be sufficient to require it. For it must be evident that the object for which the system was instituted, namely, the retaining of the services of a great architect for designing our national edifices, is entirely frustrated by the conditions inseparably connected with such an office. We are, therefore, maintaining an expensive department in order that we may have a certain kind of work done in the best manner, but, from the very nature of the office, and the variety of necessary circumstances connected with it, we fail to obtain the accomplishment of its most important purpose.

Moreover, the establishment of the present system, some thirty years ago, was supposed and expected to be more economical than the ordinary method of securing the services of an architect. But experience has everywhere proved this also to be a fallacy. An examination into the matter proves, that, in the United States, what may be properly set down as architects' charges, in connection with the government buildings, amounts to about seven per centum; and, in Canada, the charges exceed eight per centum. And this does not include, in either case, the cost of providing and maintaining office accommodation, fittings,

lighting, drawing materials, &c., which would amount to about one per centum more.

We are, therefore, paying about eighty per centum more for architects' services, under the present system, than we should pay if the work were done in the ordinary way; and, as we have seen, we incur this excessive expenditure for an inferior service. That is to say, for a building costing \$1,000,000, the architect's charges would amount to \$50,000, according to the usual scale, but the cost to the country for architect's services, according to the present system, would amount to \$90,000.

But the greatest objection to the system lies in the fact that, by continuing it, we deprive ourselves of the opportunity of obtaining the best designs for our public buildings. This is at the bottom of the efforts now being made in the United States for a complete change of system. This brought about the change in England, and this has given rise to the desire in Canada—a desire which will, before long, develop into action—for a change in our system of securing plans, and of erecting our public buildings. And in the hope that measures will soon be adopted for carrying the purpose into effect in Canada, it may be of interest to consider the leading features of the bill now before the House of Representatives in the United States.

It provides for the appointment of a commission of public architecture, consisting of three architects, two engineers, and, as ex-officio members, the Secretary of the Treasury and the Supervising Architect of the Treasury, who shall procure designs and appoint architects for all buildings hereafter erected by the government. This commission shall select architects to submit designs in competition for all buildings costing \$100,000 and over; and they may appoint, without competition, an architect for buildings costing less than \$100,000. The architects in every case must, of course, be well qualified men; and, where a competition takes place, the successful competitor is appointed architect of the building on the usual terms, and the others receive an honorarium in proportion to the magnitude of the building. Power is vested in the commission for framing rules and regulations governing competitions, and the duties of the successful competitor are clearly set forth, and are in conformity with the usual professional practice.

Such is a brief outline of the American bill, and, with a few emendations, it would not be difficult to construct from it a measure that would be suitable to the exigencies of the Dominion of Canada. For we have seen that, in Canada, we have, as far as our national buildings are concerned, the same anomalies and the same failures as have occurred in the United States and in Europe. It surely cannot be said that we have less "sand" in us than the people of those countries, and that we are content to let things remain just as they are, though we know that the present system is pregnant with harm to our art, and discreditable to ourselves as Canadians? And we are not so stupid as to imagine that any tinkering of the present system will ever produce any material improvement. We are satisfied that experience proves this to be a physical impossibility. Neither do we blame or disparage anyone who has held the office of government architect. But the experience of England and other countries places it beyond all question, that if we obtained the designs for our national buildings by competition, we would not only have better public buildings, but we would elevate the standard of architecture generally throughout the Dominion.

LONDON PUBLIC LIBRARY COMPETITION.

The information has been received that the competition recently held for designs for a public library building for the city of London, Ont., has at last been decided. A Mr. Matthews, a young student of architecture, formerly of London and Toronto, but now residing in New York, has been awarded first place in the competition, and will have the supervision of the work, which is to be commenced as soon as possible.

CANADIAN VS. FOREIGN CEMENT.

THE manufacturers of Canadian cement are protesting against the action of the Dominion Government in awarding a contract to a Montreal firm for 11,000 barrels of Belgian cement, in the face of the fact that cement of the best quality is now manufactured in Canada, and that the most of the Canadian cement works are at present shut down for want of orders. It is further pointed out that the stove mills in western Ontario are also closed down in consequence of the inactivity among the cement manufacturers who are purchasers of a large part of their product.

The protest of the cement manufacturers seems a reasonable one. Recent tests of the cement used in making concrete pavements in the City of Toronto, showed the cement made in Canada to be as durable, if not more so, than the foreign material. In view of this what necessity is there for the government engineers to pass by our home manufacturers. Mr. A. Blue, of the Ontario Department of Mines, in a paper read a few days ago before the Mining Association, made the surprising statement that of the 150,000 barrels of cement used in making concrete for street construction in Toronto, only 4,000 barrels had been native cement. There was, he urged, no reason why we should have to go abroad for Portland cement, as in Ontario we had an abundance of raw material for producing it.

REMARKS ON ESTIMATING.

As wooden buildings, either frame, balloon or plank, are mostly in vogue in rural districts, the country builder has more to do with them than with any other style of structure, so I will take as my model an ordinary balloon frame house in the country, and which is supposed to cost anywhere between \$800 and \$3,000, though the method of estimating I am about to formulate will hold good for buildings costing more or less than the sums named.

We suppose the plans, elevation, details and specifications of a building are now before the estimator, and on which he is now figuring.

In making out a "tickler," the estimator should use legal cap paper, using at first only every other line to make his list, as his first attempt will leave many omissions, which, as discovered, may be inserted on the blank lines under their proper heading. Having the paper ready, and any notes you may have prepared, head the first page "Preliminary," under which head may be written:

Preparing grounds and staking out building (giving supposed cost of every item).....	\$.....
Laying out and grading for drains, &c.....	\$.....
Miscellaneous expenses in securing contract.....	\$.....

The next heading should be

MASON AND BRICKLAYER WORK.

— yards excavating.....	\$.....
Carting and levelling.....	\$.....
— cords of stone in foundation walls at — per cord.....	\$.....
Brick walls, piers and chimneys.....	\$.....
Cellar floor, concrete or brick.....	\$.....
Cesspool and drainage.....	\$.....
Laying tiles in hearth.....	\$.....
Building fire-places and putting in grates.....	\$.....
Work and material around heater.....	\$.....

CARPENTER WORK.

— ft. in side, end and middle sills at —.....	\$.....
— ft. in trimming, posts and plates at —.....	\$.....
— ft. in main, side and tie girths.....	\$.....
— ft. in first floor joists at —.....	\$.....
— ft. in second floor joists at —.....	\$.....
— ft. in ceiling joists.....	\$.....
— ft. of studding in outside walls.....	\$.....
— ft. of studding in gables.....	\$.....
— ft. of studding in inside partitions.....	\$.....
— ft. of studding in braces and for doors and windows.....	\$.....
— ft. of studding in common rafters.....	\$.....
— ft. of hip, valley and jack rafters.....	\$.....
— ft. of trusses, purlins and collar beams.....	\$.....
— ft. of outside sheathing.....	\$.....
— ft. of inside sheathing.....	\$.....
— ft. of roof sheathing.....	\$.....
— ft. of gutter, lookouts, etc.....	\$.....
— ft. of floor lining.....	\$.....
— ft. of shiplap sheathing.....	\$.....
— M.M. of dimension shingles at —.....	\$.....
— ft. of siding (whatever kind) at —.....	\$.....
— ft. of battens, lattice, &c., at —.....	\$.....
— ft. of furring and bridging at —.....	\$.....
— ft. of fencing boards at —.....	\$.....
Fence posts (state number) at —.....	\$.....
Tarred or straw paper.....	\$.....

