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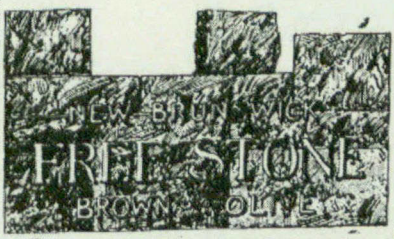

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The Canadian Architect and Builder

VOL. XV.—NO. 176. AUGUST, 1902.

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" EDMUND BURKE, " "
" S. H. TOWNSEND, " "
" FREDERICK G. TODD, Landscape Architect, Montreal.
" W. H. ELLIOTT, Toronto.
" J. C. B. HORWOOD, Architect, Toronto.
" A. F. DUNLOP, R.C.A., Architect, Montreal.

Cement Blocks.

THE new Dairy Building for the Toronto Industrial Exhibition is well worth examination by architects as an exhibit of cement block walking. It gives the Dairy Building a good architectoric appearance, and suggest the attainment of a characteristic effect, for at any rate plain work. It is rather questionable whether the right result is being attained by casting the blocks in imitation of rock faced stone; but it is remarkable how little the similarity of the blocks, which are of course all cast with the same face, catches the eye. Experience, however, teaches that this treatment will weary in time, if it does not at first. It ought to be possible to give a surface to the blocks, if that is needed, without trying to make them look like stone. If one may judge from the smooth portions of the work—the pilasters, etc., at the entrances—the edges of the blocks are what need most treatment, and attention would be well devoted to the joint.

Municipal Bungling.

WHILE the newspapers are continually urging the advantages of municipal management of public utilities and depicting private contractors in the light of robbers of the privileges and hard-earned dollars, of the citizens, the cold facts do not bear out their assertions. On the contrary, it is the case, in Toronto, at least, that every public undertaking placed directly under the control of the Council in recent years has been badly bungled and has resulted in loss of the public funds. The latest example is to be found in the new Exhibition Buildings. The contract for the structural steel work for the Main Building was awarded last February to the Canada Foundry Company, whose tender was the lowest. The Council was subsequently prevailed on to call for new tenders, which resulted in considerable loss of time. The Canada Foundry Company's tender again proved to be the lowest and was accepted. A further delay ensued while the Council listened to deputations from the Unions who wanted changes made in the specifications on which the tenders were based. This the contractors rightly refused to permit. Then changes were made in the drawings, necessitating the re-cutting of some of the structural material. As a result of these causes, two months of valuable time were frittered away, and the contractors were compelled to notify the Council that because of the delay, for which they were in no way responsible, the building could not be completed within the specified time and would not be available for this year's Exhibition. The St. Lawrence Market Building is another such example of municipal bungling. The citizens have to a large extent lost confi-

dence in municipal management of any enterprise larger than a peanut stand, and will be very slow indeed to vote for any further projects involving large expenditures under the direction of the City Council. Municipal management is perhaps beautiful as a theory, but in the light of practical experience, it must rank as a dismal failure.

The Flat Iron Building.

It is quite possible to get tired of seeing pictures of New York's Flat Iron Building, which represent it as about 10 feet through and twenty stories high. The plain fact is that this is an illusion, a representation from a trick point of view. The building is at the junction of two streets which meet at an acute angle. It has therefore converging sides, and as the point of convergence is rounded the ground plan is like a flat iron. It is in the rounded end that the interest lies for sensational picture makers. As every foot, in such a site in New York, is precious, the end is carried out to as small a round as is at all serviceable inside, and this, for the height of the building, is pretty sharp. Now, if the spectator takes up a position where he just loses sight of one side, he seems to be looking at a building which is of the size of the side in view and only as thick through as the rounded end. It all lies in the plainness of the round and in this point of view. It is just like American journalism—which regards facts only as something to be rummaged for possibilities of startling copy—to always represent the building thus, without a word. The illusion is interesting, but why not explain that it is an illusion? Something like the following would do, "This building, though in plan like a flat iron, can, by choosing a judicious point of view, be made to look like a washboard. See our illustration."

Toronto Island Park.

The latest intelligence about the Island improvements that are going to make Toronto the Venice of America, the Mecca of summer pilgrims, the convention city, is that the Park Commissioner is to take a little run of a fortnight to see what he can see and when he comes back he will settle the matter. By all means let Mr. Chambers go for a trip. He probably works hard and deserves a change. He may perhaps learn by travel what a park is like, and stop spoiling the sweeps of the Queen's Park and High Park by dotting them with his little, spikey evergreens. But what nonsense it is to talk of his taking a little trip and coming back prepared to design a park and lagoons for the island! The suggestion is his own. He accounts for his failure to produce the plan he undertook some months ago to make, by saying that he must go away first to see other places. It is a fatal error to suppose that the assembling together of ideas picked up in different places is a plan. The assemblage remains a mere assemblage even if the ideas are suitable, which they are not likely to be. At the best it is a bric-a-brac park; at the worst it is a hodge podge. What we want is a design; something that has character throughout; something that has lines; something that lies in masses; a park of which the details seem to suit itself, and do not remind one of something else. Is Mr. Chambers likely to learn to plan such a landscape by running round the parks of the United States for one breathless fortnight? Let us get down to business, by employing somebody to design who can design; and let Mr. Chambers keep in order what is designed. That is his proper business.

The Toronto Exhibition Buildings.

Now that the new exhibition buildings are in place, it is evident that they are not in the right place. The art gallery and the dairy building lie, with reference to one another, in a manner that can only be described as higgledy piggledy; and the dairy building is so placed as to cut into the axial avenue which, in the plan of the Toronto Chapter of the Ontario Association of Architects, it was shown to face. This plan was accepted and filed. It was ingeniously laid out so that the new buildings would both face the present winding roads conveniently, and yet be found properly placed, when the time comes that there is somebody in charge with larger ideas, and the avenues are widened and made more stately. The plan has been inaccurately carried out, and every deviation is an injury to the grounds. The worst offence has been in moving the main building west, far enough to set it hard upon the edge of the future main avenue. Of course the road will now have to deflect so that the building may be properly set back from it. This means that there will be no view of the lake down that avenue, as was intended, and as there ought to be.

However, the main building is wrongly placed in any case. It is easy to see now, after the walls are up, that it is out of place altogether where it is. To place a building 350 feet long so as to block, for half the Fair, the look out to the lake, which is the feature of the site, is a fundamental error. It ought to be where the old main building and the horticultural building now stand. Query: As the new building is mostly iron roof, how would it pay to take it down when the old building is condemned with its final condemnation, and put it up again where the old building stood? A better plan would be to stop the new building where it stands—the walls about complete but no roof yet on the ground—and when the Fair is over for this year make a fresh start, by pulling down the old main building and the horticultural building and moving the new main building to their site. This may sound outrageous, but in the end the $15,000 that it will cost will be well expended. The building will be put where it can be left; and, in any case, a proper arrangement of the grounds is worth more than $15,000 to the city. The question of the Fair grounds is really a serious question for Toronto, and this foolish city hall officialism which makes it impossible to get anything done properly is such a costly game that meditation naturally turns to reflect upon the comparative economy of a staff of first class, well paid, permanent officials. But how are we going to get *that* done?

