

**PAGES**

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## THE CANADIAN ARCHITECT AND BUILDER,

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A RECENT fire at the Armour glue work in Chicago appears to have shown that solid wire glass is an effective protection from fire. The Inland Architect says that the windows with metal frames and wire glass were subjected to a "fierce heat," but the flames could not make their way through, so that \$400,000 worth of property ten feet from the flames was protected by glass.

### Cataloguing Libraries.

AN important step is being taken in the direction of bringing into affiliation under one catalogue system several of the public and technical libraries of Montreal. The preparation of the catalogue is in the hands of Mr. Gould, librarian of McGill University. The card system will be employed. The management of the new public library at Westmount, a suburb of Montreal, wisely entrusted to Mr. Gould the selection and cataloguing of their books. Thereby the duplicating of books which are already included in McGill and other public libraries of the city has been avoided. The proposal has been made, and will doubtless be approved, that the Art Association, the Canadian Society of Civil Engineers, the Fraser Institute, the Province of Quebec Association of Architects, and perhaps other public bodies possessing libraries should arrange to have their collections catalogued by Mr. Gould in the manner described. With the catalogue



of their own library each of these bodies would be supplied with a copy or copies of a complete catalogue of the books contained in all the associated libraries, including lists of additional books when purchased. Under this system, duplication, and the useless expenditure incident thereto, would be abolished, while the members of the various societies thus affiliated would have at command the use of the books comprising the combined collection. The advantages of the system are so obvious as to make advisable its adoption in all cities where there has been established more than one public library.

**American Institute  
of Architects.**

At a meeting of the executive of the A. I. A. held in Washington on July 17th, a draft programme was adopted for the convention to be held in Pittsburgh, Pa., on November 13, 14 and 15, next. The papers to be read will be classed under several heads: relating to artistic subjects; to historical topics and to construction. Under the first head there will be several papers on the influence of the French School of Design on Architecture in the United States. One or two papers are promised on architecture and the allied arts. Several papers are expected on the legitimate style of ornamental design for skeleton steel construction, as well as a few papers on historical topics. The Pittsburgh manufacturing plants, such as the Carnegie steel works, the Westinghouse electrical plants and the plate glass works will be thrown open to the architects for examination, and before this examination papers will be read describing the methods of manufacture, &c., of the different plants that will be visited.

**New Building By-law  
in Montreal.**

A YEAR was spent by a Committee of the Province of Quebec Association of Architects in framing a new building by-law for Montreal. The result, in the form of a draft by-law, underwent further revision at the hands of a special committee of the City Council, the Builders' Exchange and other local associations whose interests would be specially affected thereby. Having by these been finally approved, it now requires but the sanction of the City Council, which will doubtless be given at an early date. Under the proposed by-law an architect would be placed at the head of the City Building Department, having as his subordinates men possessing a practical knowledge of modern building methods and requirements. In Montreal as in Toronto there is urgent need for a thorough revision of the present obsolete building regulations, and also for the reconstruction of the City Building Department in a manner to insure a more thorough and satisfactory compliance with proper constructional methods.

**Professional Ethics.**

IT is an unpleasant duty that an architect is sometimes called upon to perform, when he is commissioned to report on the work of another architect because the client is not satisfied. Most architects would prefer to decline with the reason that they do not care to interfere with the work of another architect, but it is self-evident that if one who is asked so to report declines some one else will be employed, and probably the man who feels like declining will be actuated by a less antagonistic and criticizing spirit than one who would be only too glad of the work. If professional ethics were worth more

than the paper they are printed on the criticized architect would be willing enough to leave the matter in the hands of the architect who is to report on his work, knowing that full justice would be done him. But as it is, he may naturally fear that the opportunity thus put into the hands of another architect will result in his being torn to pieces without mercy. Under any circumstances the architect would prefer that the matter should be submitted to arbitration. A painful case of the kind has recently occurred in connection with the new Record Hall of New York. Mr. Thomas, the architect, had proposed a great deal of very costly work that the Mayor thought useless and extravagant considering the fact that the building was not for the use of the public but for the storage of books and documents. Mr. Thomas has been subjected to scathing articles in the New York papers and feels aggrieved that his artistic work is to be spoiled on account of economy. Since the city has to pay it would have been better had Mr. Thomas quietly submitted to the exclusion of such costly work as he proposed and been willing to modify his plans. As it is the Mayor requested Messrs. Horgan and Slattery to look into the matter, with a view to ascertaining if it was necessary to incur so great an expense. It is due to the profession, and in particular to Messrs. Horgan & Slattery that the true nature of their report should be given publicity, to counteract the biased statements of the daily press. Their work has been honorably carried out; they have not detracted in any way from the character and ability of Mr. Thomas or in the least contemplated the possibility of stepping into his shoes and getting the work away from him. Their report, in fact, is worthy the attention of all who may be called upon to report on another architect's work. The result is that Mr. Thomas has been ordered to make a modification of his designs whereby nearly a million dollars will be saved.

**Contracts Between  
Architects and Clients.**

ARCHITECTS would do well to turn their attention to the subject of contracts between themselves and their clients. It is a matter that architects' associations should take up in a more definite manner than they have done heretofore. Except in large undertakings, contracts are seldom drawn up; the custom of the profession seems to serve as an implied contract between the parties. So long as the architect's work is at its commencement expected to be completed within a year, a written contract is not required by law. A recent contract entered into by the corporation of Toronto and the architect for the market improvements contains one clause in particular that is hardly fair to the profession, if, as is likely, this contract will form a precedent. The clause is to the effect that the corporation shall have the power to dismiss the architect if in their opinion his work is not satisfactory. No doubt this clause, if occasion arose, would be governed by an arbitration clause. But the point is, that a client, having selected his architect, presupposes that he is capable of carrying out the work entrusted to him, and the idea of putting in a clause to enable the client to get rid of him must produce a feeling of uncertainty, with a bias against the architect. It happens in very many cases that a client who is prone to be suspicious believes his architect is not acting fairly towards him when he decides some matter in dispute between client and contractor in favor of the latter, and under a contract containing such a clause as the one in



question, the client would most naturally be inclined to act upon it, whereas, in the majority of cases, a client learns that his architect has done his duty fairly and squarely, and that had he gained his own point at the time an injustice would have been committed against the contractor. It is to be feared that an architect is more likely to be dismissed than not, for the simple reason that a suspicion may at any time arise in a client's mind against which it is impossible to guard. The clause must have the evil effect of making the architect of necessity favor his client at the expense of the contractor, rather than run the risk of ignominious dismissal. The architect's position is a peculiar one. He is his client's advisor, and he should not at the outset be threatened with dismissal in the event of his client objecting to his advice. Time enough to talk about dismissal when it becomes evident that the architect is failing to fulfil his part.

### PRIZES FOR GOOD DESIGN.

The prizegiving by the municipality of Paris for the most beautiful houses of the year is established. There are to be six prizes given in the year. The architect gets the prize and the owner is exempted from one half his tax for local improvements. It is comparatively easy in Paris to make a fair decision about a question of design even when the matter is in the hands of the municipality. There is but one style of design; the canons are fixed, and in case of doubt there is authority to appeal to in the School of Fine Arts. But the great thing is that everybody regards a matter of art as a question deserving of serious consideration, and a decision in such a matter of genuine importance. What would be the fate of such a prize in the hands of the aldermen of an American or Canadian city. Among the list of applicants each would soon find someone whom he would like to help along; and would he be likely to stand in his way on the question of a little matter of appearance that is of no consequence? It is not want of honor we should have to complain of so much as want of appreciation of the merits of either the building or the prize giving. Yet it is in these countries if anywhere that the giving of such prizes is needed. In Paris they have both fine examples of architecture of all periods, from which the naturally gifted may cultivate a sound taste, and also a standard style, which must materially reduce the difficulty of judgment on the point of excellence for the less gifted. It is here where we have no tradition, no standard and no prevailing excellence that just such distinction is wanted as is being given to good work in Paris. There it is a reward for excellence generally recognized and applauded. Here it would be a pointer to the public as to what is good work. It would not be at all surprising to find the decisions at first bewildering to the public and to those admirable critics the local reporters. The body which made the decisions would need the courage of their opinions. But, if the decisions were right there is no doubt that the stamp of approval put upon buildings by persons supposed to be able to judge of merit would attract to the buildings a questioning attention that they would not otherwise have received, with the certain result that their merits would grow upon the observer and in course of time the presence of the acknowledged good would drive out the bad. It is an unfortunate thing that it is not only the public who do not know, that want a standard, but architects who

do know. It is a doctrine among some architects that the business of the designer is to suit the public taste. There is only one end to a career founded upon this error. But the first fruits are no doubt promising; and it may be sometimes hard to distinguish between rising to meet the client's needs and falling to meet his taste, under the idea that the man who pays should get what he wants. What he pays for is good advice and that is what he should get. It would be a stiffener to an uncertain mind of this sort to know that there is an instrument for establishing public opinion and a chance for his client to measure his house not by his own opinion but by authority.

The crux of a proposition of this kind is its feasibility. Who are to act as judges? Yet the idea is not altogether chimerical. What is practical politics in Paris ought not to be an impossibility to think of in other enlightened countries. And it is worth thinking about, for something to form a guide to public taste is much needed.

### TREATMENT OF WOOD.

THE American Paper Trade announces on "the best inside authority" that "if the present price of spruce land is kept up, in five years from now there will not be a stick of timber standing in the United States." It concludes the article by saying "the cry of the manufacturers is 'On to Canada'." It is a pity that something cannot be done to stop the use of good building material to make a pulp for which trash is good enough. There is no doubt that, when the spruce is gone, American ingenuity will discover a substitute; the pity is that the need of a substitute will not be pressed upon them sooner. A price for our spruce that gives no reason to look about for a substitute is too low a price. Spruce has a value far above its value as pulp. It is not our best wood; but its destruction implies the destruction of pine, which, in the absence of spruce, must be wasted in inferior work for which spruce would do. The destruction of both pine and spruce is in progress.

To contemplate the exhaustion of the forests is to sing the praise of wood. There is nothing like it. It has strength and stiffness greater, as compared with weight, than any other material. It is more easily and quickly worked. It is a non-conductor—an excellent thing in these days. There is nothing that will resist fire, without losing its structural strength, so long as solid timber.

We cannot afford to waste so precious a material. To some extent its less extensive use is inevitable and the substitution of stone and iron will be an improvement in some ways. But we cannot dispense with wood, and its value will continue to increase as its abundance diminishes. With the increase of value comes increased care and science in its use. We read continually now of processes invented to preserve wood from decay. The usual way is by impregnation with a preservative. The Southern Pacific Railway treats piles 110 feet long, by evaporating the moisture at 230 degrees and filling its place by creosote at the same temperature. This process is said to be perfect. All microbes, bacilli and animalculae avoid creosote; and the teredo, which makes nothing of the hardest timber, is said by the Portland Oregonian to "stand off and gnash his teeth in rage as he contemplates the creosote treated piling" of the Southern Pacific. This process is expen-



sive. It takes one dollars worth of creosote to preserve one cubic foot of wood. A cheaper process is under experiment in England where engineers have succeeded in extracting the sap by electric osmosis and sucking into its place an antiseptic mixture of borax and resin. This process will probably be known as the Nodon-Bretoneau process. Another inventor whose work is still in the experimental stage has examined extracted sap, and finding it to be albuminous and coagulable, has taken a hint from hard boiled eggs and solidified the sap in place. He claims that, without making the wood hard to work, he has removed the possibility not only of decay but of shrinkage.

The capacity for interminable shrinkage is the great fault of wood, and, for any fine and permanent use of the material, something must be done to overcome this fault. The trouble seems again to lie in the sap, so that woods treated with preservative after extraction of the sap should be comparatively free from shrinkage. The simple practice of soaking in a pond, which is practised in country places, has this end in view; and it is far more effective than kiln drying. The rapid swelling, when exposed to moisture, of kiln dried wood which has received no other treatment, as compared with the comparative steadiness of soaked boards, seems to point to the sap as the seat of the hygroscopicity of wood. To dry in a kiln a board with the sap in it is to deprive it temporarily of its moisture, so that it comes out of the kiln hungry, and paint cannot keep from it the moisture it craves. It is of little use to specify a condition of dryness which cannot be made permanent. The wood is bound to attain the same proportion of moisture as the air of the house. The air of inhabited houses is found to contain usually about 10 per cent. of moisture. Flooring or other finish ought therefore to be brought into the house when the building has reached as nearly as possible its normal condition of dryness and temperature, and the wood ought to contain about 10 per cent. of moisture. It is easy to ascertain the proportion of water. If a piece is cut from the middle of a floor board, weighed, heated till dry and weighed again, the difference between the two weighings is the weight of moisture, and this should be ten per cent. of the weight of the piece when dried. If, as is usually the case, there is little hope of precision in the proportion of moisture in the wood, and good work is still sought, there remains the expedient of specifying quarter cut wood. It is the unequal consistency in the structure of the rings that makes tangentially sawn boards warp under shrinkage. The summer wood in the annual ring is thicker than the spring wood, and takes up and parts with more moisture than the spring wood. In tangential boards these portions of the ring are often opposed to one another, and the consequence is warping. There may also be a great width of summer wood and consequently great shrinkage. If quarter cut wood is used the shrinkage will be much less and there is nothing to cause warping, for the structure is the same on both sides of the board.

There is this to be said in addition in favor of seasoning by soaking, that it is as effective to prevent decay as it is to prevent shrinking and swelling. It is the sap and soluble portions of the wood that form the food of the fungus of disease, and when these are washed out the liability to decay is gone.