To all these items add cost of labor in working and putting in place. Keep account of labor on separate sheets, preserving all for future reference.

M.M. of four ft. lath at —.....	\$.....
— bbls. of lime at —.....	\$.....
— loads of sand at —.....	\$.....
— bbls. of plaster paris at —.....	\$.....
Water service (if any).....	\$.....
— lbs. of shingle nails at —.....	\$.....
— bush. of cow or goat hair.....	\$.....

Add coloring matter if such is wanted for interior work or for rough-casting, also cost of pebble gravel.

Follow up this method of itemizing everything that will be used in the construction of the building, from the footings of foundation to coping of chimney top, each class under its own heading. Under "Hardware" place number, description and price of locks; if more than one kind give each a separate entry. The same with bolts, hangers, furniture, window locks, screws, wardrobe hooks, pulls, grates, brackets, sinks, and everything else in this department.

Under "Plumbing" enter price, description and quantity of piping required, raps, traps, closets, bowls, drains, ventilators, bath tubs, hot water boilers, and all other plumbing requisites with the cost thereof.

Under "Joiners' Work," itemize everything that is to be finished in wood, classifying and describing everything, and giving price per piece or per foot, marking on margin of your paper a rough sketch of moulding, base, rail, baluster, or whatever else it may be. Do the same with any extra sash, doors or ornamental panels or newels. This precaution will serve you in future, and be handy to refer to on many occasions. Mantels, grilles and such like work may be entered in bulk, numbering the style of mantel or grille so that no mistake may occur. Stairs, with full descrip-

tion of riser, tread-strings and finish, may be entered at so much per step, or in bulk, either with or without rail and baluster and newels, making proper provision for landings or offsets. If paneled under soffit, make entry of same and fix price accordingly. Make special entries of labor required to lay down so many feet of this base, and so many feet of the other. Time fitting and hanging sashes, same for hanging and trimming doors, fitting up pantry, shelving and putting up hooks in closets, laying down floors, outside steps, posts, building veranadas, stoops or storm porches, cresting and putting up. Wood cornice—make diagram on margin, give dimensions and cost per foot. Wainscot, paneled ceilings, ornamental dados or fixed furniture, such as dressers, sideboards, cupboards, cabinets and hall racks, should be described and a sketch on the margin, with cost and style of finish. All other joiner work should be entered, with description and cost.

When any tinsmith or sheet metal work is required, a full account of it, giving amount and quality of materials used, with cost per foot, if conductors, leaders or gutters, and per square if for roofing or like purposes. Tin used in valleys or for flashings should be enumerated with full cost.

Next comes the painter, decorator and finisher. Enter quality of paints and oil, number of coats, colors and cost per yard; style of finish, if on hardwood or stained pine; number of coats of varnish; state if rubbed and polished, with cost of same; describe quality of glass, size, manner of glazing and cost per square. Itemize every particular and of every kind, teaming, carting away rubbish, cleaning up building, and everything where cost is attached.

Having now gone over the whole building, and itemized all that has suggested itself, go carefully over your work and look for omissions; if any are discovered, enter them at once under their proper heads. Read over your specifications again and again; examine the plans, elevations and details, until you are convinced you have grasped every detail, then go to work and copy into a convenient blank book, the results of your work, leaving a wide margin for sketches, and a line or two between each entry, and you have a "tickler," a complete and permanent "reminder" for all sorts of wooden buildings costing no more than \$3000.

Your first sheet answers for an estimate of the particular building you figured on, and, if you find you have made any mistakes as to price of work, or cost and quantity of material, correct in your book so that you will not be misled the same way when estimating on another building.

It is usual in country places for the contractor to get the plasterer, the mason, the tinner, the plumber and the painter to give in an estimate on the work required of their various trades. This practice does very well, but it has the fault of throwing the whole responsibility of their work on the contractor without giving him a corresponding profit. It is better for the contractor to take the whole work, then he is master of the situation, and in a position to make reasonable terms with the other tradesmen.

If space permitted, I might give a column of current prices for building work of various kinds, that might be useful to the country builder, but just now that is impossible. At some future time, however, I may take the subject up.

A. Z. Z.

PERSONAL.

Three Toronto architects, Messrs. Webster, Bousfield and Woolnough, were called upon to serve on the grand jury at the recent assizes. This we take to be a recognition of the level-headedness of the profession.

The sudden death of Mr. C. F. Fraser, late Minister of Public Works for Ontario, which took place at the Legislative Buildings in Toronto last month, has occasioned wide-spread regret. It will be remembered that to the unsatisfactory condition of Mr. Fraser's health was due his recent retirement as head of the Public Works department, which position he occupied for twenty years. The new Legislative buildings were erected under his direction. The late Mr. Fraser was one of the ablest and most honorable of the public men of this country.

The death is announced at Ottawa, at the age of 74 years, of Mr. John Bowes, who for 40 years was employed in the Public Works Department in that city, and was superintending architect of the St. Vincent de Paul and Kingston penitentiaries, as well as the library of Parliament.

ESTIMATING THE VALUE OF BUILDING STONE.—In determining the value of any description of stone for building purposes the inadequacy of tests by chemical analysis is pointed out in a recent paper by a British architect, and, as concerns the more detailed examinations resorted to, the crushing strength, he states, is nearly always in excess of requirements, and is, therefore, to be considered relatively unimportant; the absorption test, however, gives a fair indication of the power of a stone to resist frost, and in stones of the same class is also a criterion of the crushing strength, which appears to be higher the less the percentage of water absorbed. Still more satisfactory results are obtainable by subjecting the stone, while thoroughly moist, to a freezing temperature, repeating the operation several times, and ascertaining the weight lost from the block. Another inaccurate assumption mentioned is that the specific gravity of a stone is proportional to the strength; and still another is the conclusion that the higher the proportion of silica the more durable the stone—the incorrectness of this latter assumption being manifest, inasmuch as it would involve the assertion that all sandstones are better than limestones, or even than granite.



CREOSOTE STAINS.

WHATEVER the origin of shingles may have been, it is certain, says A. Ashman Kelly in *Painting and Decorating*, that shingle staining is a modern American method of contributing to the external decorative appearance of residences and other buildings. That they fulfil that object there can be little doubt, even though it be true that the staining is not always satisfactory. Nothing of human origin ever is.

A recent writer calls attention to the practice prevalent in this country, of keeping rural houses glaring with fresh paint, instead of allowing them to become age-stained, as rural cottages of Europe are. Now, the stains we use are, in a measure, the equivalents of those produced by time on bare wood. Rare effects can be had by blending two shades together, and the single-tone stains are also beautiful and effective. There is no use denying their original beauty at least. People like them, and what people like they have, no matter what artisans may say against the object of their liking.

Creosote has for years been known as a most effectual wood preservative. It was first introduced in England in 1858, and in America in 1865. It is extensively used in all parts of the world for this purpose. It is a product of coal tar, that wonderful and prolific source of so many useful and beautiful products. The distilling process gives us several grades of the article. The distilling process gives us several grades of the article. The odor is uncreosote, containing various hydro-carbons. The odor is unpleasant, pungent and strong, but soon disappears upon exposure to the fresh air. An idea of its remarkable penetrative power to a may easily be obtained by placing it upon a thin board. In a little while it may be detected upon the opposite side by its odor.