The Fallen Campanile.

Evidence as to the cause of the fall of the Campanile of San Marco is accumulating and all the evidence points in the direction of a spreading strain upon the walls at the bottom. It is difficult to image how, from any other cause, the tower could collapse vertically as it did. It came down as a tall chimney that is felled by the simultaneous destruction of underpinning all round.

Howard Walker the American architect was an eye witness, from some distance, of its fall and describes the angel at the apex—the feature of the structure that ultimately lay the farthest from the site—"slowly descend, swaying, but upright"; and members of his family, who were close to the tower, told him that "spurts of lime-dust puffed from the tower about 20 feet up from the ground and that then . . . the base of the tower spread "like the roots of a tree?"

Another witness is an architect who writes to The Builder giving a measured plan of the Campanile which he made 27 years ago. The gist of his observations is that the inner and outer shells, between which runs the sloping ascent vaulted in brick, were tied together by wooden bond timbers some of which were decayed. "In many cases" the timbers were cut out, he supposes on account of decay, and had not been renewed. He noticed "several serious cracks in the structure", which he "attributed to the decay of the bond timbers".

Further evidence is given by the ruins themselves which show:—first, that "large numbers" of the bricks were old bricks—Roman bricks, stamped with a stamp which identifies them as coming from Altinum, a city which was ancient when Venice was new—; and, secondly, that the walls were badly built, n some cases being mere shells,(those jerry building ancients again!) filled in with rubbish.

When one thinks of an inclined plane of brick 3 feet 9 inches wide and 875 feet long (by this English architect's plan) resting its accumulated weight at the bottom upon walls which were badly built of bricks which had already served their term a thousand years ago; which have been suffered to decay behind the concealment of a marble loggia and have been deprived by decay and careless cutting of their wooden vaulting tie; it is no wonder that the base of the tower spread "like the roots of a tree."

THE R. I. B. A. COLONIAL EXAMINATIONS A CHANCE FOR ARCHITECTS.

There is seldom anyone who has had a liberal education who does not later in life wish that he had the chance again, knowing what he now knows of what kind of study would be the best for him to pursue. If it were possible for men to take up their calling for some years before finishing their education there is no doubt that the finishing process would be done more intelligently and with greater interest and profit. Architects of all men find that practice opens their eyes not only to new fields of study but to the need of more careful study of what they have already learnt. In particular is it true that increasing experience inclines them continually to the study of the academic examples. Whereas in their younger days they were apt to think a general acquaintance with the historical styles was all that was desirable for this country, and that more intimate study was better expended on current examples; as they increase in experience, it is current work that receives only general attention and they long, generally in vain, for time and opportunity to study old work even out of books. It is not impossible, even in the midst of practice, to pursue these studies to some effect, but it would require much energy and more method to accomplish anything systematic. A day's work does not create an appetite for evening studies, and without a definite end within sight there is little chance but what these studies will be indefinitely postponed. With something to fix a limit both in time and in extent it is easier to begin and to keep going. Here then is a use for the Colonial Examination of the Royal Institute of British architects.

The examinations consist of two days given to a sketch design; it was an almshouse in the examination of this year. After this there are papers on the following subjects :

1. The Nature and Property of Building Materials ; their decay, preservation and quality, and their application in building.

2. The Arrangement and Construction of Buildings, in relation to health, drainage, water supply, ventilation, lighting and heating.

3. Specifications and Estimating. A specification of the work in various trades. The measurement and cost of building work. The conditions for building contracts.

4. Construction. Foundations, walls, retaining walls, arches, vaults, floors, roofs, etc., and constructive details in all trades.

5. Construction. Construction in iron and steel. Showing underpinning and dealing with ruinous and dangerous structures.

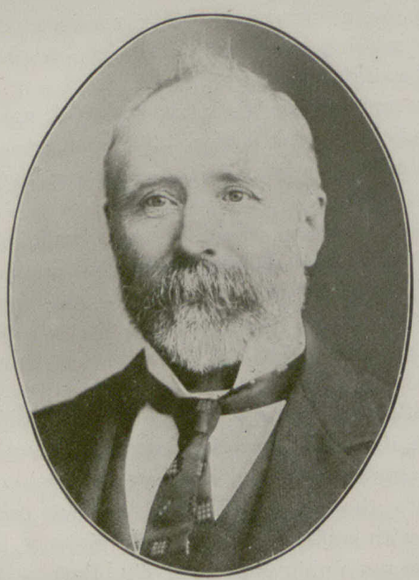
None of these papers would afford much difficulty to an architect. Any practising architect ought to be able, we may gather from these examination papers, to go into the examination hall without preparation and pass with sufficient credit. He might perhaps also pass in the remaining paper—6. The Principal Styles of Architecture : their features, mouldings, and ornament, so that if the right to put A.R.I.B.A. after his name is all he wants the only thing that need stand in his way is the five days' effort necessary and the six guinea fee.

But this paper upon the architectural styles is worth more to Canadian arch tects than to be merely an instrument for acquiring letters. It makes the very motive that is wanted to stimulate to continuous application in the study of historical work. The ultimate goal—freedom of design—is not less surely attained it the attention is fixed for a time upon the examination as an intermediate object. The examination, like a half way house, will make the way seem shorter. But its prime use lies in its supplying a fixed line of study and a fixed time for its accomplishment. These are a great help to a lonely student.

If the loneliness could be got over a greater difficul y still would be removed. Association is always a help to students, and will be particularly so to the architect student who has other work to do and to whom it is desirable that this course of study should present as much as possible the appearance of recreation. Why should it not be made something of the nature of recreation, by a number of architects agreeing together to take the examination and meeting together once a week or so to talk over and analyze the characteristics of the styles? Both the Ontario Association of Architects and the Province of Quebec Association have attractive rooms, with conveniences for associated work, and, examination or no examination, this is the sort of work to do there.

There is more reason for meetings of this kind than

merely to give to solitary work the pleasure of society. Association in study both broadens and quickens apprehension. "Iron sharpeneth iron; so a man sharpeneth the countenance of his friend." Several pairs of eyes means several points of view, and united research and united criticism will get to the practical essence of the matter more quickly than solitary study. Moreover it is remarkable how much easier it is to remember what has been enjoyed in common than what has been enjoyed alone. The person who, in reading Shakespeare for the first time, observed that he indulged largely in quotation, would never have been so familiar with these passages if he had read them first for himself. One may read



MR. A. McDONALD,
Presldent Winnipeg Master Carpenters' and Builders' Exchange.

and enjoy without remembering; the thing to fix a passage in the mind forever is its application by some one else to point an idea. Common study will contribute in this way to a common stock of knowledge that is clearer, more vivid and more practical than any member of the body could attain to alone. There is likely to be noticeable results in the way of vigorous design proceed from such a group of associated artists.