In the matter of inflammability, much may be done by treatment of the wood. The application of silicious

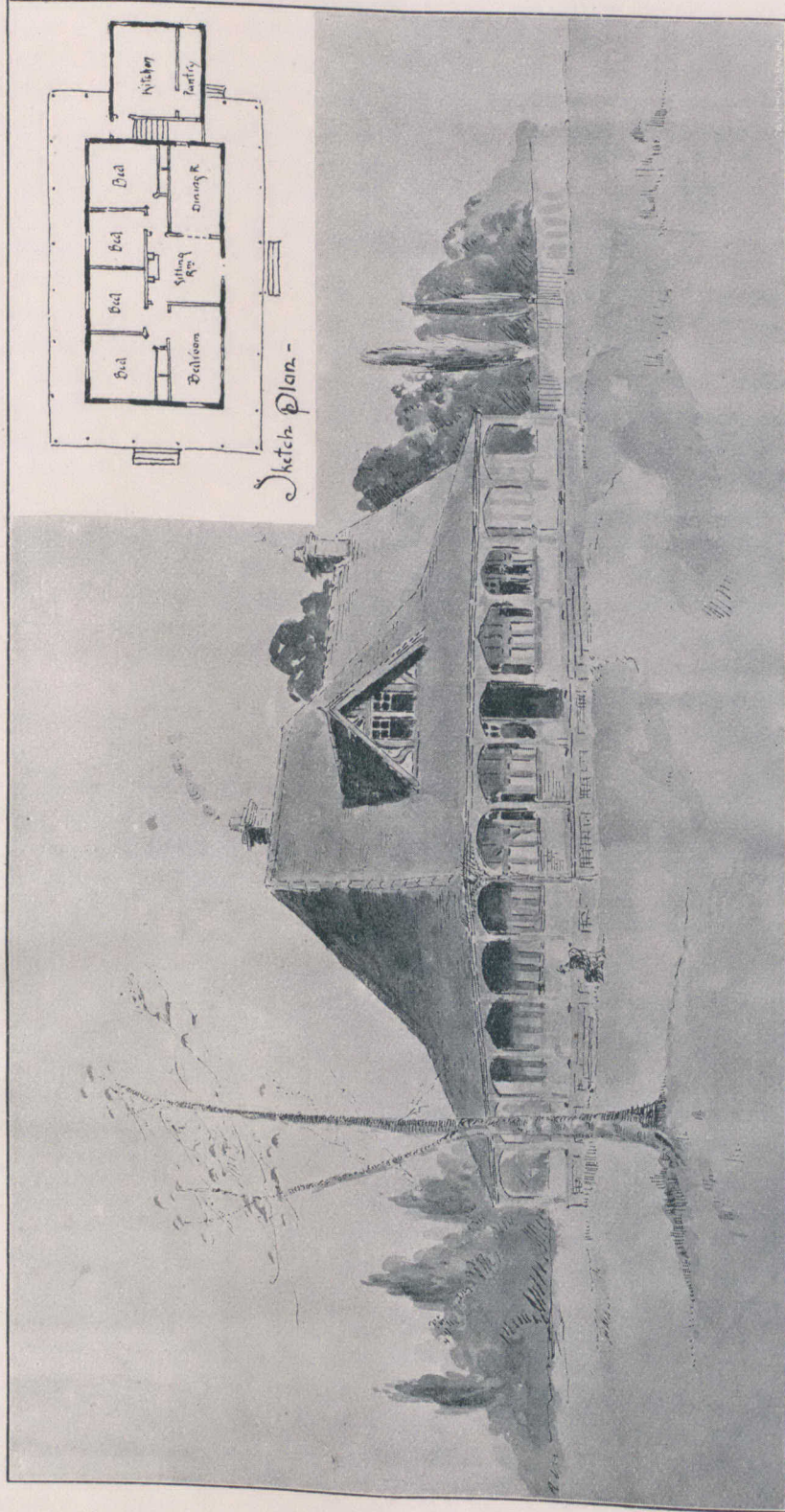
compounds has in experiment produced such results in England as to cause a decrease of 50 per cent. in fire insurance rates for buildings in which the wood is treated in this way. Experiments by the Belgian government exhibited the efficiency of treating wood with a solution of ammonium salts. Ammonium phosphate was found to be the most efficient. By the production of a non-combustible vapor, fire, which attacked untreated wood in less than two minutes, was retarded in its action for forty minutes. Such retardation is all that can be expected, but it is sufficient to reduce the inflammability of wood so that it is no longer a menace to the building in which it is used, but will instead prevent the spread of flames for such reasonable time as is necessary to let the fire department get to work. Thorough impregnation with ammonium phosphate, at 25 cents a pound, would be expensive, as it would require about four pounds to the cubic foot, but thorough impregnation is not considered to be necessary.

It is evident that, with proper care and the application of science, wood can be made more efficient than it is as we use it. Greater care is the natural accompaniment of greater value and the time is not far distant when the value of wood will rise to the point of *finesse* in its use. England and Germany still use wood to the extent of one quarter of our consumption in proportion to population. This amount may therefore be taken as the point of necessity. The amount represented by this point of necessity must steadily increase as our population increases; but in the meantime the forests are decreasing and, unless measures are taken to reforest, and taken speedily, the maximum value of wood will soon be reached.

## ILLUSTRATIONS.

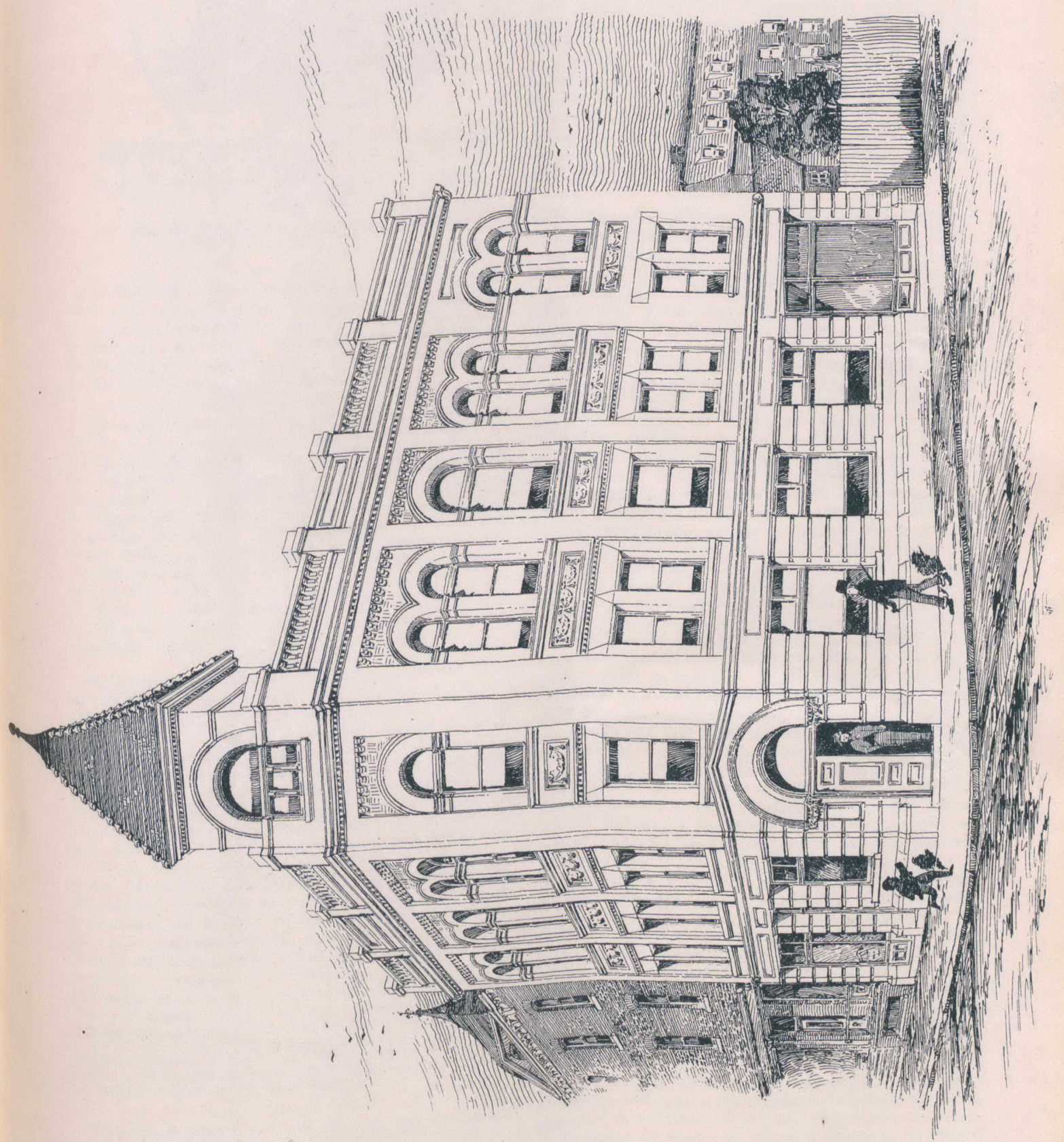
- COURT HOUSE, NANAIMO, B. C.—F. N. RATTENBURY,  
ARCHITECT.
- A BUNGALOW, BEACONSFIELD, FOR MR. C. L. SHOREY—  
J. RAWSON GARDINER, ARCHITECT.
- DRAWING ROOM IN RESIDENCE OF MR. F. B. FETHER-  
STONHAUGH, MIMICO—HENRY SPROATT, ARCHITECT.
- OFFICE BUILDING, WINDSOR, NOVA SCOTIA, FOR MESSRS.  
C. D'W. AND J. SMITH.—ELLIOTT & HOPKINS, ARCHITECTS.
- COMPETITIVE DESIGN FOR ADDITIONS AND ALTERATIONS  
TO THE MERCHANTS' BANK BUILDING, MONTREAL—  
MESSRS. TAYLOR & GORDON, ARCHITECTS.
- The conditions of competition issued by the bank required the addition of four more storeys to be placed on the old bank building, and great stress was laid by the bank on the absolute necessity of the "Design for these additional storeys being made to conform to the architectural style of the present building, and the two facades when complete must present a uniformity of design and not appear as two buildings of different design one placed over the other." This is emphasized further on in the conditions as follows: "The design for the exterior of the new part of the building will have of necessity to conform to the architecture of the old part. The present building though not arranged as it would be if designed to-day is nevertheless one of the best designed buildings in the city and in preparing the design for the new portion, the same style of architecture must be carried out, so that with the building complete, the old portion instead of being detracted from would be increased in importance and dignity."





A BUNGALOW, BEACONSFIELD, FOR MR. C. L. SHOREY.  
J. RAWSON GARDINER, ARCHITECT.





OFFICE BUILDING AT WINDSOR, NOVA SCOTIA FOR MESSRS C. DE W. AND I. S. GARDNER.



BY THE WAY.

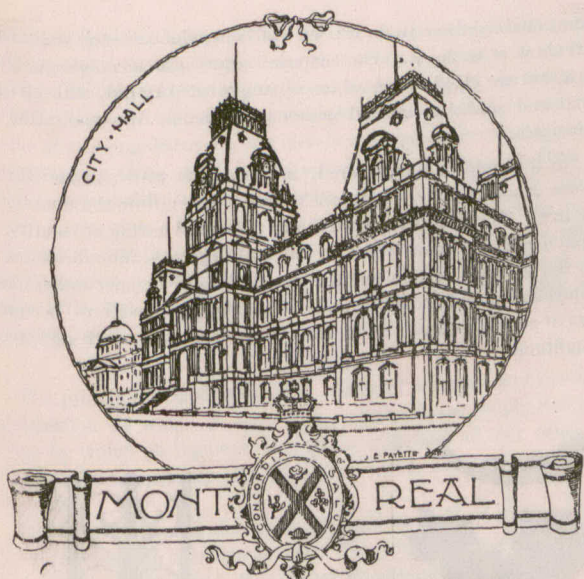
AN architect in a neighboring city advertises his work in this peculiar manner: "It is a delicate compliment to the cook when you call for a second plate of the same dish. This kind of compliment has been paid this office by clients, not the second time, but time and time again."

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THE famous promontory on the coast of Antrim, Ireland, known as the Giant's Causeway, is figuring in the Irish courts, and that, too, with a risk of its ultimate inclosure, if not from public gaze, at least from free investigation. It has now been decided in the Dublin Court of Appeals that the syndicate which leases the adjoining territory has also the sole rights over the curious ridge of basaltic columns in which Irish legend professes to see a remnant of the bridge built by the doughty giant, Fin MacCool, for his passage across to Scotland to his victory over a rival hero.

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THE following appeared recently under the heading "A Boom Town in Marble" in the columns of the Portland Oregonian: "I was assistant engineer on the Ontario and Quebec Railroad, a branch of the Canadian Pacific Railway," said an engineer in Tacoma, "and in running our preliminary lines one of them touched Bridgewater, Ontario, a deserted town, that was the personification of Oliver Goldsmith's 'Deserted Village.' Bridgewater was brought into existence by one of the strangest gold finds and crazes in the history of this continent. Nearly twenty-five years ago a farmer's wife was searching the woods surrounding their farm for a sow that had strayed, and, becoming thirsty, stopped to get a drink from a spring. Slipping, she fell against a small, loose rock, which rolled to her feet, and which proved to be a twenty pound nugget of almost pure gold. Bridgewater at that time was nearly forty miles from the nearest railroad, and the present site of the town was nothing but a wilderness, but the effect of that accidental find of the farmer's wife was such that inside of six months what had been a burned-over barren wilderness was converted into a substantial city of nearly 5,000 people. In digging a shaft about a mile south of the town site, on the claim of Billia Flint, a life Senator of Canada, an immense quarry of the purest white marble ever found on this continent was discovered, and at the suggestion of the Senator, the town of Bridgewater was practically built of marble, for it has to-day the only hotel, church, school, court-house and private dwellings constructed entirely of white marble in the world, and a mile north of the town are an abandoned axe factory and grist mill, whose foundations are built of the same beautiful material. During the building of the town thousands of men prospected the entire country, and shafts and tunnels were driven—some of them nearly one hundred feet deep, but, strange as it may seem, there was never enough gold found to pay the cost of a single shaft or tunnel sank or run in the entire district. So excited did the farmers around Bridgewater become that some of them actually hired guards to keep men from going on their land to pick up gold. Pat Keheo, an old Irishman, who owned one hundred acres of rock-strewn barren land, was offered \$125,000 for his holding, but held out for \$150,000. To-day you could buy the property for probably \$150. One rancher, whose farm adjoined 'Aladdin's Cave,' the place where the original nugget was found, sold five acres to an English syndicate for \$100,000, and it is an established fact that the syndicate spent as much more developing their claim, as everything was very costly, all material having to be hauled nearly fifty miles, over rough roads; and they did not get a single ounce of free gold out of their purchase; but they mined some quartz—about one hundred tons—shipped it to the States, and in return, got a bill from the smelting company for \$360 smelting charges over and above the gold in the quartz. This was the first, and I believe, the last, shipment of quartz ever made, as the cost of hauling, shipping and smelting was \$150 a ton more than the rock produced."



Branch Office of the CANADIAN ARCHITECT AND BUILDER,  
New York Life Building, Montreal.  
AUGUST 12, 1899.

FIRE ESCAPES.

The chief of the fire department, in his annual report to the council refers to the negligence of owners of large public buildings in this city, in not equipping such structures with proper fire escapes, as required by the fire by-laws. He expresses his intention to visit these buildings and compel by all possible means the responsible parties to conform with the law in this regard.

PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.

The annual meeting of the Province of Quebec Association of Architects will be held in Quebec in September. The exact date has not yet been chosen. I have heard the opinion expressed that it would be to the advantage of the Association that Mr. Raza should be elected to the presidency for a second term, and that the persons who may be elected thereafter should hold the position for two years. The Association are now comfortably housed in their new up-town quarters on St. Catharine street, and contemplate making, at an early date, considerable additions to their library. At the recent students' examinations, Mr. Gaulin, of Montreal, passed the preliminary examination. One other candidate for this examination and two candidates for the final examination failed.

A MODEL SUBURB.

The experiment is to be tried of establishing in the east end of the city a model suburb, to be known as Viauville. It will comprise the Viau estate, which has been divided into four thousand building lots. The managers of the estate are now laying out streets, putting in a drainage system, planting trees, etc. The property fronts on both sides of Notre Dame street, and extends down to the river. On the river side it is proposed to establish a park, wharves, boat houses, etc., for the use of persons purchasing land and erecting homes on the estate. The lots are being sold subject to the condition that houses erected thereon shall not be less than two stories in height and shall be constructed of stone. This is interpreted by some who have already become purchasers to mean that at least a portion of each house must be built of stone, and that brick and other substantial materials may be used in connection therewith. If the condition is to be more strictly interpreted, it will be difficult, if not impossible, to avoid monotony in the appearance of the buildings. It is to be regretted that restrictions as to the character of the buildings to be erected were not imposed in some of the older suburbs, where may now be seen rows of double tenement houses like to those erected half a century ago in the thickly populated districts of the city. It is understood that St. Catharine and Sherbrooke streets are to be extended through this property, which, under the terms of sale, is exclusively reserved for residence purposes.

NOTES.

The Laprairie Brick Co., of this city, has been incorporated with a capital stock of \$150,000.

The Dominion Bridge Co. have under construction at Lachine five steel scows 100 feet long, 26 feet wide and 8 feet deep, sheathed with 4 inch pine. These scows are to be used in the construction of the interprovincial bridge at Ottawa.

Indignation has been aroused by the action of the Road Committee of the City Council in granting to the proprietor of a public refreshment booth the privilege to erect a large kiosk in Victoria Square. The Committee have not even the poor excuse that a considerable sum would be paid into the city exchequer, as no charge is proposed to be made for the privilege. The City Surveyor has very properly refused to sanction the Committee's action, and the Council will no doubt also refuse its consent.