Thus may be seen that for an outside stain, a creosote preparation possesses peculiar value. Linseed oil is the vehicle employed to carry it, and the several beautiful shades given these stains, are obtained from ordinary painters' colors, ground in oil to the last degree of fineness. It is upon this point that transparency of colors hinges. Coarsely ground colors will not give clear translucent shades. This, I believe, is all the secret about the manufacture of creosote combination, but some of them are gas-stains, or are made from petroleum oils, and are not by any means to be recommended. It is difficult, if not impossible, to get lead paint to remain over such stains, or to keep the stain from striking through the lead coat. True, shellac varnish, that universal panacea for all painters' difficulties, good for a cut finger or a damp wall, may be used over the stain to prevent trouble, but the operation is costly, and prevention is much better.

The question of durability having been raised, it is worth while to enquire into this objection. Obviously, being in part creosote, a very lasting matter, creosote stain, considered solely from this point of view, is durable. But as to holding its color, that is another question. Probably it does it no better than ordinary paint. Some think not so well. A well known manufacturer of such stains declares that he has known of its retaining its original color for nine years, and he adds that it usually wears well from four to seven years. Much, however, seems to depend upon how the work is done. For instance, wet or green shingles are inimical to good wearing, just as with paint. This same gentleman tells of seeing a painter dipping shingles, one side of which were coated with ice. Where shingles are tied up in bundles, it would be well to untie them, and spread them out to dry, before dipping them. It is not unfrequently the practice, too, to employ cheap labor, such as boys or unskilled men, to do the dipping, and good results must not be expected where such is the practice. A quarter of a century's experience has taught me that it takes a skilled mechanic to sandpaper or putty well; its not a boy's or laborer's work. Neither is shingle staining, simple though the work seems. Mr. Coppins tells us that he "has seen dry-rot in both stained and painted shingles." This could not possibly occur where thorough work has been done.

There was quite a hue and cry against creosote stains in the city of Buffalo, some time ago, and inquiry elicited the fact that some painters there, of prominence, I understand, had been in the habit of changing the original stains by adulteration, and in one or two cases (I forget which) one manufacturer brought suit, where a shop made mixture had been substituted for the goods called for by the architect's specifications. This led the New York Association to discuss creosote stains and staining, at one of their sessions, and Mr. Cabot, the well-known manufacturer, was invited to prepare and read a paper, which he did. Since that I have heard nothing concerning this matter.

Finally, as to the durability of creosote stains, it may be said that careful treatment is sure to render the most satisfactory results possible. The wood to be treated should be thoroughly dry. The stain should be kept stirred, so as to yield uniform color and density of material, and only linseed oil used to thin with. The boy or day laborer forgets to stir the stuff, and the boss puts in coal oil or turpentine. I never yet found a journeyman who did not object to using the creosote stains. It burned his hands or destroyed his eyes. It was poisonous. In

part, these charges were true. Creosote hurts the eyes and the skin, but it is not poisonous. On the contrary, it possesses remarkable healing powers. It is efficacious on cuts, burns and sores, when other remedies fail. It at first causes some pain, but this soon passes away and healing begins. It is used to cure meat. Men who work in creosote stain works are healthy, and are never known to complain of the stuff injuring them in the least. They become accustomed to it. Painters would, too, if obliged to use it more frequently. A master painter, Mr. McInness, tell us that it burned his paint pots out. Salt, also would destroy his paint, and salt can hardly be said to be poisonous. Another objection to creosote stain is, that it vitiates water that is intended for curinary uses. In any case where the water from a freshly painted roof is arranged to run into a cistern, allow the first few rains to run elsewhere, after which no trouble may be looked for. It would not poison a person who should drink such water, it would simply taste or smell unpleasantly. Where gas-tar or petroleum oil stains are used, it is likely that there would be trouble with the water as long as the stain lasted. A paint compound containing tar and petroleum and applied to a flat tin roof, I know to have vitiated the water ever after. Should the creosote stains contain poisonous pigments, such as the chromates of lead, their use would be objectionable on roofs intended to catch water for cisterns. Those stains only should be used that owe their coloring to non-poisonous pigments, such as ochres.

HOUSE DECORATION.

IN the concluding portion of "Studies in Design," Dr. Dresser gives the following wholesome advice to house decorators. The progress of the decorative art rests largely with ourselves. I now speak to decorators. If we make our works worthy of patronage, I believe that patronage will be bestowed upon them. I am often perfectly amazed at the conduct of decorators when they are requested to commence the ornamentation of a room, and can only explain their mode of action by assuming their utter ignorance of the art which they profess to practice. They, upon seeing their client, ask how the room is to be treated. "Do you," they say, "wish a wall paper?" "Shall it be a gold wall paper?" "Do you wish the room light or dark?" "I will send you up a number of papers to choose from, and you can select which you please!" Such utterances can only spring from gross ignorance or a foolish timidity. What should we think if, when a medical man is called to see us, he asked how we would like the complaint treated; what medicine we desire; and if a tonic, whether we would have bark or arsenic? The decoration of a room is as much bound by laws and by knowledge as the treatment of a disease. A surgeon would not cut off an arm simply because a patient asked him to do so; he would first ascertain whether it was curable. I have no knowledge of the treatment of diseases; hence I commit myself to the care of a physician. I have no understanding of law; hence I employ a solicitor. I am called in to decorate a room; the client is as ignorant of my art as I am of his. Is it not my duty, then, to tell him that the room will look well if treated in such a way, or that its walls might be of such a color? If we have understanding of our art, it is easy to convince others, who are ignorant, that we have more knowledge of the subject than they have; but we must be able to show a reason for the suggestions we make. Let it ever be borne in mind that every successful work executed by man is an advertisement of his knowledge and skill, and as such tends to ennoble or exalt him; and that every work that he does which is offensive, untrue, or degrading—no matter who has dictated it—tends to his debasement, and is an advertisement of what can only be censured and should be avoided. I look to decorators becoming the great teachers of art in the country. If we, as ornamentists, get knowledge, and explain to our clients why we purpose treating their rooms in a particular manner, they will readily consent to the production of artistic rooms; and when once they have lived in an artistic house, they will never again like the white ceiling and merely papered walls, for their tastes will have improved. Let us do all we can to exert an influence such as shall conduce to the rapid advancement of art amongst us. Let us make our decorations as durable as possible, for that which often wants renewing will never grow in favor. A decorated ceiling will last clean much longer than one that is white; it is, then, an economy to have such. Honest work, which is the expression of knowledge, when associated with the gentlemanly bearing of the decorator, and gentle persuasion, will accomplish all we seek to achieve.

PUBLICATIONS.

The Review of Reviews for September gives surveys of recent Congressional and State legislation in special articles; the comparative table of tariff rates, especially, will be found useful for reference purposes, as it shows at a glance all the important changes made by the enactment of the new law.

Mr. Fred T. Hodgson, architect, Collingwood, Ont., has compiled and published a useful handbook entitled "The Hardwood Finisher," which contains upwards of 90 pages of rules and directions for finishing in natural colors and in antique our domestic woods, and also miscellaneous rules for dyeing, gilding and bronzing. Copies of the book may be obtained from the author.

STUDENTS' DEPARTMENT.