It is as artists that architects will meet one another in such a field of work as this, and it seems to be a law that capacity in the individual artist develops only by association. Solitude may nurse reflection, but art is execution and needs contact with the effort of others. The best work in art has always originated from a group of artists. The diverse results in individuals of a group show that association does not weaken character. Artists cannot suck one another's brains. Each man's ideas must grow in their own way, but they grow best in an atmosphere where thought is free. If a school of architecture, however local, could grow from united effort in study, so much the better. We suffer for want of unity; from the dissipation of effect that comes from individualism; and if by any possible means we could attain to such agreement of type in any town that excellence in a building would consist not in being different from its neighbours but only in being more excellent, we should have a town that would have architecture, no matter what the type.

This is looking a little onward from the R.I.B.A. examination, but study of originals and associated effort are two things which are apt to go far in results.

SOUTH AFRICAN TRADE.

With the ending of the war in South Africa will come a period of great development in that country and a consequent demand for many lines of manufactured goods. German and Austrian syndicates are said to be forming to exploit the South African market. With cool audacity the continental countries which indirectly supported the Boer cause and obstructed the British, are now seeking to reap the commercial advantages arising out of the conditions established by Great Britain at an enormous cost in men and money. The United States have also been exporting largely to South Africa, and their trade returns for the first half of this year show a substantial increase above the same period of 1901. It seems only fair to her own interests that Great Britain should impose some restrictions in the form of duties on foreign goods entering the South African market, thereby giving a preference to home and colonial industries, which will have to bear a considerable portion of the expenses of the war, and compelling foreign countries to contribute something for the commercial advantages which are the direct result of the long continued and successful struggle conducted by Great Britain. Canadian exporters of manufactured goods should lose no time in establishing trade connections in South Africa, and should be properly represented at the South Africa, British and Colonial Industrial Exhibition to be held in Cape Town from November to February, 1903-4.

Building materials, especially bricks, lumber, doors and sashes, and structural iron and steel are in large demand. The United States have already secured some valuable orders in this line. The establishment by the Dominion Government of a direct freight service between Canada and several of the principal South African ports is a gratifying assurance that this country proposes to secure its share of this trade.

Most of the business must be done through importing agents. Lists of these in the principal towns should be secured, personal letters addressed to them acquainting them thoroughly with the character of the goods to be offered. Exporters should also be prepared

MR. A. McCORMICK,
Secretary Winnipeg Master Carpenters' and Builders' Exchange.

to send samples and submit tests of their materials, as in many instances these will be demanded. Care should be taken to ascertain the financial responsibility of all firms with whom correspondence is opened, before sending goods forward, especially in the case of commission firms among whom there are many "sharks," who make their living out of "consignments". The principal demand is for goods of medium quality and moderate price. Whatever the quality of goods for which orders are secured care should be taken by the exporters to maintain uniformity, otherwise they may not expect to hold the trade.

THE FALL OF THE CAMPANILE.

The most satisfactory account, which we have so far observed, of the cause of the recent collapse of the Campanile at Venice, is that given by Dr. A. Robertson, a clergyman residing in Venice, who is understood to be the author of some valuable historical works. Dr. Robertson has written a series of letters on the subject to the Edinburgh "Scotsman", in which he states that in 1892 Luigi Vendrasco, associated with the building, reported to the Government the necessity of immediate repairs. Subsequently, a Government commission was appointed to examine the structure. This commission reported that no repairs were necessary. Because of an urgent protest by Vendrasco, the project to install an elevator in the building was abandoned. Later on Vendrasco was removed from his position because he persisted in urging that the Campanile should be strengthened. His successor, a young draughtsman, caused to be removed a line of drip stones extending the whole breadth of the east wall of the Campanile, with the purpose of inserting a band of zinc to prevent leakage from the walls of the Campanile entering the adjoining Loggetta. This is said to have weakened the wall and to have lead to its ultimate destruction. Dr. Robertson sums up the cause of the failure of the building as follows:

(1) Though the walls were thick, thicker, indeed, than I said, for they were not five feet thick, but only a few inches under six feet, they were really not solid. They consisted of two parallel walls of brick, the space, three feet wide, between them being filled up with broken bricks, rubble, cement, stones, etc. Therefore the walls were not so strong as they looked.

(2) The cement used was Istrain lime mixed with sea sand. This lime does not become hard, nor does it adhere well to the bricks. Indeed, in the course of the past centuries it became dry powder. It is all over Venice to-day. It formed the cloud that hid the falling Campanile.

(3) It has been damaged by lightning, by fire and earthquake several times. On June 7, 1398, it was struck by lightning. In 1401, on the occasion of festivities for the Doge Michael Steno, fires were lighted on the platform, and the top was burned. On October 24, 1403, the same thing happened. In 1405, the same thing happened. In 1417 it was struck by lightning, and the new top of wood again burned. On June 21, 1436, all the shops around the Campanile built against it were burned. On March 26, 1511, an earthquake split its four corners. In June 1548 it was struck by lightning. In 1565 it was struck by lightning. On July 10, 1591, an earthquake caused it to shake from top to bottom. In 1653, again struck by lightning. On August 23, 1657, again struck by lightning. On April 23, 1745, again struck by lightning, which damaged its east side serverely, killing many people in the Campanile and near it. This was its last and most serious damage, although it was not till June 18, 1776, that the Republic employed the scientist Guiseppe Toaldo to put up a lightning conductor.

(4) The Republic, seeing its east side to be severely damaged, consulted two engineers of fame and ability, Signor Zandrini, of Venice, and Signor Polene, of Padua, to examine and repair it. These engineers said the whole wall wanted support, and they proposed building a new wall against the old one. This was done. But the new wall was never properly tied to the old one. The two were practically separate, and so the weight of the Campanile was borne unequally, and its equilibrium disturbed.

(5) The ringing of the bells, the firing of artillery, and only three weeks ago the simultaneous firing in the Piazza of hundreds of muskets had a tendency to disturb it. Also the more or less frequent earthquakes that visit Venice.

(6) Twenty years ago one of the corner pilasters of the inner wall, and precisely that at the north-east corner, was seen to be cracked in many places. The authorities of St. Mark's Church, who have charge of the Campanile, as it is the bell-tower, had this pilaster tied up. No more cracks appearing anywhere, the Campanile was thought perfectly safe, and was let alone.

(7) And now comes the critical point. The Loggetta, little marble hall, built by Sansovina, rests against the eastern wall of the Campanile. It had almost a flat roof. To prevent the rain beating against the Campanile and running down its side from entering this marble hall, a row of slabs of stone sloping downwards was inserted in the Campanile where the roof met it.