METAL WORK.\*

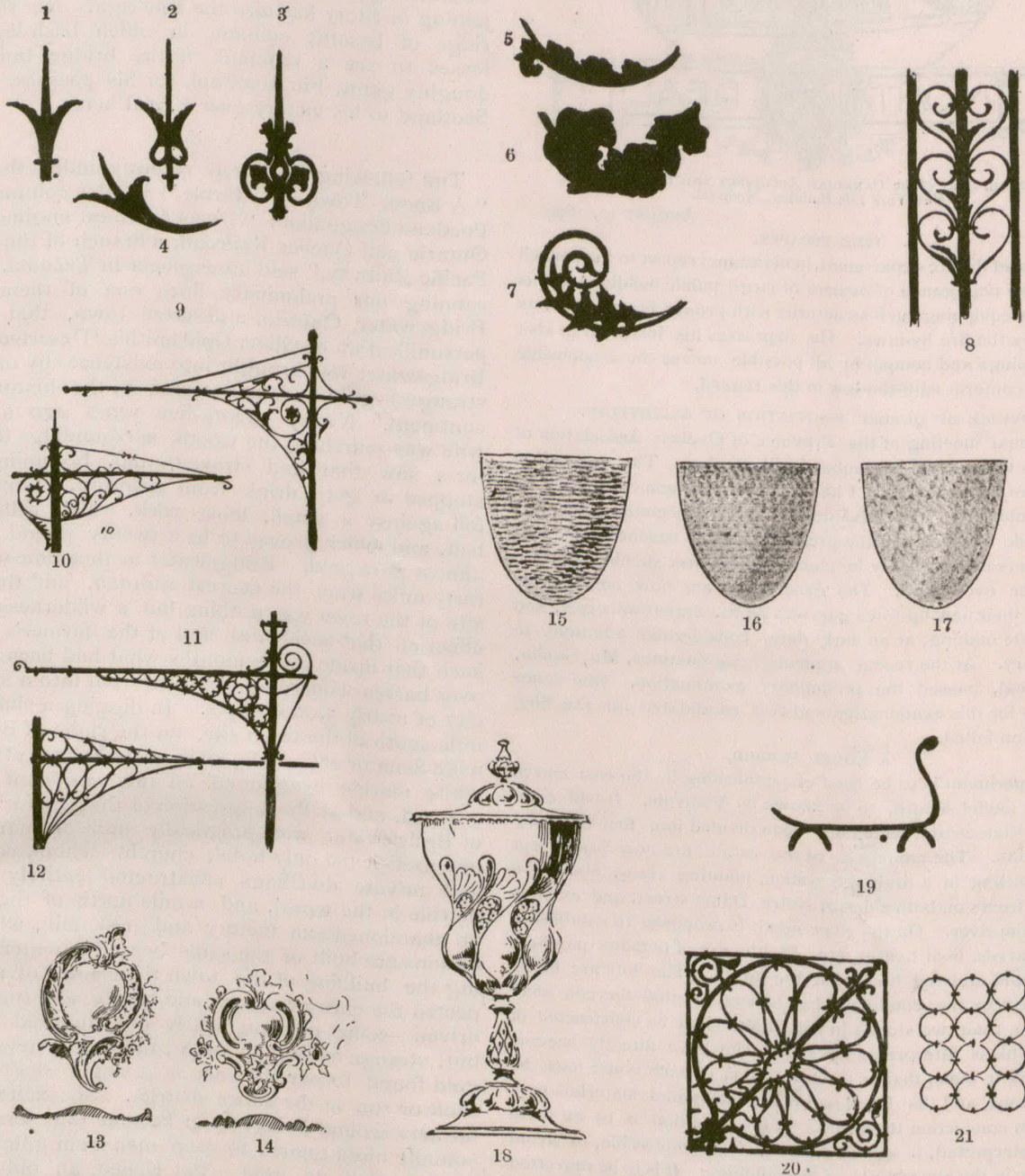
By T. SWAFFIELD BROWN, Master of the Art-Crafts Guild, Sheffield.

METAL work includes a very wide range of material and purpose. To this latter belongs the distinction between ecclesiastical and domestic art. The only difference in the past was due to the requirements of its purpose. The material was the same, the workers the same, and the prevailing style was the same; but in past days men's religion was a part of their lives and influenced their work, and no doubt the work for the sanctuary, the visible symbol of their faith, was more lovingly elaborated than that for use in domestic life.

But I do not propose to go into historical retrospect more than by casual reference. It has been done in volumes by the historian and the archæologist, and you probably know all or more about it than I could

means enabled them to do it; we want ours done as well as our means will allow us to do it. Our material means are as ample as theirs at least, but are chiefly devoted to copying what they did, with all its accidents and crudities, instead of being applied to the realization of the principles.

For it should be remembered, in connection with ancient work, that it was executed under conditions widely different from those under which we live. For long periods there was no settled feeling of security. The church and the home were—in different degrees—alike fortresses, fitted for the stress of warfare and the possibilities of defence rather than the enjoyment of such comfort, and even luxury, as have now become matters of course with us. And the character of their work reflected these conditions.



Nos. 1, 4, 5, 8, 9, are examples of the "rust works"—No. 9 (a sketch of the tram traction poles now erected in Sheffield) being shown as an example of bad design, the thick tie-rod at the top pointing out the futility of the decorative spandrels; Nos. 2 and 3 are vertical arranged) foliage in silhouette; No. 6 shows the effect of redundant foliage, and No. 7 that of properly treated (i.e. about the value of ties in design. No. 19 is a sketch of "dog" used in pairs to support wood, and Nos. 20 and 21 illustrate the remarks the next stage, and No. 17 the random markings of the hammer used as a decoration but not constructive. Nos. 13 and 14 are sketches showing how the peculiar curve of raised silver or copper lends itself to decoration as exemplified in the Louis XV or Rococo style, and the wretched travesty of it produced in England in the early Georgian period and copied now in tons of silver goods every year. No. 18 is a design intended to show the great malleability of silver and treatment it is susceptible of for display of brilliancy of surface when required.—T. S. A.

ell you. The work of the past is incalculably valuable in its teaching, but unfortunately much of it has been neglected and lost sight of, and only its outward and visible results have been made use of as patterns for reproduction. But these were the expression of the thoughts and impulses of their makers, and what we want is the expression of the thoughts and impulses of our makers. It was done as well as their

So that we should use our study of the past as a backsight to assist us forward, and only so, because otherwise, if we work back to it and merely copy it, we shall only produce anachronisms and incongruities. We shall stultify our skill, and record indisputably—and more or less accurately—to future generations, our utter sterility of imagination, if not our want of common sense.

I have made these remarks so that you shall not think that in what I have to say I am insensible to the beauties of old work; I am not, but

\* Abstract of paper read before the Sheffield Society of Architects.



keenly sensible to many which lie deeper than the surface; but I am the more concerned with the new, that which we have to live with (some of us by) in the present, and to be remembered by in the future.

It is curious to reflect that, through all the centuries, and in these days of startling discovery, the metals used generally in the arts remain substantially those used in the remotest antiquity, i.e., iron, copper and its compounds, bronze and brass, silver and gold, lead, tin, and in some forms, zinc. Platinum, aluminium, and many others have been discovered, but their use in this connection is too limited to affect this generalization. Nickel is an exception, but its discovery and use has done little but mischief in its common form (combined with brass as German silver)—I will mention presently how and why.

#### PRINCIPLES.

The principles which govern the choice of material and the degree of elaboration to which it should be subjected are simply and precisely those by which we regulate, or ought to regulate, all our other affairs, and may be summed up in a very few words: fitness for purpose, and sincerity.

For instance, iron is the strongest, hardest, lightest and least costly of the metals used in this connection. Therefore it should be used wherever these qualities are of greatest importance; but it is practically black, and extremely liable to destruction by oxidation or rust, and it must be worked at a great heat. These are limitations demanding that its design be simple, exhibited in lines rather than broad masses; that its arrangement of foliation or other features should furnish as little lodgment for moisture as possible, and that it should be capable of being wrought rapidly.

In its cast form it is brittle, liable to fracture either by violence or other causes, such as extremes of temperature; its character can only be that of the material in which the original pattern is made, and that too much marred. If these qualities indicate suitability for any purpose, to those purposes it should be confined.

Copper is tough though soft, beautiful in color, heavier than iron and much more costly, extremely ductile and malleable while cold, hardening under the hammer. It cannot be cast, except by the addition of an alloy. With about 10 per cent. of tin it becomes bronze; with about 25 per cent. of zinc it becomes brass. In these three forms, however, we find very different qualities. As fine copper, its toughness—untearability—points to its utility in the form of plate for purposes which require considerable tensile strength and complex form, such as large vessels for holding liquid. Its malleability renders it a fit material for embossed work, especially in exposed positions, in which it is quickly protected by a brown patina which forms upon its surface.

As bronze it is much harder, more costly, very imperfectly malleable. Its great limpidity in a state of fusion, however, and its beautifully colored patina, render it peculiarly suitable for some purposes, in which the hammer is out of the question—such as the casting of statues, bells, etc., to which uses it is practically now confined.

As brass it is less costly, and the most brilliant in color of all the baser metals. Fairly malleable and ductile, strong, but liable to become rotten all through its substance if allowed to get corroded, and consequently needing to be kept bright, it is the metal to use where brightness of aspect is an object. It is capable of being embossed; but as its beauty is only or chiefly to be developed or preserved by polish, it is not suitable for delicate elaboration, but rather for breadth of undulatory surface, the design being worked out in brilliantly reflected light.

Silver and gold, heavy and costly—gold nearly twice as heavy and thirty times costlier than silver—are the precious metals, precious not only intrinsically, but because of their qualities; beautiful in color, inodorous, tasteless, incorruptible, and susceptible of elaboration to the highest degree of refinement, are naturally the materials for precious purposes—for sacred vessels and symbols, for the higher domestic uses, for personal adornment, for insignia of rank or degree, for all intimate use and personal contact.

These being the principles of selection of material, the next principle, the great one of good craftsmanship, is "Sincerity."

Whatever the material and the work is, that it should appear to be. Whatever purpose it is to fulfil, its design should fit it for, and point to. Whatever the character of the material may be, its manipulation should develop and not destroy it.

Consciously or involuntarily actuated by these principles, and hammer in hand (not in the drop stamp), the smith will do good work whether he thinks he is doing art work or not; and without them he will not do good work, even if he thinks he is doing art work.

And now as to means. The chief, the archetype of smiths' tools, is the hammer. "By hammer and hand," the adage says, "all things do stand;" and only by it, controlled and directed by heart and head (that is, by will and by skill), can his work stand.

The effect of a hammer stroke can be got by no other means. The hammer is a part of the man who wields it, and the instrument through which his imagination or feeling finds expression; every blow has a subtle bias, perhaps unconsciously given, which

aids that expression; and as soon as you begin to substitute mechanical work for imaginative, you throw away the substance for the shadow, the living thing for the dead body; you discourage skill, and lower the value, the mental and moral status, of the worker. Handwork owes much of its charm to effects which spring spontaneously from various causes, physical and mental, perhaps in the quality of the metal or the condition of the temper of its worker, but which give individuality to every curve, or frond, or boss, which often lead to fresh developments hitherto un contemplated; and so the work gains variety without departing from the general intention or impairing the utility of the object.

This touches the questions so often discussed, of machine-work versus hand-work, and "When does a tool become a machine?" Well, I think a tool becomes a machine as soon as it is taken from the hand of the living man, where its direction and force is subject to the slightest variation of his will, and made the instrument of involuntary and un sentient energy, in which position it may only be employed legitimately for the doing of labourers' work, the putting of material into convenient form for elaboration by hand, and thus saving the expenditure of much human energy without superseding human art.

In the actual working of the metals there is little difference of process, the greatest being that iron, speaking generally, must be wrought while hot, and all the others can only, or better, be wrought cold (although heat is necessary in some stages of the work). For this reason I shall deal chiefly with iron and silver, because silver processes are fairly representative of those of the other metals.

#### IRON.

Iron, as you all know, is through its possession of the qualities I have mentioned, a metal of very wide and varied use. In its wrought form, its great strength and hardness fit it especially for the defence, security and protection of more precious things; and for other purposes, involving power of resistance to force; and its stern aspect is in keeping with such duties. But for all that it may be made exceedingly comely under proper treatment, and the docility with which it submits to such leaves no excuse for its neglect.

You have been spending a large amount of money in wrought iron work for tramway purposes, and what have you got for it? Wrought iron, yes, of a sort, but one pattern to every detail repeated every forty yards, I believe, to hundreds. (I suppose now, if you were to substitute for these, beautiful golden angels, with jewelled crowns on their heads, and hands outstretched holding the wires which, you think, are to be such blessings to the city, your admiration of the first would be turned into scorn or indifference very quickly by their palling uniformity of expression.) Well now, if these are wrought by hand, each might have its own character, or, at all events, you might have had a considerable variety—it is done in some places—without adding to the amount of work fixed by the proposed expenditure. Some would be better than others, some probably bad; but you have discords in music sometimes which are useful.

The process of working is simple. Forging, bending and welding are the principal operations. Forging is the creation of the desired form by hammer strokes out of the rough material; bending explains itself; and welding is the joining of separate parts by hammering them together at an intense heat. This method is peculiar to iron work, and by succession or combination of these operations the whole work is done. Its results are most familiar to us in the form of screens, gates, door-hinges, etc. As its dark surface reflects but little light, it is generally seen en silhouette, therefore its design should be clear in outline and its details very distinct. It is worked in fits of heat which rapidly subside, therefore its detail should not be dependent upon prolonged elaboration for its effect. Welding heat is apt to become destructive, "burning" the iron and impairing its strength, therefore welds should not be unnecessarily multiplied, especially between parts of unequal thickness. Ties and bolts often become pleasant features in the design, making decided little breaks without disturbing or obscuring the lines on which they occur.

Foliation is a difficult subject to deal with. In the form most generally used—that of an acanthus frond partly enveloping the stem upon which it grows—I think it entirely out of place. All foliation on this class of work should be in a vertical plane or approaching it, and kept as clear from the stems as possible, not only because otherwise it blurs the lines of the work, but because it becomes a fruitful source of mischief unless very carefully dealt with.

For instance, upright husks surrounding a central spike, unless kept open at the bottom, catch the rain and dew and store it at



the root of the spike. A leaf clasping the lower curve of a volute, or in many other situations, does the same. In each case a little laboratory is set up, and commences operations at once for the conversion of good iron into rust, which for our purposes is destruction. Witness the new gates at Weston Park, and the new electric traction posts. The old gates of the same park, though much smaller and less pretentious, are good in design, and all these principles are in force in them, and it is perhaps hypercritical to suggest that they would have been better with more ties and fewer rivets; but at all events they are now in better condition than the new ones.\*

All the greater curves should be designed to make contact with others or bars, and should be tied at that point as often as possible. Two curves of weak structure become strong by mutual support when so treated.

Of course these considerations do not apply with equal force to chancel screens, gates and grilles, and such interior works, which are not subject to such destructive influences nor seen in the same light as out-of-door work; but the same principles and processes govern their construction.

Different conditions come into play again, in such work as hinges and clamps for doors and chests. Here the iron-work is carried and kept in position by the wood, which it protects, strengthens and adorns. (I do not forget that the hinge really carries the whole thing, but I am speaking of the ornamental development of the outer clamp). The governing conditions are the gradual distribution of substance from the points of suspension, the necessary positions of the holding bolts, and the flatness of the surface, which it must closely fit.

For these and similar purposes the work should be hammered-finished, not only because the hammered surface is most durable, but because it is most expressive of the character of the material and the method by which it is worked. At the same time, in avoiding the seductions of mere smooth finish, as it is called, we must not allow ourselves to be deluded into the idea that rudeness is a virtue per se, and exaggerate it purposely, as is frequently done now.