SOME ASPECTS OF THE MUTUAL RELATIONSHIP OF ARCHITECTS.

WE reprint in part the remarks on the above subject delivered by Mr. Macoicax Anderson in his presidential address to the students of the Royal Institute of British Architects, as follows:

You may be called on to aid by your testimony as experts in influencing judgment for or against your contemporaries. It has ever been—and I suppose it ever will be—the case that men will differ. Even the highest code of morality anticipated this in the qualified injunction. "If it be possible, as much as lieth in you, live peaceably with all men." No doubt there are some to whom the injunction does not apply, inasmuch as to live at peace with anyone seems to be with them a sheer impossibility; but even with those who are peaceably disposed, circumstances will occasionally arise involving a principle which they cannot concede, and which render it necessary to appeal to the help of others either in law or arbitration. I cannot claim to speak on this subject as an expert, my appearance in Courts of law having happily—although unfortunately, too—been restricted to the discharge of the wearisome duties of a jurymen; but it has sometimes vexed me to hear some of my professional brethren, whom I knew to be men of probity, censured by others for appearing as witnesses and giving testimony against them. Such experiences, which are by no means restricted to the profession of architects, may be thought to be unedifying, and I confess that I regard the relationship as perhaps the least desirable and the most inartistic which an architect can occupy; but yet I fail to see why the witness should be the subject of censure more than he against whom he testifieth. Is it not the fact that the last named is frequently the original sinner? How can light be thrown on a purely technical point other than by the evidence of experts; and how can such evidence be obtained if none will appear as witnesses? How can questionable or derogatory proceedings be exposed if reputable men will not come forward to testify against them? Further, why should it be thought strange that men of the same craft should differ in the witness-box, so long as it is a patent fact that in scarcely any topic of ordinary conversation in society will the same view be taken? In this relationship the rule of guidance appears to me to be clear and simple. Do not consent to give evidence as to the works or character of a brother architect unless you are perfectly sure that you can testify from the safe basis of experience, and in the honest belief that what you testify is truth.

No dissertation on the relationship in which professional men stand to each other would be complete without some reference to the subject of professional etiquette. We have heard etiquette condemned. We have been told of the triumph of prejudice and jealousy to the detriment of the welfare of client or patient. We have even heard whispers of the neglect of patients rather than the consultation with the rival practitioner which might have saved life. Such rumors—if, indeed, they are true—are at best but exaggerated indications of exceptions which prove the rule. Etiquette gives honor where honor is due; it rightly exposes impostors. Etiquette appreciates ability and encourages merit; it scathingly condemns the individual and the society that live on borrowed plumes, assuming virtue if they have it not. Etiquette generously extends the arm of sympathy; it would rather cut off the right hand than by word or deed injure others for the sake of personal aggrandisement. Etiquette recognises all honorable methods of advancement; it rightly looks askance at questionable expedients of self-advertisement, such as are too frequently resorted to. In a word, etiquette is the standard which unerringly gauges the reputation of professional men. Above the level of the gauge is to be found all that is honorable and commendable; beneath it is all that is grovelling and unworthy. In the Harveian oration delivered at the Royal College of Physicians last October by Dr. Pye Smith, this subject was so happily delineated that I cannot refrain from quoting the words of the Harveian orator:—"Professional etiquette really means the observance of those rules which distinguish a profession from a trade, which makes our callings honorable as well as honest, which check the art of advertisement and direct our ambition to obtaining the suffrages—not of the public which cannot—but of our profession which can—judge truly, rules of conduct which are, in fact, nothing but the carrying into daily practice of the golden rule, to do to others as we would they should do to us."

PLASTER CORNICES.

CORNICES are either plain or ornamented. In order to execute a cornice according to a given design, it is necessary to prepare a mould of several members, which mould is usually made of sheet brass, iron or steel, indented so as to represent exactly the forms and projections of the said members, and fixed into a wooden handle previously described. If the protection of the cornice exceeds 10 in., it is requisite to fix up wooden bracketing to sustain the same. This consists of pieces of wood fastened to the wall on which the cornice is to be formed, about 1 ft. apart, to which laths are to be nailed; the whole is then covered with a rough coat of mortar, allowance being made for the thickness of the stuff necessary to form a cornice, for which

about 1½ in. is generally sufficient. To run a cornice properly two workmen are necessary, who must be provided with a pail or tub of set or putty, and a quantity of plaster of Paris. Previous to using the mould they gauge a straight line or screed on the wall and ceiling, formed of putty and plaster, and extending so far on each as to answer to the top and bottom of the cornice to be formed. On the screed thus formed on the walls, one or two slight pine straight-edges are nailed, and a notch or chase being likewise cut in the mould, forms a guide to run upon. When all is so far ready the putty is to be mixed with about one-third of plaster of Paris, and rendered of a semi-fluid consistency by the addition of clean water. One of the workmen then takes two or three trowels full of the prepared putty on his hawk, which he holds in one hand, whilst with the other he spreads the stuff on the parts where the cornice is to be worked, the workman occasionally applying the mould, to see where more or less of the material is required. When a sufficient quantity has been put on to fill up all the parts of the mould, the mould is worked backwards and forwards, being at the same time held firmly to the ceiling and wall, by which means the superfluous material is removed, and the contour of the cornice completed to the form required. Sometimes it is necessary to repeat this operation several times, in order to fill up such parts as are deficient in the former application.

CEREMONIES ATTENDING THE LAYING OF FOUNDATION STONES.