(8) Only last week, that is, but ten days ago, these stones were begun to be removed, as the rain was somehow getting into the Loggetta, and a lead sheeting was to have been substituted. Instead of carefully removing one stone at a time, they removed half of them—that is, twenty five feet of them. Not only so, but they dug through the new wall of the Campanile, that of 1745, and struck the old original wall, which they found separate from the new, and full of holes and cracks. Whilst working, the old wall slipped down an inch or two. Instantly the cut made was built up, but it was too late. On Wednesday the 16th, it was observed that the new wall was cracked at the north-east corner, above the Loggetta, where the work was begun. On Thursday it enlarged. On Friday it struck across the north-east side of the Campanile, sloping upward to the second window from the ground, then up to the third. On Saturday it passed behind the fourth and through the fifth. On Sunday the situation was, to use the word of an engineer, "desperate," and the Campanile was doomed. On Monday the crack visibly opened whilst we watched it, and the end came in a moment, when the whole structure sank into itself.

The city authorities are censured for having disregarded the repeated protests of Vendrasco, for having permitted the public to approach and enter the structure after the approaching collapse was evidenced by cracks extending from top to bottom of the angles of the walls, and for having neglected to save the precious bronze statues, bronze doors, and marble carvings in the Loggetta. The doors have been found among the debris, also two of the pictures on the ceiling, one by Veronese and the other by Schiavoni. The porch of St. Mark's Church was saved from destruction by a very thick column of red porphyry which stood in front of it, and against which was hurled a huge piece of marble adhering to a mass of brickwork. After the disaster, which fortunately resulted in no loss of life, all the shops were closed, and the city was given up to mourning. A large number of subscriptions have been received for the rebuilding of the tower. The only sufficient reason for rebuilding would seem to be to preserve the most ancient and valuable features of the original structure.

ARCHITECTS AS BUSINESS MEN.*

There exists a belief, as vague as it is general, and possessed of all the tenacity of an agreeable religious faith, that the practice of the architectural profession, that is to say, the designing of buildings and supervision of their construction, is a fine art; that it consists of certain mysticisms, executed largely with pencil and paper, and is governed by an intangible something held rigidly fast by fixed recipes, either of ancient tradition or of modern schools, which must not be contravened; that the architect is a fantastic dreamer, and ability in design and capacity for business are fatally antagonistic qualities, and impossible of friendly association in the same brain; that architects, in order to be good architects, must be steeped in an intoxication of ornamental forms, made respectable by old age; with minds almost closed against progressive thought, and above all, without disciplined mentality or ordinary business habits.

Also that an architect is in some manner a picture maker; one who can tell plausible lies in perspective, or in rendered elevations with accurately cast shadows, with equal facility, and that he may ignore every tenet of manners, customs or of common sense which all other men following any other profession or business, are bound to and do respect. In short, that the architect is a creature of moods and emotions, and as these elements have neither responsibility, quantity nor standard, he is, therefore, himself unaccountable, unsubstantial and unreliable.

This is pretty much a delusion, and although I am aware that it is a dangerous thing to disturb comfortable beliefs for the substitution of disagreeable facts—things which involve readjustment of personal philosophy, and contain a promise of work ahead, because the fallacies are harmful and the causes of conditions that are deplorable and injurious to the profession and its practitioners, and constitute obstacles to the progress of art which are otherwise insurmountable—they ought to be exploded.

The first fact is, that instead of our successful architects as a whole constituting a class of befogged dreamers, they are in reality fully as keen and of as large capacity in the business of money-getting as any other constituency in American affairs.

As we cast our eye over the personnel and work of the architects of the country, of whom it may be said that they have achieved success, we find the number of those successful by artistic qualities alone a minority, so small as to become relatively a negligible quantity. Upon the other hand a large majority have achieved worldly distinction as successful architects purely because of business capacity. In other words, the practice of architecture over which the profession, as such, has not control, has been a business rather than an art. In this connection it is perhaps proper to say that there is also a distinct class of practitioners who, owing their successes primarily to social position, make the simple error of ascribing their successes preferably to artistic merit. Of course, without the quality of business acumen upon their own part, or upon the part of friends or family, the presumed artistic merit would have remained long in obscurity. The only point made here is that these instances should evidently be connected with the majority of business successes rather than otherwise.

While there have been, and are, architects who adhere to the pet delusion before recited and others who have conveniently indulged it for business profit, there are also those who with great sincerity make not the slightest pretense that their successes are founded upon anything other than superior business ability. Of these it may be said that they have no delusions at all, and deceive neither themselves nor others. They were and are business men engaged in gaining money by practising the business of architecture. They employed men of such artistic ability as were to be found, as their business demanded such, and paid them well. Now, there are those who affect to believe that there is something in this last condition which is wrong and reprehensible. I do not share this belief. I can not find reason to reproach those who achieve success because they are forceful business men, provided that they practice their business under fair and honorable methods and do not sail under false colors. I prefer to learn something from the evidence furnished by those examples af many of our architects whose names and works become familiar.

The deduction which I make is that the ordinary belief of a successful architect's composition is a delusion, and that business capacity on the part of the architect, under the organization of modern society, is a prerequisite to his success, and consequently to the progress of architectural art.

The reason for this is quite apparent. The architectural opportunities fall to those who are preeminent for business rather than artistic ability, and thus it is they who build the architecture of the country—good, bad or indifferent. The architect must be a business man first and an artist afterward.

*Paper read by Julius F. Harder, Architect, of New York, before the New Jersey Chapter of the American Institute of Architects.

THE POWERS OF ARCHITECTURAL ASSOCIATIONS.

The Philadelphia Chapter of the American Institute of Architects expelled one of its members for having taken part in a competition in the face of a resolution of the Chapter which condemned the conditions and declared that any member who should become a competitor would be guilty of unprofessional conduct. The offending member applied to the courts to compel the Chapter to reinstate him. The Court upheld the contention of the plaintiff that in passing the resolution the Chapter had exceeded the powers granted by its charter and that its powers were restricted to those specified by its charter. According to this decision associations of professional men are without disciplinary powers, and must therefore be the more careful to enquire into the character of the men they may be asked to admit to membership.

In view of the value of wired or prism glass in windows as a protection from fire, on buildings where fire shutters would not be tolerated, Insurance Engineering suggests that their design be carefully considered by architects, with a view to making them more sightly. The design of the embedded wire might, for example, be made in an ornamental pattern and the size and shape of the prism glass frames be varied to relieve the present monotony. The reduction of the hazard incident upon the installation of these devices is so marked that they are certain to come into very general use, and a consideration of their æsthetic appearance will assist largely in their rapid introduction.

PLANNING.