But under other circumstances it may be quite necessary to give higher surface finish, as in locks, keys (and, in the past, body armor), which its great strength makes it the most fitting for. Here its susceptibility to high elaboration is a useful quality. It may be chiselled, embossed, twisted, filed and ground, and damascened.

This mode of surface decoration is a very tedious and delicate one. The lines of the design are chiselled or graved very deeply; gold wire or plate is then laid in the grooves and hammered; this drives the gold in, and brings the edges of the groove partly over it and locks it in. This process is seldom practised now; but another and easier one is the etching of the ground away by acid, and burnishing very thin gold upon the raised lines while warm. This process makes work which is extremely liable to damage; the other cannot be injured by any means short of the destruction of the object decorated.

Silver and gold, though differing widely in weight and value—gold, as I have said, being nearly twice as heavy as, and thirty times more costly than, silver—I propose to deal with together, because their processes are the same, only differing in scale from each other and from those of other cold-worked metals. In their pure state they are extremely ductile and malleable, but they are seldom used in that state, on account of their softness. To remedy this, silver is alloyed with copper in the proportion of silver thirty-seven, copper three. In this state it is called sterling or standard silver, because it is the standard of silver values, and is always referred to where silver is spoken of, except in the rare instances of the use of fine or pure silver, which is always distinguished as "fine." These are the only two qualities recognized by assay masters, and are stamped or "Hall marked" with different symbols.

Gold is alloyed with silver or copper, or both, it may be in any proportion, but is only marked as 22, 18, 15, 12 and 9 carat by the assay masters. (Carat in this use is not a fixed weight, but merely the twenty-fourth part.) There are two standards, the first of twenty-two parts fine gold with two of alloy, which is the standard of gold coinage; and the second, eighteen parts fine with six of alloy, which is the standard of gold work generally, and is understood if quality is not specified.

The art of working these metals, as practiced of old, and as it

must be again if silver work is to remain "art" work, is now all but lost. Improvements of process—the electro-plating vat, the steam stamp, the spinning lathe—have, by the fatal facilities they offer for the evasion of skill and the production of imitations of its results, reduced the silversmith to a mechanic; and the character and qualities of the material, instead of being developed and manifested in the work, are really thrown away.

For instance, let us consider, as a type of silver work, the making of a drinking-cup (in ecclesiastical use, a chalice). It is the emblem of hospitality, from the time of Melchizedek, and of fellowship in the greatest society in the world, the Holy Catholic Church, and therefore claims precious material and the best work. The bowl and foot are each hammered out of a disc of metal (formerly as cast from the crucible, on a flat stone or anvil, but the need of the mere labour of the earlier stage of the work is now superseded by the rolling mill). After being roughly dished into the hollow of a wood block or sand-bag, it is hammered on the outside in circular courses, with a hammer adze-shaped but blunt, upon a round-surfaced iron, squeezing the metal upward and inward and distributing its substance gradually as it is needed, thick in the bottom and thin at the lip, or otherwise as the worker wills, until the form desired is attained—all is as regular as the deposits which build up a snail's shell or a crystal, and the same results follow, good line and contour. In this state it is marked all over with the evidences of its process, the impressions of the hammer, in the form of long hollow grooves, to the axis of the bowl. These are removed and the form still further developed by a similiar operation with a flat-faced hammer (called a planisher). This leaves the inner surface quite smooth, and the outer covered with faint hexagonal facets—again you observe that these are the evidences of process, and their regularity is the index of the worker's skill and the perfection of his work; but it is not intentional, it is merely the accident of the process, and is generally removed in finishing or by subsequent decoration. These two conditions of the work are the sources of origin of that class of work which has been much practised lately under the euphonious titles of "chip-hammered" and "bullet-hammered," neither of them possessing the character of the original, and only serving to disguise the want of invention of its designer. The whole work is entirely dependent upon the skill of the craftsman, and this simple object illustrates the whole art of the silversmith. But now—a disc of silver is banged into a steel die, with a ton of iron for hammer, or is wrapped round a revolving piece of wood by the pressure of steel tools, and its character is that of the steel die or the turned piece of wood. It is exactly like a multitude of others, all weak where they should be strong, and heavy where they should be light—all wrong; and those that make them become like unto them.

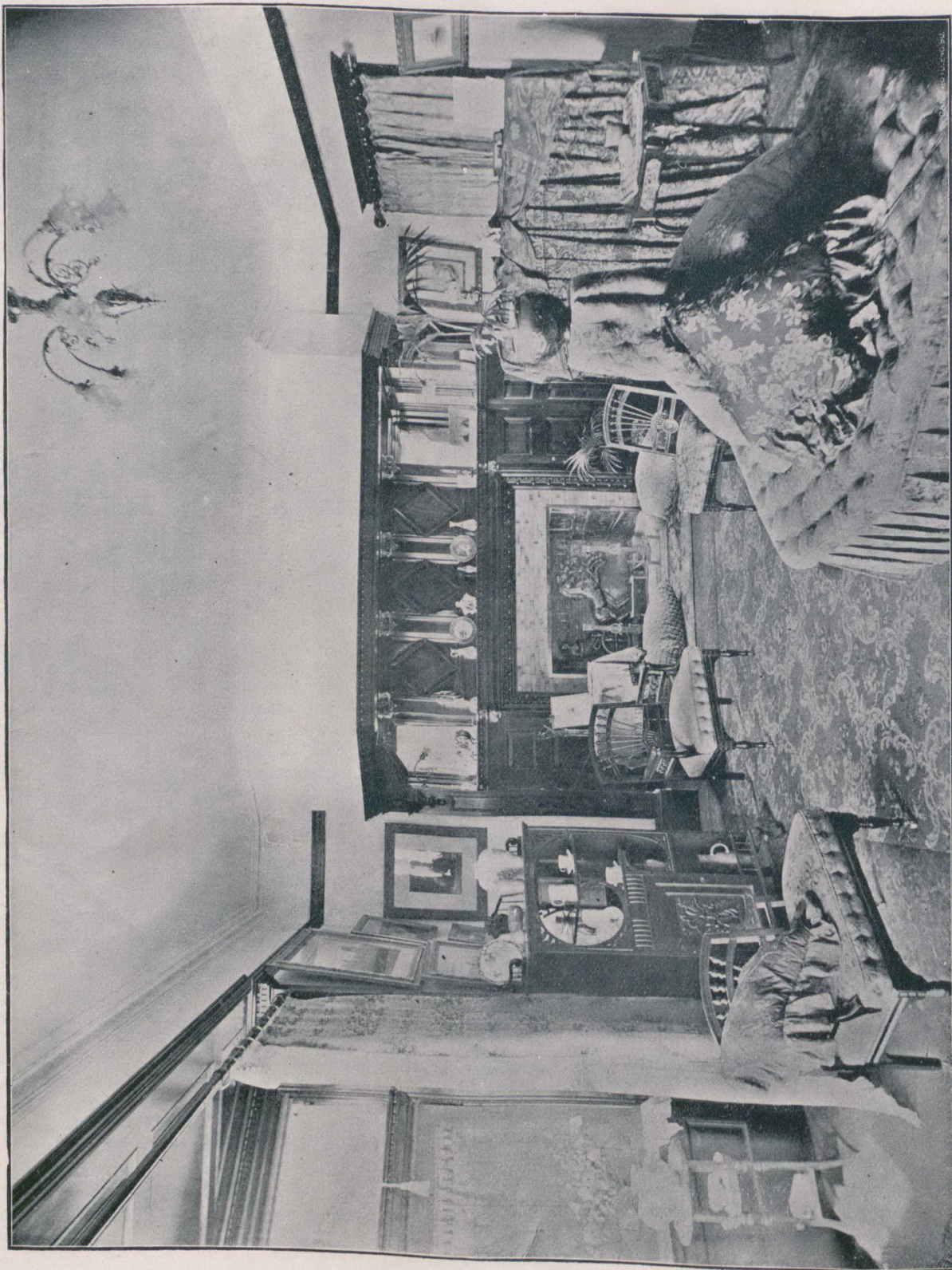
Having indicated the principles, and touched upon the processes of metal-work, I will add a few words about the revival I spoke of at the commencement. One of its evidences was visible in Sheffield a short time ago in a collection exhibited in the New Gallery, which did not attract the attention it deserved. Without saying that it was altogether admirable—it contained some very beautiful objects—it was full of suggestion, and showed an appreciation of the qualities and capacities of material, and a freedom of treatment, which were absolutely refreshing. But there were evidences of affectation (which is poison to good art), which point the danger I referred to of neglect of principles; such as the imitation of the crudity of old work; the covering of articles with irregular hammer marks, not as the result of the forming process (or, if so, the work was very badly done), but for their own sake as decoration; and similar tricks unworthy of the name of art, which must not be practiced if that revival of the union of heart and hand and hammer, is to be realised and resume its power as the expression of the presence of art in our midst.

To which happy end I, as an earnest craftsman, ask you, the architects and art leaders of Sheffield, to give all the assistance of your influence for the honour of your city and the credit of your country.

In the foundations of the new Chicago Post-Office, piles have been driven to a depth of over seventy-five feet, these being surmounted by broad timber caps covered with a deep bed of concrete, which forms bases for the stone piers, which in turn support the 208 steel columns carrying the building. It is said that in this foundation, when completed, there will have been used over 5,000 piles, nearly 800,000 feet board measure of timber capping, 150,000 cubic feet of concrete, and over 350,000 cubic feet of stone.

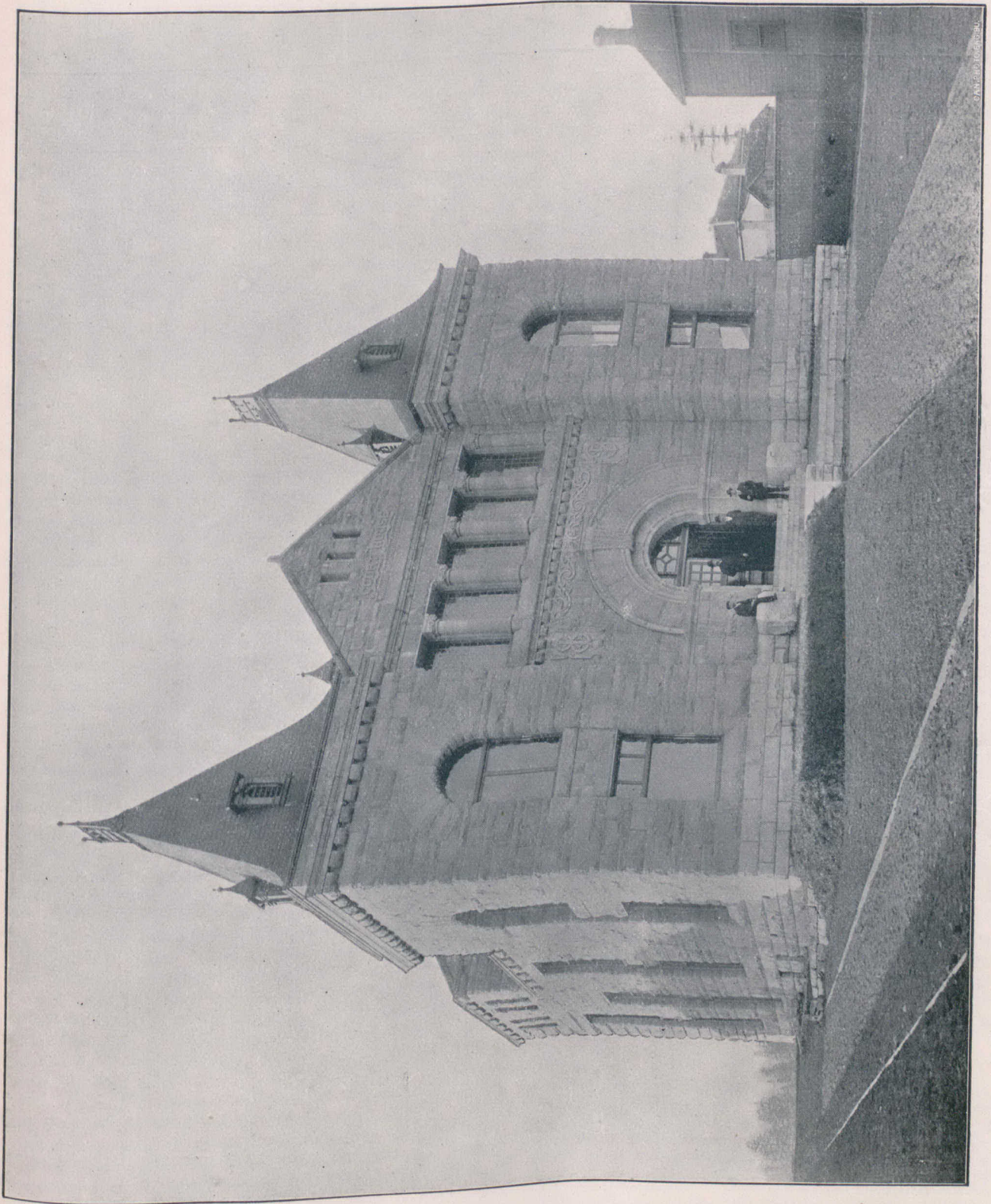
\* The posts I refer to are not good in design. The ornamental work is flimsy in execution, and does not properly fulfil its ostensible purpose, that of supporting the span carrying the cables. Its utility is indicated by the tie rod introduced above it to do its work.—T. S. B.





DRAWING ROOM IN RESIDENCE OF MR. F. B. FETHERSTONHAUGH, MIMICO.  
HENRY SPROATT, ARCHITECT.





COURT HOUSE, NANAIMO, B. C.  
F. N. RATTENBURY, ARCHITECT.





(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

A CASE of considerable interest, especially to builders, that came before a local judge here recently and was carried to Osgoode Hall, has just been decided. A man named Consuis entered into an arrangement with one Teeter, a builder, for the demolition of an old barn and the building of a new one of larger size to replace it. The builder was to use the old material as far as possible and make up with new. As the work proceeded the owner expressed dissatisfaction with the

new material supplied, and sought an injunction through the courts to force the builder to substitute other material. An interim injunction was granted by the local judge. Falconbridge, J. held that the Courts of Equity will not interfere in the case of building contracts. At the present state of the works there was no evidence to show the contract was improperly carried out, and the court would not act as clerk of works. According to the terms of the contract, apparently nothing need be paid to the contractor until all the work is completed; up to date nothing has been paid. The owner's only remedy is upon completion of the works, when, if not satisfied, he can sue for damages. The injunction was therefore dissolved.

At a recent meeting of the Hamilton Steel and Iron Company, the following directors were elected: A. T. Wood, M.P.; C. E. Doolittle, A. E. Carpenter, C. S. Wilcox, John Milne, A. M. Wilcox and W. Southam. At a subsequent meeting of the directors, A. T. Wood, M.P., was elected president; C. E. Doolittle, vice-president; Robert Hobson, secretary, and C. S. Wilcox, managing director. It seems as if Hamilton will, before long, be a centre for the output of iron and steel; it possesses particular facilities for transportation of material, and several moneyed men interested in these materials are operating with that end in view. The remarks of Mr. Frank Baird, an iron producer of Buffalo, with regard to the advantages possessed by Canada for the production of iron and steel have appeared in the daily press all over the country, and it is certain that this city occupies a position which ought to secure for it a great trade. It has also attracted the attention of the electrical engineers, and a syndicate, in which Mr. John Patterson is the leading spirit, is rapidly securing control of the existing electric railways not only within the limits of the city, but of the radial lines that run out into the country. Other electric routes are contemplated by this company, for which bills have been submitted to the Railway Committee of the Dominion house. This same company has also secured the contract for the lighting of the city by electricity, all its power being generated at Decew Falls, about 37 miles away. People who have thought that Hamilton was dead, are beginning to think "there is life in the old dog yet," and that perhaps after all its destiny is not that it shall be absorbed by Toronto.