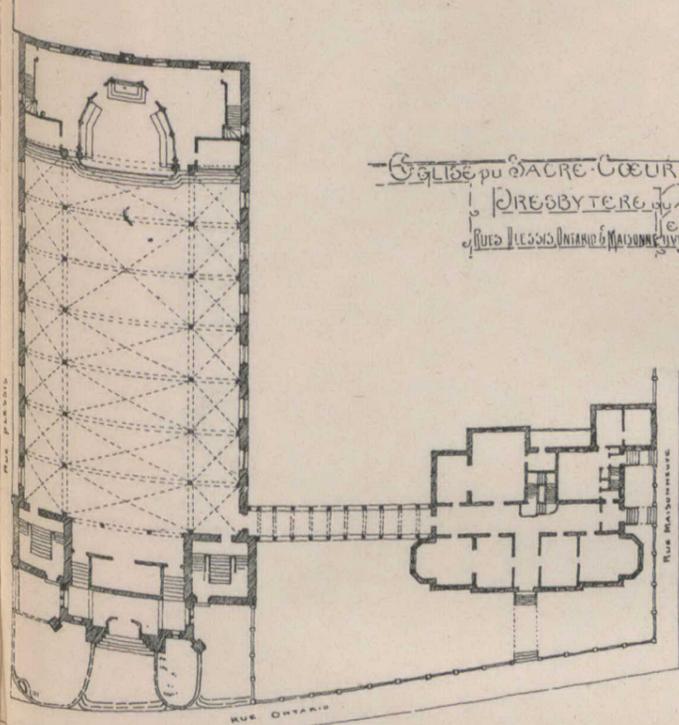
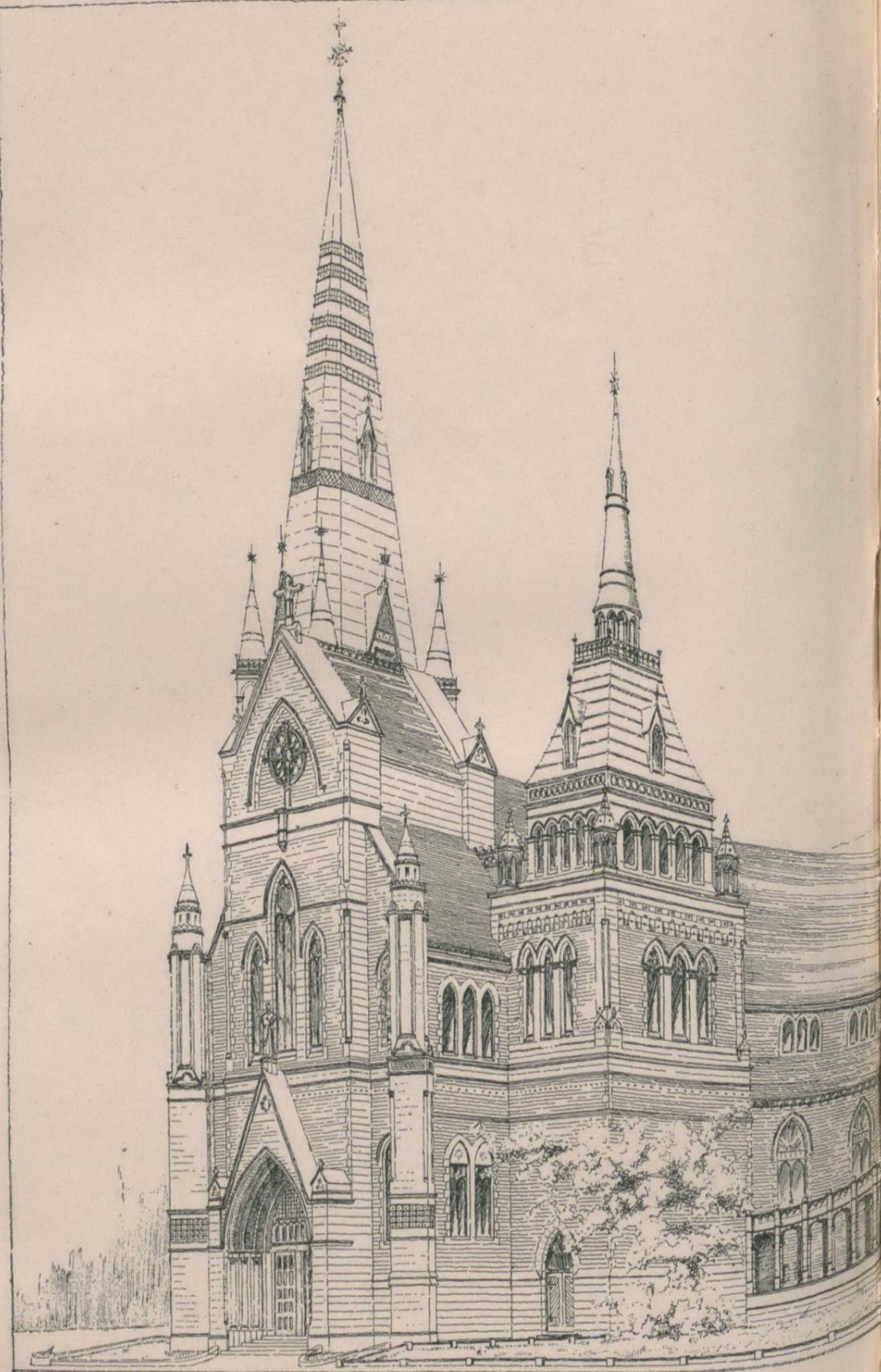
AMONG the papers read at a recent Congress of Anthropologists at Berlin, was one referring to the above subject. "The mason's ways are a type of existence," said Goethe, and it was shown by Herr Rowald how from the earliest ages his work was started with due reverence, as if it united time with eternity; the site consequently assumed more importance than an ordinary spot on the earth's surface. A king of Babylon considered it was worthy of record that he restored a pyramid on the original foundations. To this day what is believed to be the foundation-stone of Solomon's temple imparts a sort of sanctity to a mosque. The Capitol in Rome was four times erected on one site. For two thousand years there has been a temple on the site where Cologne Cathedral stands. Auspicious days were selected for laying foundation-stones, and a survival of the old custom still exists in Hanover, for a builder hesitates about starting a new building on a Monday. As far back as the times of the Assyrians the foundation-stones were accompanied by records, which were sometimes placed in cylinders of clay. From the interest attached to the stones it is no wonder that it became a custom to employ more than one. In Eastern ruins four have been found in positions corresponding with the cardinal points, and in the Bible angle or corner-stones and foundation-stones appear to be synonymous. In some Mediæval buildings twelve were laid, probably in honour of the Apostles. Money and precious stones were liberally employed as offerings, but in some parts of Asia and Africa it was not unusual to offer human sacrifices. In Siam a case of the kind occurred recently, and the custom was common when beginning Buddhist monasteries.

USEFUL HINTS.

Sandpaper is at present made with powdered glass instead sand. Glass is readily pulverized by heating it red hot and throwing it into water, and finishing the powdering in an iron mortar. By the use of sieves of different sizes of mesh, the powder can be separated into two various grades, from the finest dust to very coarse, and these should be kept separate. A strong paper is tacked down and covered with powdered glass of the desired fineness; when the glue is dry the surplus glass is shaken or brushed off. Muslin is better than paper, and lasts much longer.—Woodworker.

One boiler horse-power or its equivalent every hour will in general heat the amount of space given below in the different kinds of dwellings:—Brick dwellings in blocks, as in cities, 20,000 cubic feet; brick stores in blocks, 15,000 cubic feet; brick dwellings exposed all round, 15,000 cubic feet; brick mills, shops, factories, &c., 10,000 cubic feet; wooden dwellings exposed, 10,000 cubic feet; foundries and wooden shops, 8,000 cubic feet; exhibition buildings, largely glass, 5,000 cubic feet. The above table will answer in general for estimating, although men who figure very closely go into calculations in regard to the actual amount of cooling surface which the building has for the sake of being on the safe side.

MOISTURE AND MASONRY.—Water is the most destructive agent to construction. There is no quantity so small which, if repeated, is not ultimately fatal. The softest as well as the hardest material must yield to its insidious attack. No adage more true than "Gutta cava lapidem." Our forefathers knew the connection between moisture and decay in soft material. Hence in the buildings of the districts where the soft stones prevail, the bottom courses of the walls will frequently be found to be formed of a hard and impervious stone, the strata of which are called by the quarrymen foundation-stone. Walls always above or always below water may, under certain circumstances, be laid without mortar. When between wind and water they never should.



ÉGLISE DU SACRÉ-CŒUR J. VENNE ARCH^{TE} 1882
 PRESBYTÈRE DU SACRÉ-CŒUR 1894
 PERRAULT, MESNAUD & VENNE ARCH^{TES}
 RUES LESLIE, ONTARIO & MALDEN STS



CHURCH AND PRESBYTERY OF THE SACRED HEART, MONTREAL, QUE.
 PERRAULT, MESNAUD & VENNE ARCH^{ITECTS}, MONTREAL.

USEFUL OFFICE BREVITIES.

In all levers the power is in proportion to the length of the arm on which it acts, which means that if the fulcrum is close to the body to be moved, the effect is greater than if it were nearer the balancing point or centre where the lifting force would only equal the downward pressure, increasing or decreasing as the fulcrum recedes or approaches it.