Plan may be treated under several heads, such as (1) axia arrangements, (2) location of rooms, (3) accommodation, (4 hygienic condition, (5) artistic arrangement, or the fine ar principles of planning—all important points to keep in view. The first of these, the arrangement of axes, is a fundamental condition of the planning of all large public or private buildings, but few architects make it a study. The main axis of a building ought to have a relation to sight and aspect. In an elongated site with the narrow frontage to the main street, there would be one axis passing through the entrance hall and through the larger apartment as a council chamber or public hall, while if the site is of large area, and extends laterally as well, there may be two axes crossing at right angles, one at right angles to the front, the other parallel to it extending laterally in one or both directions, and upon these two axes the architect may dispose his chief rooms or departments. The relation of these lines or axes to the aspect or points of the compass will not of course hold in town sites; but for country residences the main axis of the chief reception-rooms ought to have reference to those points of the compass from which the most desirable light and sunshine are to be obtained. In the planning of hospital pavilions, asylums, and the like, the importance of sunlight and genial winds is recognised, and in many of our latest hospitals, as that of the Grove Fever Hospital, Tooting, the large pavilions are placed axially due north and south, the effect of which is to secure a south-east aspect and a dry atmosphere to each pavilion or ward. Another axial arrangement is to place the pavilions due north-west and south-east. The architect should make a study of the aspect compass in laying down his plans for buildings of this description. In arranging his windows in domestic buildings it is equally important that he should bear in mind that for morning sunshine the windows should look eastward, for evening sunshine westward, and for evening coolness eastward. It is, therefore, of value that his principal rooms should be so axially placed that their windows may face as nearly south-east as possible. But the main axes of a plan may be determined by other considerations—to obtain a good view or vista from the main entrance, or a suite of apartments, having reference mainly to the interior effect. We only mention the value of an axial distribution that will afford the best aspect, if possible. Not less of moment is the question of outlook. In many buildings, as county residences, the main axes of rooms may be determined by a pleasant prospect—hence the importance for the architect to determine the position of his chief rooms on the site before he prepares his plans.

Rooms may be arranged axially in several ways, the two axes being placed at right angles instead of parallel; thus the rooms may be L or T-shaped, just as the axis of one meets that of the other. This gives rise to various juxtapositions of rooms, parallel side by side, or end to end, axially as above, or they may be disposed en echelon, one room projecting before the other. Another way of arranging the main rooms is to so unite or join them that one fits into or interlocks with the other, as when a recess of one room projects into the other, so that both have recesses, but in opposite ends. All these methods are employed in planning to give variety, and to produce external breaks.

The location of rooms is probably the first consideration with the architect, even before he can devote attention to their axial arrangement. Having fixed the position of his main and other entrances and the principal aspects, he sketches out roughly the principal rooms or departments of his plan. This is a work requiring both skill and patience, and probably several attempts are made in pencil before a final decision is made. In actual planning the student will find the sectional paper divided into squares of the scale he adopts of great use and help in massing out his scheme. Under this head there is little that can be said, as each problem of planning has its special location of rooms. The plans we see of houses, schools, municipal offices, and baths convince us how little is systematically done. The novice has one notion of planning: he draws an entrance, and a long corridor leading from it, and places his rooms one by one, regardless of shape or convenience, along this line; but the skilled designer likes to break up his area, to shorten his corridors as much as possible, and to place his main rooms in their positions before he commences to consider detailed requirements. He adopts certain axes upon which his larger rooms are placed, and, in fact, axial arrangement and location of apartments are concurrently worked. His plan presents a scheme of orderly grouping of departments all within easy access of one another, and he attains compactness and concentration with the least labor or indirect means. Other plans show a "beating about the bush"; a want of study of the requirements of the scheme. We at once detect this in awkward positions allotted to some rooms, circuitous corridors, and bad lighting. The scheme as a whole has not been grasped; the best positions are assigned to inferior offices and the like. Every experienced planner can detect almost at a glance the want of principal coherence, and grouping exhibited in a plan. He can, in fact, almost immediately say whether the designer knows anything about the requirements or not. A want of grouping and classification is evident in most novices, plans. They are scattered, disjointed, and regardless of wall supports in the upper floors; but we are not now considering construction, but simply planning, though we would here say there is one real quality in good planning, and that is, it is constructive.

Accommodation, our third point, is too important to be considered in one article: it implies a large acquaintance with statistics and data, the allotment of space or area for special purposes of building as for assemblies in halls, churches, and theatres, floor or seat area; bed and desk area as for hospital wards and schools; all of which involve a study of the leading authorities—hygienic, medical, and other—on these respective subjects. We know of plans for workhouses and schools that have been thrown aside owing to the ignorance of their designers about the area per bed and per pupil allowed in such plans by the Local Government Board and School Board. Without a knowledge of the floor area required in each case, it is impossible to lay down a plan correctly. We may roughly locate the room, but such rough arrangement must be adjusted or modified by actual dimensions before we can complete the plan. In a large building—say, public offices, or a public school—the readjustment may practically necessitate a larger area, or some of the rooms being placed on another floor. No one as yet has thought of compiling areas for different purposes of building, although certain data have been published to aid in estimating buildings such as hospitals and schools by the bed or per scholar. Yet there are certain areas accepted and used in planning that have been authorised, such as the space allowed for each bed by the Local Government Board, or area of floor for each pupil by the Board of Education. The rules for elementary schools are by no means fixed. In the United Stated, for instance, the classrooms in the best schoolhouses of recent construction are about 32ft. long and 28ft. wide, and 13½ft. high, and accommodate 56 pupils seated at single desks, which gives a floor area of 16ft., and an air-space of 216c.ft. for each pupil; but it is recommended by one authority that a classroom should be 32ft. long 24ft. wide and 15ft. high, to accommodate 45 pupils, which gives an area of 19ft., and a cubic space of 250ft. per pupil. In England, classrooms generally are planned to allow 10ft. to 14ft. superficial per pupil—a rather wide limit. In churches, a floor area of from 7ft. super. per sitting to 10ft. or 11ft.; but these figures include the aisles, lobbies, sanctuary, vestry, and choir, and, therefore, do not help the architect much in planning the seated areas. The actual floor-space per sitting is about 4½ft. to 5ft. superficial—that is, allowing the usual dimensions for each seat, or, say, 3ft. from back to back of seats, and 20in. to 22in. for each person. Nearly every authority publishes its own rules for seat or floor area. Thus the London County Council, under the Metropolis Management and Building Acts Amendment Act, provides for theatres a seating area to each person of not less than 2ft. deep and 1ft. 6in. wide in all parts of the house where no backs or arms are provided, and not less than 2ft. 4in. deep by 20in. wide where they are provided. This allowance is little enough, and only provides per floor area 3ft. to 3ft. 8in. The London School Board and the Local Government Board have their regulations, which the architect has to consider before he can settle upon the plan.

The hygienic conditions of planning have also to be considered. We mean by these the requirements of light and air, ventilation, warming by artificial means, &c. These are matters that we need not discuss here; but the relation of doors and fireplaces in residential rooms is not always attended to as it ought to be. We have seen plans and houses in which the living or reception room has its door on the same side as the fireplace—often near the fireplace-wall at one corner, and even more frequently in the wall opposite the fireplace—of all positions the worst, as when the door opens those seated near the fire are at once exposed to a current of cold air, and are immediately exposed to the view of any gazer who happens to be in the hall. It is rather strange that so many architects ignore the right positions for doors both to sittingrooms and bedrooms. How

often we enter a bedroom in which the bed is exposed to view from the outside, instead of being placed with its head to the wall in which the door is; but there is no other wall against which the bed can be placed. The simple rule that the door should screen the bed or the fireplace as much as possible is disobeyed, and the inmates exposed to unnecessary draughts or the gaze of the inquisitive.