There is not much to comment upon this month in the way of building operations. As a rule the architects are not busy. The only noticeable thing from an architectural point of view is the completion of the tomb and vault that Senator Sanford had erected in the cemetery to the memory of his son, and which was just completed in time to receive his own coffin. It is a charming little classic temple, but it has been spoiled and knocked out of all proportion by the statue of "Hope," pointing heavenward, that has been placed on the apex of the main front. The statue is so large that the temple is dwarfed until it looks like an ornamental base for the figure,

instead of the statue being subordinated to the temple. The tomb occupies a conspicuous position on a mound near the larger road and was erected at a cost, I believe, of nearly a hundred thousand dollars, the material being white marble.

The monument to be erected on the battlefield of Stoney Creek, a few miles from Hamilton, is causing a lively discussion in the papers. A site was purchased for the purpose by the Women's Wentworth Historical Society and presented to the government, and now it is disputed that the battle was fought at or over this particular spot. It is known as Gage's farm, and the evidence that part at least of the battle was fought there is almost conclusive. Even if it were not so, it is so near the ground that undoubtedly was part of the battlefield, and being the only elevated site at the place, it would not be inappropriate to erect the monument there.

R. W. GAMBIER-BOUSFIELD

#### TREATMENT FOR A DRAWING-ROOM.

The first concern in a drawing-room, writes Mr. W. Scott Morton, in the Art Journal, is the method of lighting, both artificial light and daylight. It is not always possible to avoid heavy shadows, but here a well-diffused daylight is desirable. It should come from the sunny side, with, if possible, subordinate windows where the outlook is good. The ornamentation of the room and all objects which are placed in any picturesque grouping, as well as the people in the room, look to best advantage when the light is strongest from one side. In artificial lighting, a main central light is found most successful for the apartment generally, but many things in the room often lose the artistic value they possess in daylight by the alteration of the illuminating centre, which causes a different light and shadow relief. When a drawing room has ample window space, and it is considered desirable to retain all the daylight, the treatment of the decoration should be delicate, for fulness of color and strong detail are almost sure to run to coarseness, unless a very skilful hand controls. When the light is scanty, luminous tints and strong contrasts of form and color are desirable, as they help greatly to relieve the apartment of the blackness of the shadows, and make use of them to help the color effect. Where there is a recess or dark corner which is objectionable, there is often presented an opportunity for adding the best touch to the apartment by setting something of china, bronze, statuary, flowers or a screen, which will tell with much effect in the shaded setting surrounding shadow; provided, of course, that such objects be so placed as to catch a favourable light. In light rooms a soft-colored wood like satin wood is certainly the best, but in lower-toned rooms dark woods like mahogany or rosewood, relieved with ormolu or gilding, are most fitting. When a cheerful room is desired nearly everyone thinks of white painted wood. It is clean and easily obtained, and raises no serious ground for criticism; but in every case where white is used it should be tinted to allow of its easy assimilation with the strongest color, be it on the wall, seat covers, or floor. Of the ordinary wall papers little need be stated here, except that it will generally be found that those which are the most pleasing for homely rooms are not those which ordinarily attract one in a decorator's showroom. The mass of a wall color is always stronger than appears in a small pattern, and it is safe to choose a color which will be a pleasant offset to the complexions of the ladies who are to be "at home."

#### IMPROVEMENT OF THE CAPITAL.

The Dominion Parliament at the session which has just closed, adopted the following resolution: "That it is expedient to provide that in consideration of the municipal corporation of the city of Ottawa providing adequate water supply and fire protection for the property of the Dominion government in the said city and in the vicinity thereof, and exempting the Dominion government from any charge therefor, the Minister of Finance and Receiver-General be authorized to pay out of the consolidated revenue fund of Canada the sum of \$60,000 per annum for a period not exceeding twenty years, for the purposes of improving and beautifying the city of Ottawa by the acquisition and maintenance and improvement of public parks and public squares, and the improvement of the streets and thoroughfares in the said city such sum to be paid to a Board of Commissioners, to be appointed under the authority of an act of the parliament of Canada to be passed for such purpose."

The action of parliament in this matter will we believe be universally approved. A feature of our national ambition should be to make the capital of the Dominion in the highest possible degree attractive and interesting. A wise choice of commissioners is the next important step toward the accomplishment of this end.



## STUDENTS' DEPARTMENT.

### MARTELLO TOWERS IN ENGLAND.

Whatever may have been the defensive value of martello towers a century ago, it has entirely evaporated now, and it is not surprising to find that one or two of them at Bawsdsey Haven, on the Suffolk coast are being demolished. There are a good many of them on the coasts of Essex, Suffolk, Kent and Sussex. These massive round towers, some forty feet high, were regarded as, and very likely were, splendid defenses at the time they were erected, but they have long been used only for coastguard purposes. Their name is derived from the Italian coast towers which were erected as a protection against pirates. Warning that a suspicious craft was in sight was given by striking a bell with a martello, or hammer. It was the powerful defence made in 1794 by Le Tellier at the tower of Martella, with only thirty-eight men, against a simultaneous sea and land attack, led by Lord Hood and Major General Dundas, which brought them into favor in this country. It was thought that they would be a splendid defence against "Boney."—The London Chronicle.

### WORKMEN'S DWELLINGS IN GERMANY.

The United States consul at Chemnitz writes that there is a movement on foot to furnish working men with better dwelling-places in Germany. At present they are crowded into buildings which often look like barracks. The proposed houses will be built upon plots of ground about 16½ feet wide by 102 feet deep, thereby allowing for a front yard for flowers, and a back yard for a vegetable garden and shed, the latter for the keeping of poultry or some domestic animal. The houses will contain five rooms. A parlor and kitchen will be on the first floor, the parlor containing a porcelain stove and heating pipes, and the kitchen a wash boiler and stove. The three bedrooms on the second floor will easily hold five or six persons, and can be made to accommodate ten. In the largest an iron stove will be placed. A pump will provide water where the city waterworks do not extend to the house. The cost of such a house and plot of ground when a number are built at a time will be between 170l. and 190l. It will let for about 9l. a year—that is for the same price the working-man has to pay for two rooms in the barrack-like tenements of the large cities.

### HINTS ON DECORATION AND FURNISHING.

The private office of a well-known architect, writes Edward Hurst Brown, in the Painters' Magazine, has been hung with curious old pieces of German tapestry, with quaint figures of burghers in high top boots and rosy-cheeked maidens in red dresses, walking amidst stiffly trimmed trees and gardens of formal flowers and foliage, with perhaps here and there the towers of a castle seen in the distance. The ceiling is supported by heavy oak beams, stained a dull black, between which the panels are covered with natural tinted burlap with stenciled figures in dull reddish brown. The deep carved cornice has heavy modillions from which the beams apparently spring. On the floor of polished oak parquetry, in small square blocks, is thrown a handsome Turkish rug, while in the center of the room is a

large square table of black oak, convenient to display a roll of drawings to a client. Cases in one corner of the room contain photographs and books of architectural detail, while here and there are displayed bits of terra cotta, or plaster models of carving used on buildings designed by the architect himself. The inevitable roll-top desk is of black oak, and has been made to harmonize with the furniture and decorations, and while the chairs are comfortable, they have been made to imitate the quaint old German carved chairs that are so artistic. A drawing table in one corner is a convenient working place when sketches are to be made, while on an easel stands a fine perspective drawing of one of the noteworthy buildings which the architect has designed. The broad window is filled with plain white glass, set in lead lines, with ornamental medallions introducing the various tools of the different building crafts. A broad cut stone fireplace on one side of the room is surmounted by a carved hood of black oak, ornamented with armorial bearings in true heraldic colors.

### NOTES ON STAINING.

FIRST-CLASS staining can be done only with the best of materials. Water stains are objectionable in that they raise the grain of the wood, and yet their exceeding transparency, and the quality they possess of drying without showing laps, clouds, streaks, etc., enable the workman to obtain better results as a rule than oil and turpentine stains afford. Alcohol stains, in this respect, are ranked with water stains.

The successful stainer bears first in mind the fact that not only is color effect sought, but the figure and characteristics of the wood are to be imitated or enriched.

The really artistic example of staining is that which shows a tone of color due to a combination of the color of the wood and the stain employed.

A good rule to remember when staining is this: The woody appearance is to be sought for; the painty look to be avoided.

Nearly all woods have a transparent quality or power of reflection, changing as the changing light strikes them. The aim of the stainer should be to have the wood retain this reflecting property, this changing look as one changes his position or the daylight shifts.

Only the best dressed and smoothest lumber, clear and clean, knot and sap free, and running barren of soft places or "dead wood," invites the best order of staining.

Concerning the art of staining, an expert advises: "Strive to hide the fact that you are imitating, and after you have secured the desired effect, be careful to keep your color uniform and free from clouds, laps and finger marks."

French artists are now busy in considering the conditions of the competition for the design of the diploma which is to be issued in connection with the International Exhibition of 1900. The designs in the first competition are to be sent in before June 15, and those in the second before September 21. The jury will consist of twenty-one members, of whom eight will be selected by the competitors. It is anticipated that five of the competitors will take part in the second contest. The design selected will be rewarded with a prize of 10,000 francs, and the four artists who are not successful will each have 1,000 francs. The design for the last International Exhibition in Paris was the work of the late M. Galland, and M. Paul Baudry designed its predecessor.



## CORRESPONDENCE.

## FIREPROOFING MATERIALS.

NEW YORK, July 18th, 1899.

To the Editor of the CANADIAN ARCHITECT AND BUILDER :

Sir,—Your issue of June, 1899, contained a communication from N. T. Gagnon, in which he attempted to discredit the Roebing system of fire-proofing, which has just been adopted in two buildings in the city of Montreal. We note from the advertisement on page 12 that Mr. Gagnon is a manufacturer of the terra cotta or hollow tile fire-proofing. The fact that he is a direct competitor of the system on which he writes would not, of course, influence (?) him in his statements, but the general public would probably be better satisfied with an account of the tests given by disinterested parties.

For this reason we beg leave to enclose the following extracts from the New York "Herald" and New York "Sun" of November 20th.

## "AFRAID OF THE FIERY TEST."

(N. Y. "Sun.")

It occurred to the manufacturer of an alleged fireproof material some months ago that it would be a good stroke of business and perhaps the means of downing one or two rivals, to arrange a competitive test of the output of his factory. Having hit upon this plan of getting a little free advertising, the manufacturer roped in a prominent city official whose business it is to know about all kinds of building material and proposed to him that he be the judge of the test when it came off. The city official agreed, and forthwith the challenge of the manufacturer was placed in his hands. It was addressed to all manufacturers of fireproof material and stated that the challenger was prepared to stack his product up against any other fellow's product, and show by a competitive test that it was the only real thing in the fireproof line that was being turned out. The challenge was ignored by the more substantial firms in that line, but finally there jumped into the ring one who had recently gone into the business and who was sure that his product could knock the spots out of the stuff turned out by the challenger.

Pretty soon the city official got a notice from the acceptor of the challenge, telling him to fix a date for the test. The official fixed yesterday morning as a time, and an open lot uptown not many blocks from the East river as the place. The rivals agreed on certain conditions, it is said, and then the newspapers were invited to send representatives to witness the thing, and maybe to write a little something about it. The newspapers are always invited on these occasions. There wouldn't be any profit in having the test unless the winner could in the words of Insect O'Connor "Git his name in the pape."

But somebody got panic-stricken on Thursday night and it wasn't the fellow who had accepted the challenge. The excitement was the result of a rumor which reached the ears of the challenger to the effect that the city official had changed the conditions of the test at the last moment. The challenger rushed to the city official, also to the enemy and to various others concerned in the test. He charged undue influence and various other heinous offences against fair play, but was informed that the test would be made in the way regarded as best for bringing out the qualities of the two materials. Then he wanted to withdraw from the competition, and failing in that demanded that the whole thing be stopped. Again he met with a refusal, so he rushed down to the office of a friend, who is a State Senator, also a lawyer, and laid the matter before him.

"We must stop the test," he said. "We will certainly get it in the neck if the thing goes on as I'm informed it will."

"Nothing easier" said the State Senator. "Come with me."

So the manufacturer and the State Senator hied themselves to the court house where they waylaid a Supreme Court Justice and secured an injunction, which was served on the city official at his house, with the result that the test didn't take place.

The injunction will come up for argument in a few days. Meanwhile the rivals are saying things about each other and the product of their factories. It is not at their own request that the names of the manufacturers are left out of this story.

## "INJUNCTION DID NOT RESTRAIN."

(N. Y. "Herald.")

The injunction granted, as told in yesterday's Herald to Henry Maurer & Son, tile manufacturers, to restrain Superintendent of Buildings Constable from making a proposed test of the merits of tile and cement arches in fireproof buildings by burning a building constructed

of both materials in a vacant lot at Sixty-eighth street and avenue A, failed of its purpose.

Superintendent Constable accepted the service of the injunction, then transferred the lease of the lot to H. W. Hodge, a civil engineer, of No. 27 Pine street, and Mr. Hines of Hines & Lefarge, architects. Mr. Hines immediately applied the torch to the experimental building and the test was carried out.

After the episode of the injunction and transfer of the lease Mr. Hines set fire to the mass of inflammables, with which the structure was filled. The fire started with a roar. The heat became intense and registered 2,100 to 2,200 degrees, 200 more than is required to bake tiling. After five hours of this heat the tile roof fell in. Then Superintendent Constable sent for engine company No. 39 and extinguished the fire. The concrete roof withstood the sudden cooling off.

The building will be constructed for tests with other materials.

We think further comment upon the matter on our part is entirely unnecessary.

Very truly yours,

THE ROEBLING CONSTRUCTION CO.

## PHOTOGRAPHY FOR THE ARCHITECT.

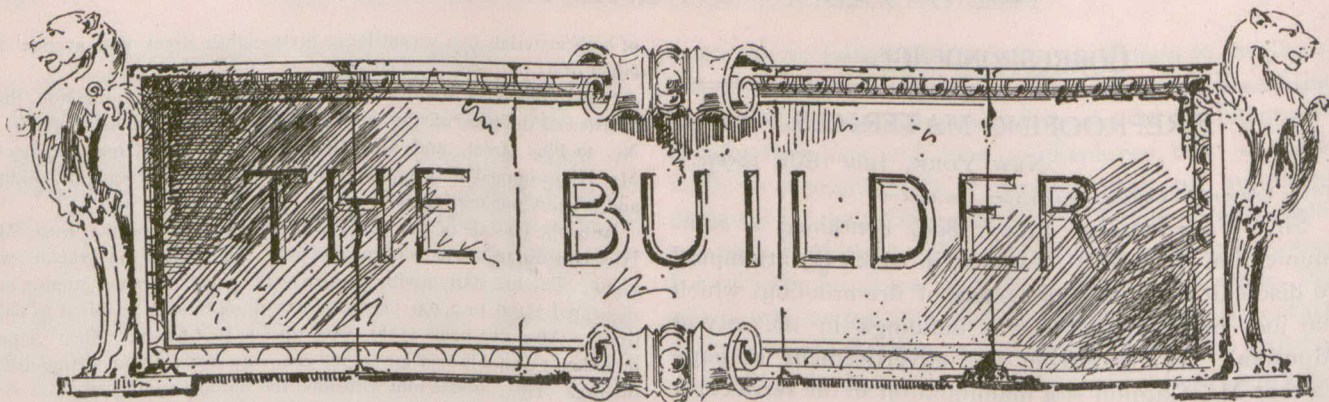
A great deal is heard of photography in its application to medicine and surgery, of the assistance which it renders to the astronomer and the microscopist; by many others than specialists it is employed to obtain records of old buildings, curious towns and picturesque bits of landscape. Yet comparatively few professional land surveyors and still fewer professional architects are alive to the help which it is capable of affording to them in their ordinary workaday business. That it is of such value the few who have employed it have proved without doubt, going as far as to say that for the surveyor, at least, a knowledge of photography is as essential as an acquaintance with the theodolite. . . . There was a prominent instance of the value of photographs as supplementary to the land survey a few months ago, says G. A. T. Middleton, when architects were invited to submit plans in competition for a new university at San Francisco. The site was an extraordinary one, at the foot of the Rocky Mountains, and rose no less than 700 feet in a trifle over a mile; and of this a plan was, as usual, supplied to intending competitors. On application, however, they were also provided with a scale model of the land and a series of photographs. These would undoubtedly have been more useful had they been panoramic, or even had the directions in which they were taken been more more clearly indicated than was the case, but even as it was they gave a very good idea of the topography, and especially of the way in which the character of the land altered at its different altitudes, and of the views obtainable.