All plumb lines drawn to the earth's surface continue to its centre, showing that walls and other parallel erections are not in reality parallel, and if continued to a sufficient height a difference would be perceptible in the distance between them.

The same rule applies to horizontal lines, owing to the earth's curvature, which is 8 in. to the mile, making all lines drawn parallel to its surface similarly curved.

In making patterns for iron castings the iron in pounds is equal to the same weight of pine in ounces. A hollow cast-iron column is capable of bearing as much strain as a solid cast column of the same diameter.

To space any number of articles the thickness of same being given: Place them closely together and measure their combined width, then subtract this dimension from length of distance to be spaced, and divide the number of articles in the remainder.

A simple way to strike lancet Gothic arches is to join the apex and a point of springing, bisect this line, and draw a line at right angles to it. The intersection of this line with the springing line is the radius point.

To find mitres on the Steel Square.

- 12 × 12 = Square Mitre.
- 7 × 4 = Triangle.
- 13½ × 10 = Pentagon.
- 4 × 7 = Hexagon.
- 12½ × 6 = Heptagon.
- 18 × 7½ } = Octagon.
- or
- 7 × 17 }
- 22½ × 9 = Nonagon.
- 9½ × 3 = Decagon.

Half an ounce of iron loses one-eighth of its weight in water. A mans daily labor could be performed by 4lb. of coal.

Figures on the square for top and bottom cuts on common rafters:—

1/8 pitch	=	3" rise	12" run.
1/6 "	=	4" "	12" "
1-5 "	=	4 10/16 "	12" "
1/4 "	=	6" "	12" "
1/3 "	=	8" "	12" "
1/2 "	=	12" "	12" "
2/3 "	=	16" "	12" "
Gothic "	=	21" "	12" "

For hips substitute 17in. run for 12ft. run.

When a beam is fixed at one end the strain on it is four times as great than if it were fixed at both ends.

To calculate the area of an ellipsoid or spheroid: Call the base 10ft. and the height 7ft. Then 10² × (7 × 4) = 296 sum of square of base and four times square of height 296 ÷ 2 = 148 and √148 = 12.1655 square root of 148. Then 12.1655 × 3.1416 × 10 = 1191.0957. Square feet and area of spheroid or ellipsoid.

Table of the gravity of wood from cork to lignum vitæ:—

	Specific gravity.
Cork	246
Poplar	383
Larch	544
Elm and English fir	556
Mahogany, Honduras	560
Willow	585
Cedar	596
Pitch pine	560
Pear tree	661
Walnut	671
Fir, forest	694
Beech	696
Cherry tree	715
Teak	745
Maple and Riga fir	750
Ash and Dantzic oak	760
Yew, Dutch	798
Apple tree	793
Alder	800
Yew, Spanish	807
Mahogany, Spanish	855
Oak, American	872
Boxwood, French	912
Logwood	913
Oak, English	970
Oak, English, sixty years cut	1170
Ebony	1331
Lignum vitæ	1333

To find out how many feet there are in one ton of mahogany:

1 ton = 20cwt. = 35,840 ounces in a ton.

Look to mahogany, and opposite you will find 560, which divided into the ounces in a ton, will stand thus:—

560)35840 = 64 cubic feet. Ans.

To find the weight of a body from its bulk:—

RULE.—Cubic feet × specific gravity = weight in ounces.

To find weight of a log of larch 14ft. long, 2½ft. broad, and 1¼ft. thick:—

2.5ft. × 1.25ft. × 14ft. = 43.750; then,
43.750 × 544 = 23800 ounces =
13cwt. 1qr. 3lb. 8oz. Ans.

The standard of specific gravity of bodies is water, one cubic foot weighing 1,000 ounces.

"GEOMETRICAL DECORATED" WINDOWS.

THE important subject of the due subordination of the mouldings of Decorated windows was very ably worked out by Edmund Sharpe, though at the present day, when Gothic principles are so well understood, some of his comments may appear to give almost elementary information. He remarks on page 51 that "the different orders of the window arch seldom consist of the same mouldings, and do not often even resemble each other. This is, perhaps, less the case with the earliest windows than with the later ones." He proceeds to say, "On the other hand, the rich series of curvilinear arch-mouldings, commencing with Carlisle and ending with Beverley, exhibit profiles of great variety and beauty". Further on, "As soon, however, as the double ogee began to be a prevalent curve, the practice of repetition in the orders of mouldings, both of windows and doorways, became again very common." All this is very interesting. In some thirteenth century work there is good reason for saying the mouldings have the effect of bundles of reeds tied together, and this complaint is justified by their sameness, also by the want of proper prominence and boldness to the leading members of the several groups of mouldings. Again, page 53, Sharpe says, "The section of a tracery bar is usually the same on both sides. This rule, which may be said to obtain throughout the whole of the curvilinear period, has its exceptions in the Geometrical period. Occasionally the circular centrepiece has a different series of mouldings on the inside and on the outside. . . . Where, also, two orders of Foliation are used, not occurring together, a tracery bar will sometimes show a different profile on its two sides." Even were there no Mediaeval precedent for what Sharpe has described, there can be no reason whatever why, when the architect thinks fit, he may not act according to the particular circumstances. For example, the employment of what has sometimes been called "edge-tracery" (*i.e.* where the fillet is dispensed with the plain chamfers or hollow chamfers, as the case may be, meet in an arris) is very useful where the tracery requires to be lightened, more particularly in wood-work. For the same mouldings can be used in the same window with or without the fillet. What is somewhat unfortunately termed a "false" mitre is also handy in those parts of tracery where the plan just mentioned does not suit, so as to get a perforation. Even although an architect gives a drawing of the tracery half or full size, he is sure to find that he can improve it when he has seen the masons set it out full size on the boards, as every architect ought to make a point of doing if he possibly can. It is very apparent that much of old Geometrical tracery was never struck in by compasses, and varies in outline where, according to rule it ought to be the same. In modern practice such a procedure is undesirable, but at the same time it will be found that an occasional deviation from compasses is a decided help. It was just remarked that some license might be taken in lightening tracery, but, on the other hand, there is occasionally an advantage in giving, at any rate, an appearance of strength where desirable by refraining to pierce according to routine. What ought to be avoided is any "cut-and-dried" look to a window. It should show the evidence of the care and thought bestowed upon it by the designer, and not look as if turned out from a mill. To make one last quotation from Edmund Sharpe:—"Much ingenuity is often shown in the manner in which these three members of a tracery window [*i.e.* window-arch, scoinson-arch and rear-vault] are respectively arranged and united with its lower part and with one another; and the subject is one which deserves more attention and study than is usually bestowed upon it." These words might be written in letters of gold, so true are they. But, happily, since they were penned architects have begun to pay a good deal more attention to the point Sharpe alludes to than they did then. But, with the best intentions, what can the unfortunate architect do who is tied and bound by want of funds placed at his disposal? It is most difficult to find room for a window-arch well recessed from the exterior, an ornamental rear-vault, and a bold drop-arch for internal effect—for it means walls of substantial thickness. The successful treatment of a scoinson arch is important, for it gives a charming variety, and prevents a too large soffit where the window is placed at a considerable height. If treated in combination with an order of tracery distinct from that of the exterior of the window the effect is the more enhanced, as it gives that slight feeling of mystesy which is so valuable an aid to the architect.—Builders' Reporter.