In our limited space we cannot dwell at any length on the last head of our subject, artistic arrangement, or the fine-art principles involved. Everyone will have noticed, in going over a number of competitive plans, that some are architecturally arranged—that is, the authors have complied with those amenities of plan that go to show them accomplished designers. Great solicitude and care will be shown in the arrangement of the entrance-hall and staircase, in easy, well-lighted vestibules and corridors; and even in the plan of each principal room the author will not sacrifice the convenient approach to his room; it will be well lighted, and be proportioned by a regard to a pleasing ratio of length to width and height; he will study, too, the arrangement of his ceilings, their divisions into compartments by pilasters, by making little adjustments in the positions of his rooms and entrances. Such proportions of drawing-rooms will be found as 18ft. by 22ft., or of dining-rooms as one-and-a-quarter to one-and-a-half times the breadth in length. Then variety and charm will be given to the location of the principal rooms by avoiding square or merely rectangular shapes, and making recesses and bays or L-shaped compartments, which can be managed often by fitting one room into the recessed part of another in the manner we have before mentioned. The pleasure derived from pursuit, or from not seeing the whole of a room or hall at once, immensely increases the mystery and charm of the interior. Other points on which we cannot now enter—such as bay windows, ingles, the arrangement of furniture, &c.—are matters that come under this head, and which may be all made to contribute to the sense of homeliness and comfort.—Abstracted from the Building News.

PUBLICATIONS.

It would be difficult to devise a more persuasive setting forth of a university course of study than is shown in the Biennial Review of the School of Architecture at the University of Pennsylvania. Confessedly planned upon new lines for the purpose of presenting a comprehensive account of the character and environments of architectural training at Pennsylvania, the Review sets forth in detail the requirements of the course from the entrance examinations to the completion of the fifth or "Graduate" year. To this end, typical problems have been selected whose demands are printed in full together with one or two of the best solutions offered in each case by the students. The course in Interior Decoration is represented by schemes dealing with rooms as a whole and by several charming individual pieces, such as furniture, wall papers, lamps and other decorative objects. Supplementing all this work are the courses in drawing from the cast and from nature, the latter especially being represented by several excellent studies in charcoal and water color. The nature of the work done in the related fields of history and building construction, as well as in those more purely academic studies which are essential to a well rounded university course, is of such a nature as to preclude its pictorial expression. The details of these studies are given in full in the text. A limited supply of copies of the Review may be had, while the supply lasts, by enclosing one dollar to the Bursar of the University of Pennsylvania. The book contains about one hundred pages of text and illustrations, the former in a special poster type on hand made deckle edged paper, and the latter on dull calendered paper for the half tones and inset on a special paper for the gelatine plates.

NOTES.

The Gold Medal of Honor of the Royal Institute of British Architects has this year been awarded to Mr. Thomas E. Colcutt, F.R.I.R.A., architect of the Imperial Institute building in London.

Some of the most recently constructed buildings in Paris have cut in the stone facade the name of the architect and date of erection. In passing by one of the best modern examples of good building in a Canadian city we noticed the date deeply cut on the corner stone and wondered why the name of the architect did not appear also. Canadian architects should adopt the French practice in this particular. Their names would thereby be perpetuated, the public would be informed to whom the credit for designs of important and well designed buildings should be given, and an incentive would be given architects to put forth their best efforts in design.

Mr. Harry Hems, the veteran sculptor of Exeter, in a letter to The Building News, states that the chair used for King Edwards' Coronation is a new one designed and made in Paris. He remarks that "the 'design' shows an armchair such as Litchfield would scorn to have shown in his 'Illustrated History of Furniture,' and with nothing individualized about it save the Royal Arms, which occur in the upper part of the back, completely overweighted by a royal crown half as heavy again as it ought to be for its surroundings." He prophesies that visitors from the United States will get duplicates in Paris for their dining rooms at £15 to £20.

The planning of people's baths depends, says Mr. Walter W. Thomas in a paper on the subject, chiefly on the shape of the site available, but as the hall and rooms required may be of any form no unsurmountable difficulties will be experienced with any ordinary site; care, however, ought to be taken to have the arrangements as symmetrical as possible. It is advisable that there should be two entrances, one for either sex, leading into a waiting hall, from which access to the baths is obtained. The bath hall ought to be in sections or blocks, so arranged that they may be used for males or females as required. Should there be ample room at disposal, the size of the dressing rooms would not be too large if made 4 feet by 4 feet 6 inches, and the bath-rooms could be the same size. The minimum size of either rooms should not be less than 3 feet 6 inches by 3 feet 3 inches. The corridors may be from 4 feet to 6 feet wide; 5 feet is a fairly good width if the corridor is not more than 30 feet long.

Whatever may be the criticisms passed on many of the decorations which blossomed forth in contemplation of the Coronation, it seems to be generally agreed says The London Building News, that in the Canadian arch our Dominion friends have produced a novelty, as much by reason of the design as in the lesson which it has sought to convey of the resources of the great colony's territory. Sturdily square, two very tall towers of stout wooden beams rise from the carriageway of Whitehall, allowing passages on each side, between them and the pavement, of the width of a vehicle. They are joined by a massive, very simple arch of wood. On a level with the top of this emerge from the summit of the two towers high white poles, six on each, supporting pointed roofs. The arch, the upper outline of which is perfectly straight, has on its centre an octagonal roof, reaching considerably above the other two, and resting, as do the latter, on white poles. The form of the whole structure is simple, but its best feature is the harmonious colouring. The towers and the arch are entirely covered with plaited straw, fixed by red flowers. Wheat, oat, and barley sheaves are looped round the edge of the roofs. The arch is decorated with plain curved lines of twisted corn on some shiny, crimped stuff of a cherry red. Above, in letters of the same red on a yellow ground, are written the inscriptions, "Canada, Britain's Granary," and "God Save our King and Queen."

Some time ago the well-known French sculptor, Bartholdi, described in La Nature a simple method of ascertaining what dimensions of a proposed monument will produce the desired effect on a given site. A silhouette of the design is cut from cardboard, either a scale drawing or preferably a photograph from a scale model furnishing a basis therefor. If this can be tinted so as to give the tone of the material to be used, so much the better. The silhouette is attached to one end of a piece of soft wire, which is wrapped loosely round a cane, umbrella, or other similar support, so that its position may be shifted back or forward at will. On the site of the monument, just alongside where the base will probably come, is placed a vertical measuring rod marked off into prominent divisions. The experimenter takes his position at a sufficient distance to secure a good general view, and brings up to the level of his eye the support carrying the silhouette, aiming as with a gun towards the site. By shifting the position of the silhouette along the support it may be determined after a while where it produces the best effect, considered as furnishing the illusion of the original structure. By there noting the correspondence in height between any given division of the small design—as, for instance, the top and bottom lines of the die—and the feet or yards on the measuring rod, a scale can be established. This scale applied to the drawing or model will show what the sizes of the executed work should be.