At first sight it is, perhaps, not quite so obvious how photography can be of value to the architect as to the surveyor. Yet it is so in even a greater number of ways. In crowded cities particularly it is of the utmost importance before commencing building work to ascertain and record what is existing on the site and what is surrounding it before beginning operations, having regard to possible legal complications, actions from neighboring owners for infringements of rights of light and other easements, and many other eventualities; and in such cases the evidence afforded by photographs from well selected points of view and taken with suitable lenses, in conjunction with proper plans and models, is most important. By themselves, however, the value of photographs as evidence is liable to heavy discount in court, as many judges, and juries also, have become skeptical of the truthfulness of the impressions conveyed by them, owing to the occasional unscrupulous use of specially wide or narrow angled lenses, for purposes which are sufficiently obvious.

Of equal importance are photographs of shoring and underpinning work, and of all work which is to be covered over and about which disputes of one sort or another are by no means infrequent, owing, in the majority of cases, to the absence of evidence such as a photograph would supply; and almost invariably when bad work is condemned and ordered to be reinstated should the camera be used for the purpose of after reference if necessary. When work is being carried out at any such distance from the architect's office as to render personal constant supervision impossible, the clerk of the works by supplying constant photographs, can keep him in touch with what is going on and by their means a client can often be informed as to the progress of the building for which he is paying in a manner most satisfactory to all parties.

Pulverized lime and ammonia will remove marks and stains from marble.





[THIS DEPARTMENT IS DESIGNED TO FURNISH INFORMATION SUITED TO THE REQUIREMENTS OF THE BUILDING TRADES. READERS ARE INVITED TO ASSIST IN MAKING IT AS HELPFUL AS POSSIBLE BY CONTRIBUTING OF THEIR EXPERIENCE, AND BY ASKING FOR PARTICULAR INFORMATION WHICH THEY MAY AT ANY TIME REQUIRE.]

Gravel Roofs. THERE are gravel roofs and gravel roofs, but good ones are few and far between. There is no reason why a gravel roof should not be a good one, if only proper care and good materials are used in its construction; at least it should be good for the money expended on it when compared with the cost of tin, galvanized or copper roofs. Of course a gravel roof is only suited for a low pitch or flat roof, as on a steep roof the gravel would eventually wash off and leave the paper or canvas exposed to the weather. Ordinary coal tar answers fairly well for a top coat before the gravel is spread on, if the roof is very flat. If the roof has a good pitch it is a good idea to mix eight or ten pounds of common resin with the pitch while it is boiling, stirring the mass well with a stick before it is taken out of the boiler. To prepare the roof before covering with tar after it is boarded tightly with matched stuff, the following rules should be observed: In all cases the grain of the roofing boards should run in the direction of the pitch—never across it—and all joints should be driven close and tight. The boards should be planed on the top side, and should be free from shakes or knot-holes. Swab the whole roof over with a thick wash of Portland cement mixed with water to the consistency of thick paint. Let the roof dry for a few hours, then lay on a coat of good roofing paper—tarred paper preferred—having a lap of about one-third of the width of the paper. Over this give a thin coat of hot tar, in which ground asbestos, mica or Portland cement has been mixed, in the proportion of one bucket full of cement to four of hot pitch. Let stand until dry and hard. Over this lay another coat of roofing paper, and on this lay a thickness of rough sacking, which must be tacked down here and there with broad-headed tinned nails, such as tinsmiths use in roofing. On this sacking lay a thick coat of the tar while hot, and then sprinkle coarse sand and fine gravel on the hot tar and leave to harden. The tar must contain the proportion of asbestos, mica or cement as described in the foregoing. When the tar or pitch hardens it holds the gravel in place, and the rough sacking over the paper strengthens the whole roof covering and binds the whole together, and to a very large extent prevents the roof from cracking or blistering, faults which are common to gravel roofs, and which cause a great deal of trouble and annoyance. A roof covered in the manner described will make a good serviceable one, and one that will hold good for from seven to nine years, when it may be made good again by a generous coat of the prepared pitch and another layer of fine gravel. Metal roofers do not take kindly to roofs of this kind, but there are instances when no other kind of roof is available, and to meet these instances the above method is offered.

About Concrete.

"SPECIFICATION," a semi-annual work published in London, England, and containing upwards of 525 pages, 9 x 12 inches, in discussing concretes, has the following general notes in the introduction to the subject, which are worthy of being repeated: 1. The average compressive strength of concrete is about eight times its tensional strength. The proportion of compressional and tensional strength varies according to the quality and quantity of the aggregate. 2. The best fire-resisting material for general use in building construction is undoubtedly concrete, when properly made. It can be made completely water-proof and acid-proof, and may be moulded or carved to any design, and colored to any shade. 3. The use of iron in concrete is invaluable for many constructive purposes; but for general work, unless as a temporary aid, or in exceptional cases, it is unnecessary. 4. Compression done by beating and ramming is a matter of considerable importance; it increases the weight of concrete about 4 per cent., and the strength about 25 per cent. 5. Concrete should not be thrown in from a height, but spread in layers and rammed until the matrix is flush with the surface. The surface should be brought to a dead level. Norman cement is unfit for concrete in mass; 1-10th of Portland cement in concrete is equivalent to 1-6th best ground lime. 6. Weight of concrete—If the matrix is of Portland cement, 132 lbs. per cubic foot; of lime, 125 lbs. per cubic foot. 7. Concrete laid in cold weather\* stands better than that laid during hot; mild, damp weather is, however, preferable to either extreme. 8. The quantity of water required is determined by the class and condition of the aggregate, the state of the atmosphere, and the purpose for which the concrete is required. 9. Common materials in the construction of concrete staircases should be debarred; a judicious selection, with small additional cost, will produce the most incombustible constructive compound known. 10. Sand is extensively used as aggregate in Portland cement for cast work, mouldings and wall plastering. 11. A secret of success in producing solid and strong work, is the importance of topping the rough coat while it is green. 12. Complete incorporation of all materials, when guaging, is important; a waste of materials and unsatisfactory results will ensue if care be not exercised. 13. Concrete should be well pounded or rammed immediately after being placed in position. The compression renders it more durable and impervious, and increases its strength. 14. The ramming must not be too prolonged, or it will affect the strength of the concrete. 15. In hot weather it is a good plan to lightly sprinkle setting concrete with water from time to time, in order to allow even setting and prevent cracking on

\*Providing there is no frost.



the face. 16. When concrete is to be deposited on any concrete face which has become dry, such surface should be well wetted previous to the application of the new material. 17. Cement concrete should be deposited as soon as made. The concrete, should, after mixing, be rapidly wheeled to the site, gently tipped into position, and then evenly and gently rammed, but not so as to make the surface wet, as the cement exudes from it. 18. In recent experiments the strongest concrete proved to be made with slag; broken fire-brick came next, and then pumice; while coke-breeze was the weakest. After heating the above to a red heat and quenching them with water, it was found that slag had lost two-thirds of its strength, broken fire-brick nearly as much, and pumice about the same, but coke-breeze less than one half; and that the latter was then stronger than the other three materials. 19. Cement concrete should be used at once, but lime concrete may be left a short time before being used, to ensure the slaking of the lime. 20. Fat lime is no good for concrete; stone, or hydraulic lime, or Portland cement should be used. The aggregate should be free from clay, loam, etc. The sand should be sharp. Thames ballast is as good as it requires no sand added." The forgoing introduction contains some capital pointers, and some facts not generally known. We may have occasion to quote again from "Specification" in future issues.

**Builders Exchanges  
and Labor Troubles**

It is gratifying to learn that through the efforts of several Builders' Exchanges, a number of strikes and labor disturbances have been prevented, and in other cases, by the combined efforts of labor leaders and exchanges, serious differences have been adjusted, and the workmen who had been on strike, returned to work satisfied with the mutual arrangements. These achievements by the Exchanges, are only small beginnings of what may be accomplished—for the good of all concerned—if their influence covered a larger area, and a stronger bond of unity, obtained among the Exchanges. If it were possible that dissatisfied workmen, through the agency of their leaders, could appeal to the heads of some national organization of employers; and there discuss their grievances, and become acquainted with the conditions controlling the particular class of labor disturbed, there would be a less number of strikes, and much more harmony between employer and employed, than now exists. Speaking for the workmen employed in the construction of buildings—from the man who does the excavating, to the man who lays out and constructs the stairs and hand-railing, no more intelligent, or more reasonable class of workmen can be found in any other trade; and an impartial discussion of their troubles, when properly submitted to the heads of some sort of a National Exchange, would engender kindly feelings all round, and be a powerful factor in the prevention of strikes or other labor troubles. It is manifestly in the interest of building contractors, that they establish Exchanges in every town and city, having five thousand or more inhabitants. It is not necessary that expensive rooms for the purpose, should be rented; in fact, in the smaller towns, it may not be necessary to rent rooms at all, as the board might meet in the offices of its members as occasion might require. A small sum paid to a secretary, and a few dollars for stationery, might compose

the whole expenditure for a very long time, and the amount required, could easily be raised by a membership fee, and a small yearly due. Meetings might be held monthly or bi-monthly, or they might only be held at the call of the chairman, or as occasion demanded. The benefits derived by an organization, such as a Builders' Exchange, even in a small town, can scarcely be measured; and if the builders and contractors will only pause for a moment and think over the subject, they cannot fail to see how their own interests, the interests of their workmen, and greater than all—the public interests, can be bettered; they will seriously think that it is about time to organize a Builders' Exchange in their town.

**MR. JOHN HIGMAN.**

Mr. John Higman, president of the Ottawa Association of Master Plumbers of Canada, and retiring vice-president for Ontario, is an Englishman by birth. Born in Cornwall in 1842, he came to Canada when thirty years of age, taking up his residence in Ottawa, where he has remained almost continuously ever since. He is



MR. JOHN HIGMAN.

a leading business man in the plumbing and steam fitting line, is a fine stalwart fellow, standing six feet and turning the scale at two hundred and seventy pounds. He directs his business with careful intelligence, while his integrity of character makes him one of the most respected residents of the city. His recognition at the hands of the master plumbers is well deserved.

A permanent liquidator has been appointed to wind up the affairs of the Canadian Granite Co., of Ottawa.

**POLISH FOR BEECH WOOD.**—The wood of the red beech is known to acquire, by the use of ordinary shellac polish, a dirty yellow color, and by the use of white polish, prepared from bleached shellac, an unsightly gray-white color. Therefore, where light colors are desired only filtered shellac polish should be employed, and in order to impart some fire to the naturally dull color of the beech wood the admixture of a solution of dragon's blood in alcohol for a red shade, or turmeric in alcohol for a yellow may be used. A compound of the red and yellow liquids gives a nice orange shade. A few trials will soon show how much coloring matter may be added to the polish.



### WIND PRESSURE ON BUILDINGS.

THERE has been more or less discussion of late, says the Engineering Magazine, as to the proper allowance to be made for the force of the wind in proportioning buildings and other structures, and although there have been numerous cases of overturning and wrecking from the force of the wind it has been strongly maintained that the usual allowance is more than sufficient. Probably no structures offer a better mark for the wind than do gas holders, and the great bulk of such structures, together with the impossibility of securing them firmly to foundations, renders the estimate of wind pressure a matter of especial importance to engineers engaged in connection with such work. A very full and valuable discussion of this subject was contributed by Mr. J. O. T. Irminger at the recent meeting of the Institution of Gas Engineers, and his treatment was so full and broad as to be of interest to structural engineers in all lines of work.

After referring to the experimental investigations of Professors Langley, in America, and Kernot, in Australia, as well as of Herr Vogt, of Copenhagen, Mr. Irminger describes some very interesting experiments of his own, in which models of various forms were exposed to the draught produced by a chimney 100 feet high, careful measurements being made of the pressures and suction on all sides. The results of these tests are tabulated in connection with the computed values, using the formulas of previous experimenters, and fairly consistent figures are obtained.

The influence of the sucking action of the wind is especially important, acting as it does to modify very materially the direction of the resultant for which provision must be made in the construction, and the lifting effect upon roofs and gasholders should always be taken into account.

Referring to the statement of Sir J. Wolfe Barry concerning the excessive magnitude of the Board of Trade allowance of 56 pounds per square foot for wind pressure, in connection with the Tower bridge, Mr. Irminger shows that this suction effect has much to do with the diminishing of the direct pressure of the wind, and cites an instance of the measured pressure on a large gasholder in a storm as being only 4.9 pounds per square foot.

That such measurements should not lead engineers to err on the side of too small allowances for wind pressures, Mr. Irminger gives an abstract of the computations of Mr. J. Baier, upon the wind pressures which must have existed during the storm at St. Louis, U.S.A., in the summer of 1896. The damage done by that great storm is well known, and by computing the strength of some of the structures which were overthrown the actual force of the wind was determined. Mr. Irminger states that the velocity of the wind on that occasion was about double that known in Europe, and hence of four times the force, ranging from 40 to 60 pounds per square foot.

"Such a hurricane simply rases all and everything in its path, but is fortunately not known in Europe; and, if we assume the forces mentioned by Mr. Baier are correct, it cannot be wondered at that the forces estimated in Europe are considerably less violent."

Mr. Baier's conclusions agree with those deduced from Mr. Irminger's experiments, and show that the wind acts in a direction quite different from that

generally assumed and generally provided for in designing bridges, roofs and buildings. "One may thus assume that the experiments on the small models have been verified by nature itself, and that calculations of the wind's force must be made on a different basis than hitherto, inasmuch as, besides the horizontal effects, the upward force must be taken into consideration, the power of which can equal half the wind's normal pressure."

The discussion of the paper bore out the idea that until now wind pressures have been studied with rather preconceived ideas. The construction of buildings has proceeded in accordance with these ideas, and except when great catastrophes have called the attention of engineers to the failure of structures, very little seems to have been done in the way of investigation to see whether the established ideas are correct or not.

The increasing size and altitude of framed structures is rendering the question of proper allowance for wind pressure a most important matter, and the experiments made by Mr. Irminger, as well as those of others cited by him, form valuable contributions to the subject. When such buildings are being designed it appears desirable that small models be made and tested in the simple manner described, and there is little doubt that the stability of the structure during wind storms would be materially increased if such information is obtained and used in the preliminary stages of the design.