Mr. Horwood, architect, recently from New York, has opened an office at 90 Bank Street, Ottawa.

It is understood that the Owen Sound Portland Cement Company, whose works were destroyed by fire recently, is being reorganized under the name of the Georgian Bay Cement Co., with a capital stock of \$90,000.

MANUFACTURES AND MATERIALS

WIRE NAILS.

THE increasing use of wire nails to the exclusion of cut nails cannot be explained says the Architect, Builder and Decorator, by the rules that commonly govern the substitution of one line of goods for another which has had the field for so long as did the cut nails. It is no uncommon thing these days of advertising to see an old favorite driven from the market by a new and perhaps inferior article, through the judicious use of ink; while a really good article, well established in the esteem of the public, must be liberally advertised in order to hold its own. In this use of nails, however, no advertising seems to have been done, while what little investigation of the relative merits of the two kinds has been made, all seems to have given testimony in favor of the old style of nails. In spite of the fact that repeated tests have shown the cut nails to hold more than the wire nails of the same length and weight, and in spite of the weight of tradition on their side, which is usually of itself sufficient to hold the market for useful articles against any ordinary effort, the wire nails have pretty much driven the others out. Some dealers do not keep any considerable assortment of the cut nails, and others declare that they do not sell a fifth as many as of wire nails. It will not do to say that the favor shown by builders is all a mistake, and accept the testimony of the testing machines as altogether conclusive. There must be something upon which to found the very general belief prevalent among the people who use nails, that the wire nails are the better. Possibly the evidence of the retailer as to the relative condition of packing boxes put up with the two sorts of nails on their arrival at the end of their journey, may have weight. The difficulty the carpenter finds in pulling down his staging when built with the wire

nails may be evidence to him of their staying powers. Whatever the cause, he thinks the wire nails will hold more than the others. When the wire nails were first generally introduced, they had only cut nails of the very poorest material to compete with, but that is not the case now, for there is no difficulty in getting cut nails that will clinch almost as well as the old "wrought" variety. In the larger size nails, the number to the pound of a given length is about the same, but in the sizes more commonly used there is a considerable difference in favor of the wire nails—enough to make them the cheaper at anything like the same rate per pound. The present popularity of the wire nails is such that the cut nails must be specified if one has any hopes of securing their use on buildings. That the cut nails of a given length are better for the general purposes of a building, there would seem to be no reasonable ground for doubting, being as they are, so much stronger when driven home. Nails are not expected to hold in a building after they are half pulled out. The "coated" or "cemented" wire nails would probably be of advantage in some building work, as although a more slender wire than the ordinary nails of the same length, their hold when driven home is allowed by all who have tested or used them to be phenomenal. So far as we have observed, they are, however, hardly known among builders. For such places as the lathing of an ordinary ceiling they would add greatly to the security.

A method of drawing designs on glass with an aluminium pencil has recently been brought out in France. This metal, like cobalt and some others, has the property of leaving a metallic trace, like that of a lead pencil, on glass quite free from grease, and the trace is so adherent as to be practically permanent if not removed by hydrochloric acid. The pencil employed has a rotary point, which is found to make the metal adhere better than a fixed point, as in the ordinary pencil.

HOW SLATE IS MINED.

The manner in which slate is mined and cut up for purposes to which it is applied is a process that is known to only a few people, because slate is not found in many places in this country, its principle source being in upper New England and Pennsylvania. It is not taken out of shafts but is quarried out of big holes in the earth.

The slate is blasted out in huge blocks, and is hoisted out by steam and turned over to the men who know how to reduce it to the proper size. Huge blocks of it are taken in hand by these workmen, who cut a niche into one end of each piece. Then they take a chisel and a mallet, and they are so skillful in directing their blows that they can split the blocks of slate in almost any way they please.

If you watch the slab on which one of them is working you will see a little hair line running through it, and presently the block will fall apart on either side of this mark. The workman will make this line straight through the middle or to either corner just as he likes. I do not know just how he does it, but he invariably accomplishes what he sets out to do.

The smaller pieces thus produced are taken in hand by another set of men, who split them up into sheets of the proper thickness for roofing slate. This they do with a long-bladed instrument about the shape of a putty knife, but many times larger, and if you saw them do it you would marvel how they got the sheets off without breaking them, and also how they could split them so thin. Some of these men can take a sheet of slate only one inch thick and split it thirty-two times. The usual number of divisions is sixteen. These sheets are taken and cut into squares by machinery.

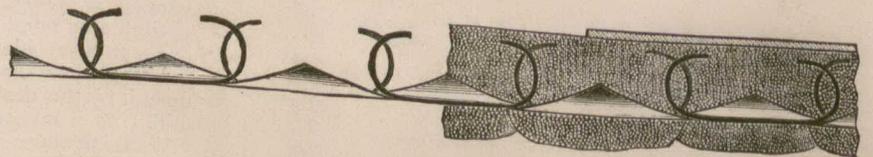
Wherever there are slate quarries you will find a great many Welshmen, for the best slaters come from Wales. Boys follow the trade of their fathers, and there are whole families and settlements who know no other means of earning a living.—Exchange.

A size of shellac varnish would be useful on a fresh wall. Ordinary liquid wood filler is often used for this purpose. A coat of boiled oil is preferred by many painters for a size. But these oily surfaced sizes are hardly adapted for wallpaper, unless cut on surface with sandpaper. For water colours a varnished or painted wall is always an ideal wall, because of the absence of suction.