VOLUME OF WATER IN HOT-WATER HEATING APPARATUS.

The volume of water required per square foot of radiating and heating surface, in the radiators, mains and heater of a hot-water heating apparatus, for best results in heating and greatest economy of fuel in operation, is a question which has received some attention in the past, but judging from the differences of opinion, as expressed in their various constructions, by manufacturers of heaters which have been used for heating by hot water during the past twenty-five years, and which are being offered and used at present for that purpose, we are still far from a standard, particularly in the volume of water required in the heater per square foot of heating surface exposed to the fire or heated gases.

In the manufacture of radiators, particularly when they have been constructed with a view to their being used for hot-water heating, the standard aimed at, and finally accepted by the leading manufacturers of radiators in this country, has been one pint of water to the square foot of surface—being approximately the volume of water contained in one square foot of surface of one-inch, ordinary thickness, wrought-iron or steel pipe.

Some radiators have been constructed which contained less than this volume of water, and some which contained considerable more, but in either case these radiators have gradually gone out of use, while new designs in hot-water radiators which have been brought out during the past six years, have largely conformed to this standard, which seems in practice to be the best suited for this purpose for all classes of buildings, except, perhaps, all-glass constructions, in which I have found it to be an advantage (on account of the greater and quicker cooling effect in such constructions, and the variable temperatures at which the water in the system is sometimes maintained, on account of irregular firing, lack of fire-box capacity or lack of capacity in the heater, and on account of friction due to the long lines of piping usually employed in placing the required radiating surface in this class of building) to use a surface that contained from fifty to one hundred per cent. more water, although were a uniform temperature maintained in the water in the heater, and the same arrangement of radiating surface utilized that is at present used for the heating of other buildings with this system, with short circulations, and an ample arrangement of mains, it would not be necessary to increase the body of water in the radiating surface above one pint to the square foot of surface.

CANADIAN PAVILION, WOLVERHAMPTON EXHIBITION OF ARTS AND INDUSTRIES.

At our last annual meeting, during a topical discussion, when this question was under consideration, I mentioned an experiment or test made some years ago, in two green-houses of uniform construction, size 16x100 feet. Each house contained approximately 2,000 square feet of glass and had about 650 square feet of surface or running foot of 4-inch greenhouse pipe; each house was heated by a separate heater located in the same pit, with separate brick flues 8x12 inches, extending 20 feet above the ground. To these flues each heater was separately connected by 10-inch wrought-iron pipe; each had about 4 square feet of grate area and about 90 square feet of fire and flue surface (about half fire and half flue.) The radiating surface was arranged in the usual way for such constructions in 4-inch greenhouse pipe on each side of the house, below the benches, with one flow and two return pipes on each side, an open expansion tank at the extreme end of each line, and each side connected separately to the heater with 4-inch flow and return connection. In one house the 4-inch pipe was left regular and had an internal area of about 10 square inches, in the other house 2x2-inch oak strips were inserted in the center of the pipes, reducing the waterway about 40 per cent., while retaining the same external surface. In a six-hour test maintaining a 60-degree temperature in each house with an outside temperature of from 25 to 30 degrees, an average temperature of 160 degrees was maintained in the flow mains and 130 degrees in the return mains at each heater. The consumption of fuel was 130 pounds of anthracite coal, stove size, for the house with full waterways in the radiating surface, and 110 pounds of the same coal for the house with reduced waterways, while the temperature on the flow main on the heater with reduced waterways was frequently 5 degrees higher than on the other heater, and the dampers on this heater had to be partially closed to prevent a higher temperature. Later this house was lengthened 25 feet, or 25 per cent., and piped in the same way, and the temperature maintained with the same average consumption of fuel as that used in the other heater with 25 per cent. less surface and glass area.

Since that time I have used largely 1¼-inch pipe, with a little over one pint of water to the square foot of surface, in small conservatories; 1½-inch pipe, with about 1½ pints of water to a square foot of surface, in medium-sized conservatories, and a 2-inch pipe, with about one quart of water to the square foot of surface, in large conservatories and greenhouses in preference to 4-inch greenhouse pipe with about half a gallon of water to the square foot of surface. I have found that I obtained better and quicker results, a greater possible variation of temperature, and greater economy from the use of 2-inch pipe, with manifolds, than from any other size of pipe, either larger or smaller.

In arranging the mains of a hot-water heating apparatus the area of the main has to be determined from the number of square feet of radiating surface to be supplied and the nature of the surface, whether direct, direct indirect, or indirect radiation, and from the length of the main; also, whether the main is to be used as radiating surface or covered, so that no standard as to volume of water per square foot of surface supplied could be adopted in regard to the mains in a hot-water heating apparatus without being subject to considerable variation. At the same time I have found cases in hot-water heating where the area of the mains was from 25 to 50 per cent. larger than was necessary, and they could have been reduced with beneficial results, being made large to insure a uniform temperature in the main, which could have been obtained in a smaller main with a different arrangement of taking off branch connections.

The greatest difference of opinion as to the volume of water required per square foot of surface in hot-water heating seems to exist in the heater, or source of supply.

Beginning with boilers of the Cornish type, which are used in some sections for hot-water heating, they contain about three gallons of water per square foot of boiler surface; then the ordinary horizontal and vertical tubular boilers, arranged for hot-water, have about 1½ gallons per square foot, a number of cast-iron one-piece and sectional heaters have about one gallon per square foot, some have three quarts and others half a gallon; then some heaters of this type, and water-tube heaters, contain from three pints to one pint per square foot, and in some heaters constructed of one-inch pipe, while the volume of water to the foot of surface is not materially reduced, the friction is increased by inserting a sheet of metal, as a circulating division, reducing the pipe to half its area. Now, if we do not consider the Cornish boilers, which are more largely used in other countries, and begin with the horizontal tubular boiler, which is largely used in this country, we have a variation in hot-water heaters of all the way from 1½ gallons to 1 pint of water per square foot of surface, and while all of these different constructions, with their varying amounts of water, will accomplish certain results with more or less efficiency and economy, certainly some will produce better results than others, and on that account would be considered a proper standard; and while the arrangement and location of the surface relative to the fire and heated gases would make some difference as to the volume of water which

*Paper by Mr. M. Mackay read before the American Society of Heating and Ventilating Engineers.

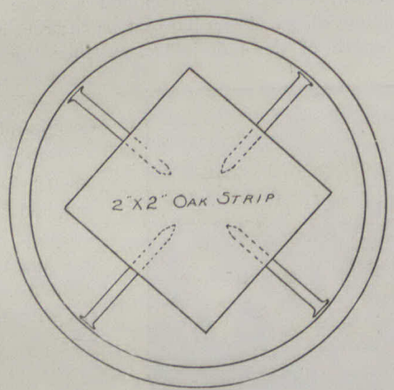
should be back of it, I have obtained the best results from an average of a half-gallon of water per square foot of heating surface in a hot-water heater, with an average of from 20 to 25 square feet of heater surface to each square foot of grate area, the surface being arranged with about 50 to 60 per cent. of fire surface and about 40 to 50 per cent. of flue surface.