### GREEK MASONRY.

THE ancient Greeks were as empirical in their rules upon the proportions of each stone they employed as upon the proportions of the whole design. Thus it may be observed, for example that the size of the stones in the Erechtheum and in the Parthenon differ in about the same ratio as the one differs from the other. For the actual proportion of the stone itself no direct rule can be given, nevertheless it is found that the geometrical ratio of 1. 2. 4. is by no means unfrequently employed, Symmetry also was considered as necessary in the position of their joints as in the composition of the plan, or the position of their triglyphs and mutules, and these may be observed as occupying the same place in nearly every similar construction. The Greek joint, whether it is executed in marble or in stone, is a thing really to marvel at. It is, indeed, scarcely visible. Its perfection arises from the amount of skill and labor bestowed upon it, and from the peculiar method of working the two surfaces. There are grounds for believing that there was a universal method adopted in all ages by that nation, nor was it confined to the Greeks alone, it having been handed down to and practiced by the Romans also, as can be observed in the Coliseum and Arch of Septimus Sevetus. It, however, at length became either lost or disused.

### POINTS FOR ADVERTISERS.

THE reason a good deal of advertising doesn't pay is that it is only half done.

A manufacturer spends a lot of money advertising to the consumer, and makes no concerted effort on the dealer.

The two things must go together.

The dealer must be reached on both sides of the counter at once—by the consumer in front with his money and by the manufacturer at the back with information about the goods and about the profits that can be made by handling them.

The two things together make an irresistible argument.

Either one alone may do some good, but one is not complete without the other.



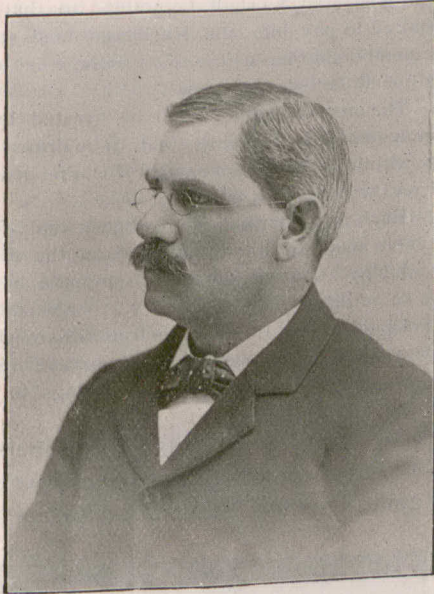


COMPETITIVE DESIGN FOR ADDITIONS AND ALTERATIONS TO THE MERCHANTS' BANK BUILDING, MONTREAL.  
MESSRS. TAYLOR & GORDON, ARCHITECTS.



**WINNIPEG MASTER CARPENTERS' ASSOCIATION.**

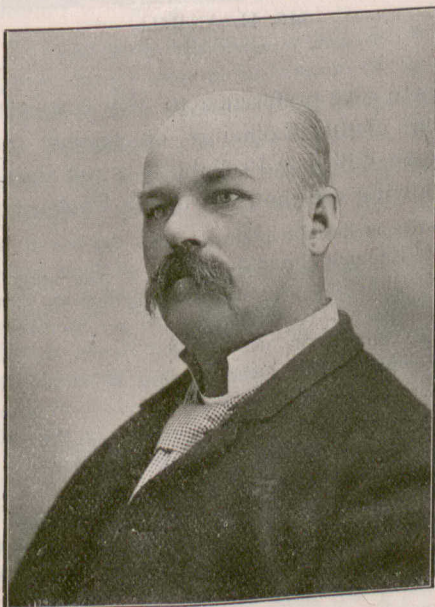
The advantage of organization by employing contractors in the building trades are receiving greater recognition of late. The last two years have witnessed



MR. WM. BRYDON,  
President Winnipeg Master Carpenters' Association.

the establishment of Builders' Exchanges in several of the leading cities of Canada. One of the latest of these organizations is the Master Carpenters' Association of Winnipeg. The association is the outcome of the recent unreasonable demand of the striking carpenters in that city.

Although at present solely composed of master carpenters, the purpose is that the organization shall be established on the broader basis of a Builders' Exchange, representing all branches of the building trades. The association occupies a suite of rooms in the McIntyre Block, in the most central portion of the city, and is under the government of the following excellent staff of officers: Mr. Wm. Brydon, president; Messrs.



MR. JOHN A. GIRVIN,  
Vice-President Winnipeg Master Carpenters' Association.

John Girvin and S. B. Ritchie, first and second vice-presidents; Mr. J. G. Latimer, treasurer; G. A. Mitchell, secretary; James McDermid, chairman of the executive. The membership fee is \$25; dues, \$6 per annum. We are privileged to present herewith the portraits of the executive officers of this new and energetic association,

which in a short time will no doubt greatly develop in strength and usefulness.

**GRANITE AS A BUILDING MATERIAL.**

Notwithstanding the existence in the provinces of Quebec and New Brunswick of granite of excellent quality, the material has not hitherto been employed to any considerable extent for building purposes. This may be attributable to the fact that in the vicinity of Montreal there were extensive deposits of limestone and in New Brunswick and Nova Scotia there is an abundance of building stone. From the Maritime Provinces, however, large shipments of granite have been made to New York and Boston, and also to Scotland, the home of the granite industry. We have understood that a portion of the material thus exported was to be employed in building construction. Recent events seem to indicate that our native granites are likely to enter more largely into building construction in the future than in the past. The limestone quarries in the vicinity of Montreal are said to be so far exhausted that it is no longer possible to obtain stone of large dimensions or uniform color. Even in its best days this stone was unattractive in color and its extensive use in Montreal can only be accounted for by the ease with which it could be obtained and its consequent cheapness. For the first storey of the new Grand Trunk Railway offices, Stanstead granite has been



METHODIST CHURCH, STANSTEAD, QUE.

employed, and the architect is reported to have said that he would have built the entire structure of it had he known that the material was obtainable in the required dimensions and quantity.

In color Stanstead granite is a bright, clear grey. In rock-faced work it gives a bright sparkling effect. In hammered work it shows nearly white and stands out distinctly in mouldings and carving. Blocks of any size up to 40 tons weight are obtainable and the quarries are fitted with appliances for handling them. The shipping facilities are excellent, the quarries being reached by a branch line of railway by which connection is made with the G. T. R., C. P. R., B. & M. or M. C. railways.

The strength and enduring qualities of granite are too well known to require special mention. On this point Prof. Cleman, of the School of Practical Science, Toronto, says: "Having carefully examined a specimen of grey Stanstead granite, I find that it contains no iron pyrites nor other sulphide which on weathering would give a brown stain in the stone."

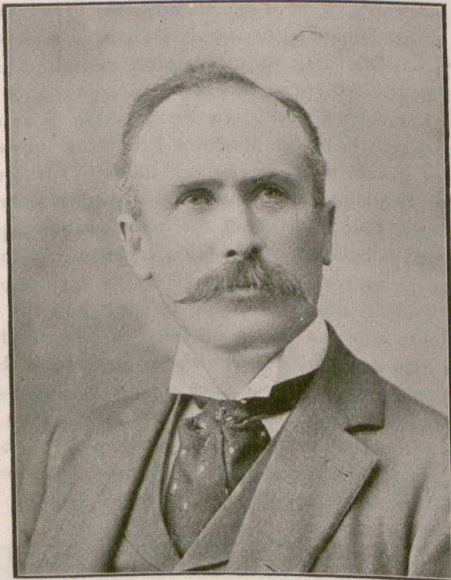
Hitherto the cost of working granite has been against its use for building purposes in this country, but of late by the use of machinery this drawback has to a large extent been overcome. It is claimed that by means of improved quarrying facilities and stone working machinery operated by compressed air, it is now possible to offer this material at a very slight if any advance on the cost of other varieties of building stones.

The accompanying illustration of the Methodist church at Stanstead, constructed of granite from the local quarries, will serve to show the appearance of the material in situ.



## VANCOUVER BUILDERS' EXCHANGE.

We present herewith portraits of the executive officers of the new Builders' Exchange at Vancouver, B. C. Some particulars of the organization of this Exchange

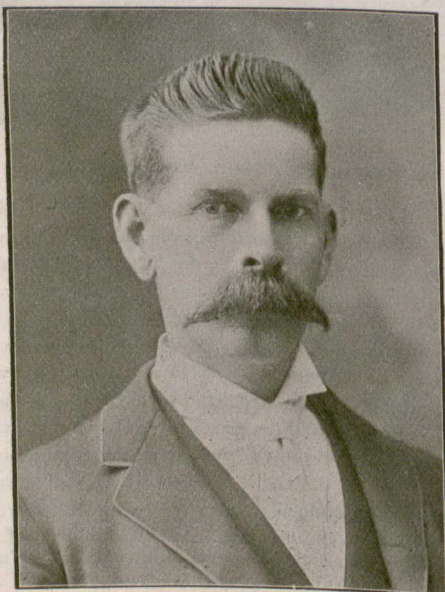


MR. E. COOK,  
President Vancouver Builders' Exchange.

were supplied in a letter from the secretary published in our July number.

The constitution shows the Exchange to be founded on a somewhat different basis, as regards terms of membership, from organizations of like character in Eastern Canada. For the information of those of our readers who are interested in the builders' exchange movement, we reprint from the constitution of the Vancouver Exchange the sections relating to Membership, Fees and Dues, as follows :

MEMBERS.—“Section 2. Should any member of this Exchange make an assignment or in any way fail in business to the manifest injury of his creditors, this Exchange shall pay to his creditors pro rata a sum equal to 90 per cent. of his share of the invested funds of the Exchange. He shall be suspended and shall forfeit all privileges of the Exchange until such time as he shall have recovered so as to re-enter the Exchange as provided by the Con-



MR. A. E. CARTER,  
Secretary Vancouver Builders' Exchange.

stitution and By-law, in which case he may be reinstated to all the privileges of the Exchange.

Section 3. Any member in good standing may withdraw from the Exchange upon giving thirty days' notice, which notice shall be posted in the Exchange rooms. He shall be entitled to receive from the Exchange a sum equal to 90% of his share of the invested Exchange funds.

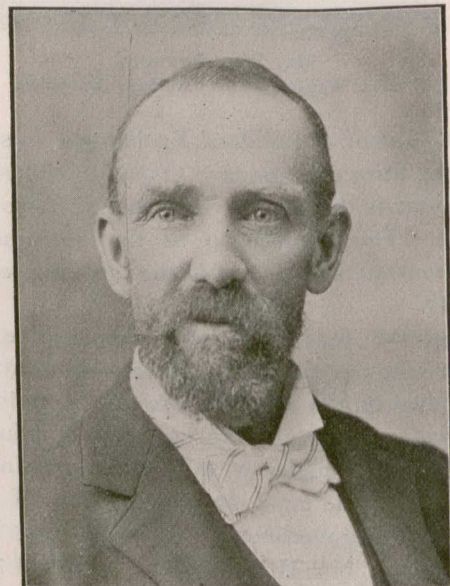
In the event of the death of a member in good standing, his share of the invested funds of the Exchange shall be paid to his legal representatives.

FEES AND DUES.—“Section 1. Applicants for membership shall deposit the sum of \$12.00 with the Exchange, as an application fee, which shall be returned if the application is refused, and taken as the first payment of dues if the application is accepted. If the applicant is elected, he shall be notified to that effect and that he is required to pay into the Exchange funds the sum of \$300.00 as a membership fee within thirty days, when a membership certificate shall be issued to him.

Section 2. The membership fee shall be invested by the Exchange as an accumulative reserve fund, to be drawn upon only in case of the withdrawal, the assignment for the benefit of his creditors, or on the death of a member.

Section 3. Each member shall pay as dues twenty-four dollars per year, payable semi-annually in advance, on the first days of November and May. Any member three months in arrears for dues shall be so notified by the Secretary. If the dues of such member be not paid within thirty days from the receipt of such notice, his name shall be reported to the Board of Directors, who shall investigate and institute proper proceedings to collect the amount in arrears.”

It will be seen that the terms of membership are a guarantee to some extent of the business probity of the members, and this must influence architects and build-



MR. H. A. BELL,  
Treasurer Vancouver Builders' Exchange.

ing owners to give preference to the contractors who are members of the Exchange, as against contractors whose responsibility and reliability is not thus assured.

The following are the rules of the Exchange :

1. These rooms shall be exclusively for the use of members of the Builders' Exchange, and shall be at all times under control of the Board of Directors, who may upon application therefor, grant to trade organizations (two-thirds of whose members are members of the Exchange) the use of such rooms as in their judgment may seem proper for the holding of committee or other meetings.

2. Visitors shall not be admitted, except on the following condition, viz : They will inform the Secretary who they wish to see, and if the member so notified desires to invite the visitors upon the floor he may do so, with the understanding that he will be responsible for their proper conduct while upon the floor, and that they will promptly retire after they have transacted their business with said member.

3. Any member of the Exchange in good standing may introduce “non-residents” as visitors to whom the Secretary is authorized to issue cards of admission to the Exchange rooms, good for one week, provided, however, that said visitor shall first register his name in the visitors' book, and shall not be allowed to exhibit any sample of goods, wares or merchandise of any kind, or transact any business whatever in the Exchange.

4. The Exchange rooms shall be kept open during the usual business hours, viz : from 8 a. m. until 6 p. m., holidays excepted.

5. The Exchange rooms shall not be used by any members as



an office for payment of employees, nor will workmen be permitted to solicit employment at these rooms.

6. The following named persons will be cheerfully admitted to the floor upon making themselves known to the Secretary, viz :

- (1.) Architects and draughtsmen.
- (2.) Government and city officials.
- (3.) Building inspectors.
- (4.) Retired master-builders, to whom complimentary invitations have been voted.

Persons admitted under this rule will not be permitted to make appointments to meet other than members of the Exchange in these rooms.

7. The Secretary will not be permitted to give receipt for any money, checks, drafts or negotiable papers (the law appearing to make the Exchange directly responsible for such receipts). Should parties desire to have such money, checks, etc., placed in the boxes of members, then the Secretary may do so, with the understanding that the Corporation shall not be held for any loss that may occur.

8. No advertising cards or wares of any kind shall be displayed in the Exchange rooms, except by permission of the President.

### PLUMBING SIMPLIFIED.

In a brochure bearing the above title, Mr. Wm. Paul Gerhard, C.E., consulting sanitary engineer, of New York, says :

I am to-day more than ever in favor of simplifying the plumbing work of buildings. Anything that helps to reduce the present complicated system of piping, while at the same time retaining the safety of the system, seems to me to be worthy of serious consideration.

When using the simple S-trap, I provide, as everybody else does, the "back air pipe" necessary to render this special form of trap safe against siphonage. But I have long ago come to the conclusion that branch pipe ventilation is carried much too far; that instead of giving positive security, it creates new and sometimes serious dangers, and that it also entails an unnecessary and useless expenditure of money. I hold it is imperative that this matter be seriously considered by unprejudiced and unbiased experts and sanitarians.

Briefly stated, the objections to the trap vent law are as follows :

- (1) The venting of traps leads to a greater, and sometimes dangerous, complication of the work.
- (2) It involves a useless outlay of money.
- (3) It increases, and often doubles, the number of pipe joints in a building; it duplicates the pipe system, and therefore increases the danger of leakage at the joints.

(4) Trap vents attached to the horns of porcelain fixtures, such as water closets, often lead, in case of settlement of the building, to the breakage of these horns, thus opening up a dangerous inlet for sewer air, the crack often remaining unnoticed for years.

(5) The mouth of the vent pipe at the point where it attaches to the crown of the trap is liable to clog up with congealed greasy deposit, rendering the vent pipe useless without this fact becoming apparent to the occupant of the house.

(6) The upper end of the back air pipe, where it extends separately to the roof, is liable, unless enlarged to at least 4 inches in diameter, to be closed up with snow or hoar frost in winter time; in very cold climates even a 4-inch pipe may become sufficiently obstructed by hoar frost or icicles to impede seriously the free ventilation of the vent pipe.

(7) Owing to the increased air current passing over the water seal of the trap, and induced by the vent pipe,

the destruction of the water seal by evaporation is much more rapid.