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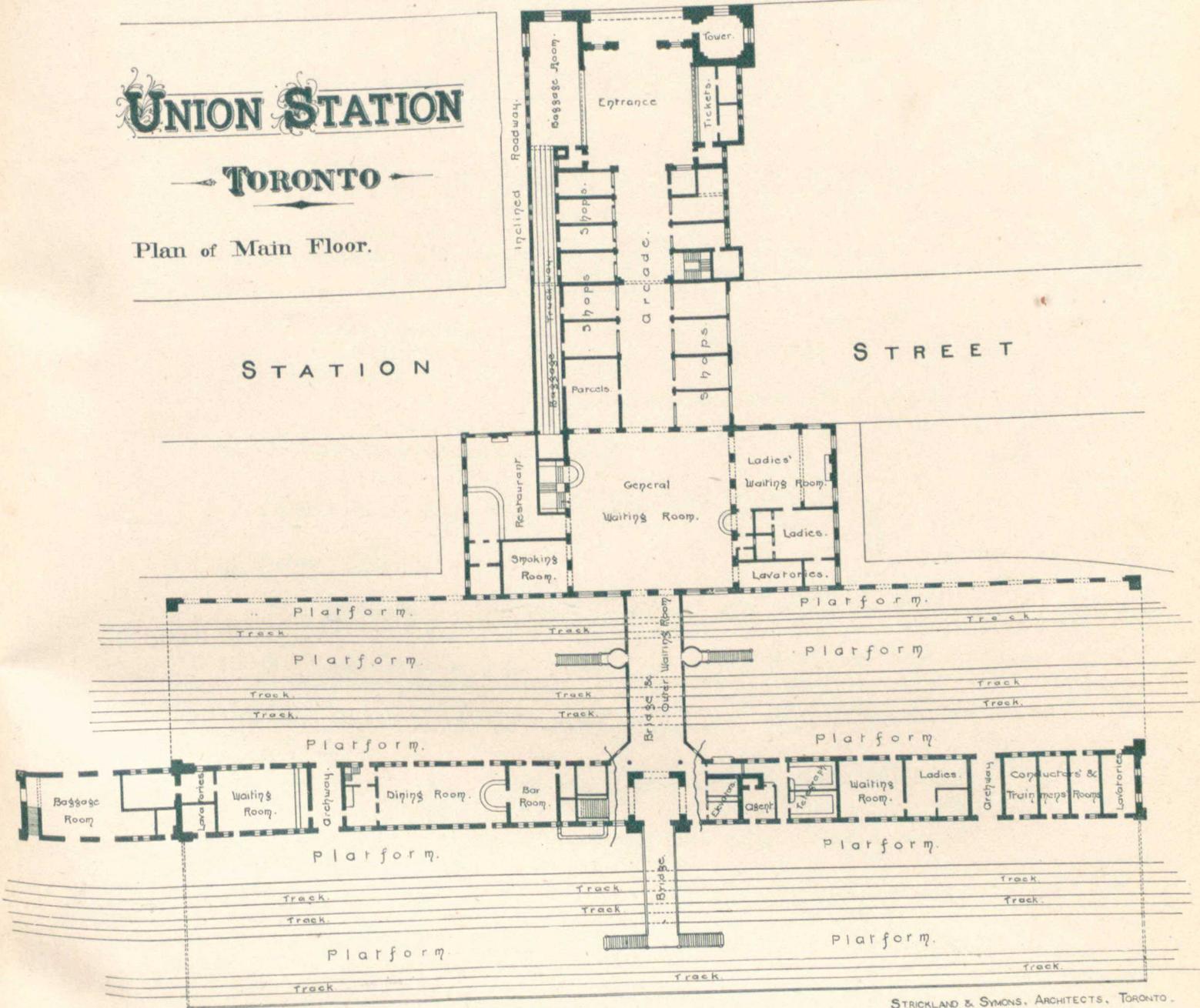
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Toronto, June 21st 1894

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MORESQUE PLASTER DECORATION.

THE Moors employed plaster for the decoration of both the exterior and the interior of their structures, not only for the simple expression of form, but as a basis of polychromy. At Segovia there are several good specimens of exterior decoration, and it will not be out of place to particularize one. The front walls of the Alcazar are covered with a diaper in plaster with most artistic effect. Probably the work was wrought by means of a frame, either of metal or wood, in which the requisite pattern had been cut, as is done with stensils. This pattern was placed flat on the face of the plaster as it dried, and the pattern was cleverly incised, as it were, through the openings. It could also be pressed on the plaster until the surface pattern was indented. The composition of the plaster for such purposes was undoubtedly cared for, as well as the manipulation, for the durability of it has been tested by many centuries of exposure. A band of such ornament can be carried across brickwork, or round a brick-built tower, as it was by the Moorish artists. Examples of such application can be found in plenty, and it is always richly effective. The Moors showed fine judgment in the use of this ornamentation in relation to the whole building on which they applied it, not being led away by the facility they thus had for the employment of detail, but, using the work in uniform masses, or bands, they avoid any expression of pettiness by profuse and meaningless variety.

For the interior courts and chambers mural decorative work in plaster was of fine quality, and was cut and carved in situ by the artist; it was simply sculptured on the spot as stone or alabaster might be carved, no mould being used. The capitals of the columns were thus produced in delicately intricate work. At Toledo there is a synagogue that was constructed in the twelfth century by Moorish artists, and was afterwards forcibly seized and converted to Christian uses, where the application of plaster work of this kind is exemplified with conspicuous effect. The spandrels above the arches are all original carvings of arabesque pattern, showing delicate undercutting as well as surface work of peculiar beauty. In all parts of the structure there is that delightful variety in detail with unity of effect such as artistic handwork can give, but which mechanical repetition will not achieve. The mere play of light and shadow on such a carved surface, if it be white or of a uniform light tint, has a charm of its own; but when the carving is emphasized by colour the effect is most powerful. It is the principle of the work, not existing specimens of it, that we should copy; the same principles that we may see practically illustrated in the Alhambra, and equally in other Mahometan structures. We may not require the splendid harmonies of those wonderful walls for our purposes, but we should none the less learn from them to produce what we do want. We do want art in our plaster work. That plaster may be used truthfully and artistically we may learn from the

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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 x 3	2 7/8	131,000	15,188	
C	2 1/8 x 3	2 7/8	130,000	14,751	
D	3 x 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.

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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.

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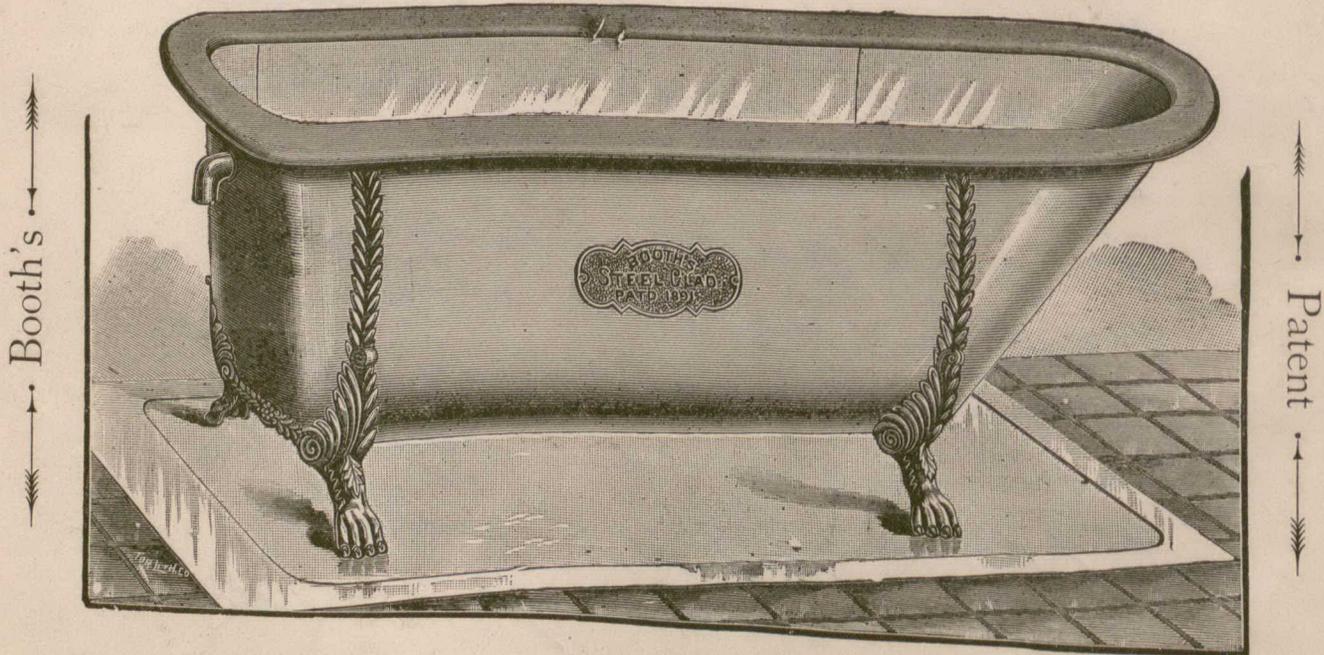
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