(8) The trap venting system affords increased opportunities for bye-passes in the case of careless or ignorant workmen. In my examinations of the plumbing of houses, I have discovered bye-passes even where such work was done under board of health inspection.

(9) In the case of long vent pipes, particularly where there are several sharp bends in the pipe, the friction of the air passing through the pipe is sometimes increased to such an extent that the vent pipe fails to protect the trap from siphonage.

"But," say the advocates of trap vent pipes, "these pipes are not only put in to prevent siphonage; they are intended equally to ærate the branch waste pipes and to produce a circulation of air in the entire system of branches." To this I reply that plumbing work can and should be always skillfully arranged and planned, so that the fixtures are located immediately adjoining well-ventilated soil or waste pipe lines. If thus arranged, the short branches are so well flushed by the frequent discharge from the improved modern fixtures with large outlets—each of which constitutes in itself a small flush tank, and only fixtures having these desirable features should be considered at all—as hardly to require any other purification or æration. Just the moment, however, the branch wastes become long, owing to the location of the fixtures, I always insist upon the proper ventilation of the branches by continuing the lateral wastes the full size into a vertical line, which is carried up to the roof the same as the soil pipe.

In conclusion, I hold that the authorities who make the plumbing laws should keep themselves thoroughly posted about the progress of the art, and should examine, without fear or favor, all devices calculated to preserve and maintain a sound water seal against any possible air disturbances in the soil pipe system.

I claim that the rules drafted should be such as to secure a system which is as simple and economical as possible consistent with security and efficiency. Security against back pressure, self-siphonage or loss by momentum, siphonage, evaporation and loss of seal by capillary attraction are the chief requirements, and these are unquestionably attained by the method described. If the process of simplification should tend to give us even greater security, so much more will be gained. *Caeteris paribus*, the simplest and least costly system must necessarily be adjudged the best.

The trap-vent law will, in my judgment, ultimately be repealed. Simpler and better methods will take its place. The first initiative step to be taken consists in so modifying the present law as to leave the option with the owners, architects or sanitary engineers of buildings to choose between the simpler, better and less expensive, advanced method, or the antiquated, costly, and in a good many respects unsafe method.

Paradis & Letourneau have registered as proprietors of a brick manufacturing business in Quebec.

At the annual meeting of the American Society of Heating and Ventilating Engineers, held in New York, one of the topics discussed was, "What is the practical experience as to the loss of heat from hot air flues, especially when located in outer walls?" A written discussion from H. Elsert was to the effect that the loss was 15 per cent. greater when the flue was in an exposed northern wall than when in a southern wall, under the same conditions.



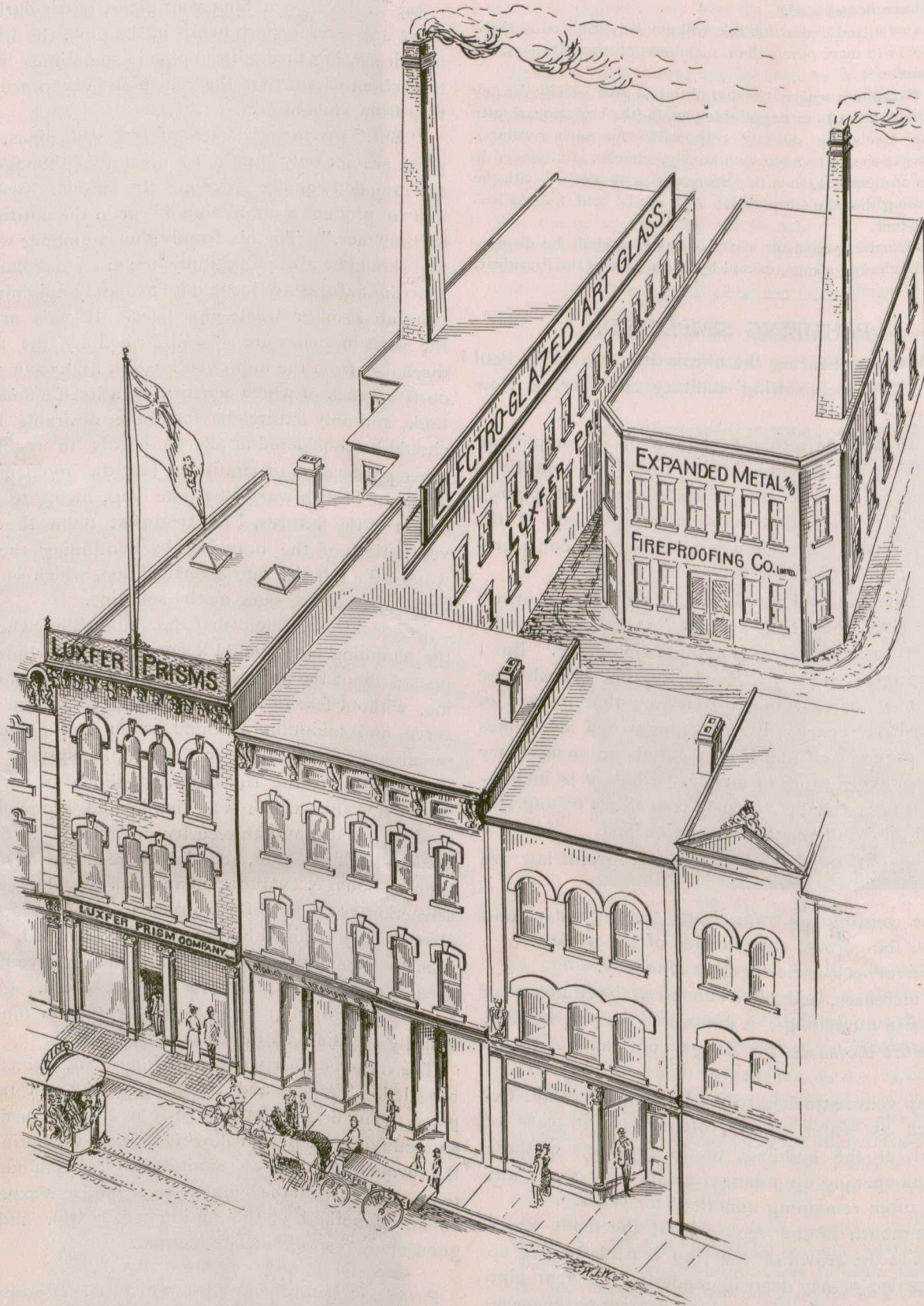
### HOW A NEW BUSINESS HAS GROWN.

Seldom does a concern of the magnitude of the Luxfer Prism Co. Limited attain thereto in so brief a time, and from a beginning so modest. There is a vast deal in having merit in the product. How Luxfer Prisms facilitate the endeavor to secure good daylight for store and office buildings, otherwise doomed to darkness, the architects themselves best apprehend. It was a case of experi-

equipped both for prism work and ornamental electro-glazing.

This year the Luxfer Prism Co. makes a most interesting exhibit at the Industrial Fair, next north of the Rice Lewis Co's. old established stand. Their building will be lighted with Luxfer Prisms and plate glass, and the contrast between the two as a means of lighting interiors will be strikingly displayed.

The company extends the most cordial invitation to old and



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menting at first, with the result that now Luxfer Prisms are included in the specifications of every important new building.

"Advance" will be the motto of the new company, which—with a largely augmented capital—recently acquired the business of the old one.

The battery of electro-glazing tanks in the new and specially designed King street factory quadruples the capacity of the present one. In every way the extensive plant will be thoroughly

new friends to visit them either at the Fair grounds or in their fine new premises, Nos. 98-100 King street West. To architects especially a hearty welcome will be given, and a new and noteworthy exhibit of ornamental iron work, pressed brick, and other high-grade building materials—for which a new-born, but healthy demand exists in Canada—will be presented for their delectation, in addition to the important Luxfer features in prism work and art glass.



### TESTS OF ARMORED AND IRON DOORS.

The first of a series of tests of the fire resisting qualities of doors was made recently under the direction of the London Fire Prevention Committee. An iron door and a wood door covered with tin plates were the subjects of the first test. The doors were obtained in the open market, the armored door, being fixed by its maker, was hung to fit closely against the face of the brick wall, and had a 3 inch overlap both at the sides and at the top, as measured at the centre. The iron door was hung in a rebated frame. Both doors opened inward toward the fire. The door openings were approximately 3 ft. 9 in. by 7 ft. 3 in. The object of the test was to record the effect of a fierce fire of one hour, gradually increasing to a temperature of 2000° Fahr., followed suddenly by the application for five minutes of a stream of water.

The result is summarized as follows :

**ARMoured DOOR.**—All the woodwork between the tinned steel plates was wholly reduced to charcoal, and had fallen to pieces within the steel casing.

The tin was melted off the door.

Some of the plates were forced out of position and the welded edges opened.

The steel plate casing was considerably bulged on the fire side, and also on the outside, so that the distance taken at the center between the inner and outer casing was 9½ in.

**IRON DOOR.**—The iron-framed and panelled door had buckled and warped, as had also the rebated frame in which it was hung.

The door had fallen over at the top corner on the lock side to the extent of 4⅞ in.

The rebated frame had bulged to the extent of 2⅞ in. from the vertical straight line.

No further observations were made.

### CEMENT DETERIORATION.

ATTENTION has recently been drawn to peculiar cases of comparatively rapid cement deterioration under obscure conditions. Thus, Stutzer and Hartleb report a case of a reservoir which, within three years, became covered with a soft brownish mud, while the concrete underneath proved permeable. On analysis it was found that silica, iron and alumina seemed to have increased in proportion, whilst the percentage of lime had decreased. Evidently some lime had been dissolved, so that the percentage of the other constituents was apparently augmented. In some cases this would be ascribed to the action of carbonic acid. Exhalations of this gas are common in the Rhenish district, where some of these deteriorations have also occurred. In other instances, any action of carbonic dioxide looked improbable; and, no other cause being traced, the suggestion of some bacteriological activity did not appear altogether absurd. In one of these cases ammonium sulphate was added to the water. It was gradually transformed into nitrite, all ammonia disappeared, and nitrite of calcium—a readily soluble compound—was formed. A microbe was also discovered.

### RECENT IMPROVEMENTS IN ART GLASS.

Electrolytically glazed art glass is now upon the market at practically the cost of the leaded work. Samples of this speciality of the Luxfer Prism Co., Limited, Toronto, are to be viewed in the new steamer Toronto, just built by the Bertram Engine Works Co. The copper lines are slender and tough, and no disfiguring saddle bars divide the panels into sections. A rigidity before attained only by copper bar or some other expensive mode is at the same time a prominent characteristic. Messrs Bond & Smith, architects, supplied the design, which is Moorish in treatment and refreshingly attractive.

In addition to securing its due share of the general run of decorative glass, the Luxfer Prism Co. has already established an enviable reputation for supplying, at reasonable cost, panels to resist strains due to sudden concussions, as in book cases, door and transom lights, etc. The future of electro glazing is promising.

The master carpenters of Toronto have recently formed themselves into an association in affiliation with the Toronto Builders' Exchange. Mr. John Hanrahan is the president of this new Association, and Mr. George Henry is the vice-president. An Executive Committee was appointed comprising these gentlemen and five other members of the association.

A charter of incorporation has been granted to the Expanded Metal Company of Canada, Limited, with headquarters in Toronto and a capital stock of \$100,000. The purpose of the company is to sell and deal in expanded metal, and carry on a general fire-proof construction business in Canada. The names of the following persons appear in the charter: Charles Waldo Adams, manager Edwards Railway Electric Headlight Company, Chicago; William Wilson Ramsey, president Expanded Metal Fireproofing Company, Chicago; Chapman Jay Root, bottle glass manufacturer, Chicago; James Henry Barnard, lawyer, Chicago; Ebenezer Forsyth Blackie Johnston, barrister-at-law, Toronto; Charles Samuel Spencer, building constructor, Rossin House, Toronto.



Masonic Coat-of-Arms, Masonic Room, Temple Building.  
By W. J. HYNES, Toronto. G. W. GOULLOCK, Architect.

## The List of Large Buildings

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## LEGAL

SCANLAN VS. DETROIT BRIDGE AND IRON WORKS.—In this case argued and decided recently in the Superior Court at Montreal, Mr. Justice Archibald, presiding, the Judgment was as follows:—The plaintiff sues the defendant, alleging that he was a bridge builder, employed in the defendant's service in the building of the new Victoria bridge across the St. Lawrence, from Montreal to St. Lambert, at the salary of \$2.50 per day; that on the 2nd of October, 1898, plaintiff with other workmen was employed in removing the iron floor of the old Victoria tubular bridge, under the orders of their foreman, and it was his duty to fasten the hooks upon the cross-beams of the portions of the floor which were to be removed, which were then by means of a derrick lifted and carried over and piled on one side of the new bridge. These pieces of flooring of the tubular bridge were six or seven feet wide by the width of the bridge, and had two cross-beams, which existed in old bridge bolted to the plate iron, which formed part of the tube. The chain, which came down from the derrick, was provided at its lower extremity with two short chains, having at each end, hooks, or rather clamps. These hooks, or clamps, were then attached by the workmen by placing them under the flange, which existed upon the cross beams, whereupon, when the power was put on these clamps, would tighten upon the cross beams and so raise the whole piece of iron to be removed. However, as the derrick had to work among the braces of the new bridge, the boom of the derrick could not swing over so as to carry the iron sideways. For this purpose it was necessary to have a second derrick provided with a chain, which was also hooked into the ring of the other chain, which was attached to the chain of the other derrick. When the iron had been raised some feet by the first derrick the strain was gradually transferred to the chain of the other derrick and just as that chain took the strain, the chain of the first derrick slacked, thus enabling the iron to be carried sideways, so as to come perpendicularly under the boom of the second derrick, and be there deposited upon the pile free from the tracks of the railway.

It seems that the workmen found it difficult to prevent the hook of the chain of the second derrick from slipping out of the ring, while it was being hoisted by the first derrick, and so the men

were in the habit of riding upon the iron so as to be in a position to keep the hook of the second derrick in its place. They would then ride over until the iron was deposited on the pile. When this operation was being accomplished on the day in question the plaintiff was standing between the two cross-beams holding on to the chain of the derrick. As the strain was put upon the chain of the derrick one side of the iron lifted before the other, and just as the iron was about to be completely suspended one of the bolts which bolted one of the cross-beams to the plate iron gave way and these cross-beams naturally fell together and injured the plaintiff, who was standing between them.

The defendant says that frequent warnings were given to the men not to stand between the cross-beams, and that the plaintiff disregarded these warnings, and that if he suffered it was his own fault. It appears however, that it was necessary for the men to be on the piece of iron, which was being moved, at least after it was completely suspended on the derrick chain, in order to attach the chain of the second derrick. It is manifest that the danger of accident would be just as great whether the men were standing between the cross-beams or not, because the chairs and pulleys with which that work was performed would if they gave way, in all probability kill or seriously injure any men who were working with them.

It is not the duty of an employer to guarantee the lives and limbs of the men acting under his orders, but it is the duty of an employer to use means as safe as are practicable in the performance of his work. If there was any danger in standing between the cross-beams when the iron was being hoisted that danger ought to have been known to the employer, and presumably was known to him, seeing he alleges that he had warned the employees against standing between the beams.

It is manifest that other means might easily have been employed to prevent any danger arising from the giving way of materials in connection with the removal of that iron. An employer has no right to use means which offer a constant danger to his employees when other means, perhaps a little more expensive and a little slower in operation, would have avoided the danger, nor can he excuse himself by alleging that he had warned the employee of the nature of the danger which he was running.

The accident of which the plaintiff complained was caused by what I must hold to be the negligence of the defendant, and it follows that judgment must go in plaintiff's favor.

I assess plaintiff's damages at the sum of \$750, for which I give judgment with costs.



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