DISCUSSION.

Prof. Carpenter: The paper is to be commended as bringing out a great deal of information about the relation of surface to volume, both in radiators and in boilers, and this ratio is an important factor in the successful operation of the radiator or boiler.

If the volume be too small within the boiler the circulation is likely to be bad, particles of steam are thrown out, and the results are poor. With too large a volume the action will be slow, and there will consequently be an excessive demand upon the apparatus.

C. B. Thomson: In manufacturing boilers we have to make one type answer for both steam and water, and we have to pay particular attention to the fact that it is a steam boiler. There are many little problems in a steam boiler, such as carrying a steady water line, carrying a water over into the radiators under certain conditions, and we have to be careful about the waterways and the return column, so as to get good circulation. On that account boilers are sometimes made to contain much more water than would be desirable in a water heater. I believe the



most popular heaters in the market to-day contain about one-half gallon of water to the square foot of heating surface.

If manufacturers built boilers for water alone, ignoring the conditions required for steam boilers, they would produce more efficient water boilers. A hot-water boiler requires small waterways and a large amount of effective heating surface exposed to the direct rays of the fire; also a rapid circulation of the water It is generally known, and I have made experiments which prove it, that with a sluggish circulation, sought to be accelerated by a strong draft, the draft carries away much of the value of the fuel. An easy and rapid circulation is therefore essential.

Mr: Mackay: I would like to enlarge on one subject a little On account of the sun greenhouses require little or no heat during the day time. With 4-inch pipe you must waste your heat to the outer air by opening ventilators during the day. With 2-inch pipe you can lower the temperature more quickly in the morning and avoid opening the ventilators and wasting the heat, and ye you can quickly raise the temperature to the desired point in the evening when it becomes cooler. At our last meeting something was said of the advantage of storing heat, but I think it better to generate heat as you require it and use it as you generate it.

Some people object to hot-water heat in dwellings because it takes too long to raise the temperature in the morning. I have not found it so in properly placed and properly operated apparatus.

The President: Do you use an open or closed heater?

Mr. Mackay: Always open. I can get better results with an open system, and I consider it dangerous and bad to use high pressure when you can do the work with low pressure.

Prof. Carpenter: The question as to volume and surface really comes down to a question of circulation. The smaller the volume on a given amount of work the greater must be the circulation, and it has been pretty well proved that the greater the circulation the greater the efficiency of the surfaces, both of the boiler and radiator. So it really comes down to what is the least practicable limit in velocity of circulation. Personally I favor a large volume of water in a hot-water heater for heating houses, as tending to reduce fluctuations of temperature. We like to put on a fire and have its effect distributed over a long time.

FIRE-PROOF BRICKS.

Theoretically, the ordinary types of bricks made by the clayworker are fire-proof; but, practically, very few of them are. We, of course, exclude perforated bricks in making this statement, says a writer in the British Clayworker. During a conflagration of any magnitude, the inside bricks, especially in partition walls, usually become red-hot. This leads to the expansion of each brick concerned, and buckling of the walls commonly results. This effect is minimized where the mortar has been laid on thickly between each brick-course, as the coefficient of expansion of ordinary builders' mortar is not the same as that of the bricks. In the last-mentioned case the mortar is, in the vast majority of instances, ruined by the great heat at an early stage of the conflagration, though if the wall is a thick one the mortar in the interior of the wall may to some extent be preserved. Cement mortar does not seem to be so much affected as ordinary lime mortar. Where the life of the mortar is sapped, so to speak, the bricks suffer more from the heat, but the greatest amount of damage is done to them by the water from the firemen's hoses. The sudden application of cold water to a hot brick frequently has the effect of cracking it, particularly if the operation be of an intermittent character, which is generally the case. In order to test the quality of a brick for fire-proofing purposes, therefore, it is desirable, amongst other things, to heat it to as high a temperature as possible, and then plunge it suddenly into a bucket of cold water. It should not be allowed to remain there more than say 10 to 12 seconds, and should then be returned to the retort, or whatever the form of furnace in which it was heated for the experiment. This procedure is rather drastic, and many types of bricks cannot withstand it; but it certainly brings out their relative capacity for endurance under extreme changes in temperature. In watching such experiments it will be noticed that whilst many different kinds of bricks crack and split right across, others will simply have a corner or two removed, and a third may merely exfoliate. In the last-mentioned instance the bricks are usually of very fair quality for the purpose. The sudden application of the water to the red-hot surface produces steam, which in its turn exercises a semi-explosive result at innumerable points on the surface. The accumulation of these points locally leads to "starring" and frequently to serious exfoliation.

It is difficult to lay down a law as to what should constitute an ideal brick for fire-proofing purposes, but it is clear that cæteris paribus one that does not become red-hot very quickly, and which does not expand much, should fall into the first rank. At the same time, the brick must be strong, especially for the construction of of buildings in which much ironwork is employed. For, whilst it is in itself being very severely tested during a conflagration, the brick has frequently to bear the brunt of an attack from the iron girders. These latter expand very much during a conflagration, and though when properly built up an allowance is made for this, they are apt to buckle and exert enormous strain on parts of the wall not designed for such contingencies.

Bricks that are not protected in any way by fire-proofing materials, and upon which reliance is solely placed, ought not to be of a soft character except for small buildings where there is no likelihood of a very high temperature arising during a fire. The reason we make this exception is that they are less liable to great expansion during the fire, though they must first have been thoroughly well burnt in the kiln. We exclude nearly all fire-bricks from these observations.

BAGSHAW V. JOHNSTON.—Action brought in the High Court of Justice at Toronto. Solicitor for defendant Siddall moved to dismiss the action as against the applicant on the ground that no relief can be obtained against him for the cause of action alleged against him in this proceeding to enforce a mechanic's lien. The defendant Johnston is the owner of the property on which plaintiff asserts a lien, and the defendant Siddall was the architect for the owner. This proceeding or action was begun by statement of claim under the Mechanics' Lien Act. The claim is to enforce the lien and also reform the contract between the plaintiff and defendant Johnston, and to set aside the defendant Siddall's certificate or for damages. Held, that defendant Siddall is not a necessary party to an action to realize a lien, for he is neither a contractor nor a wage earner, nor one who has supplied materials, nor is he an owner or encumbrancer. He is merely the architect for the work. If plaintiff wishes to proceed against him he is of course at liberty to do so, but he must not do so under the Mechanics' and Wage Earners' Lien Act, for no power is given to join such a claim under it. Order made striking out the name of defendant Siddall as a defendant, with costs to be paid by plaintiff. Leave to defendant Johnston to make any motion that he may be advised.

—THE—

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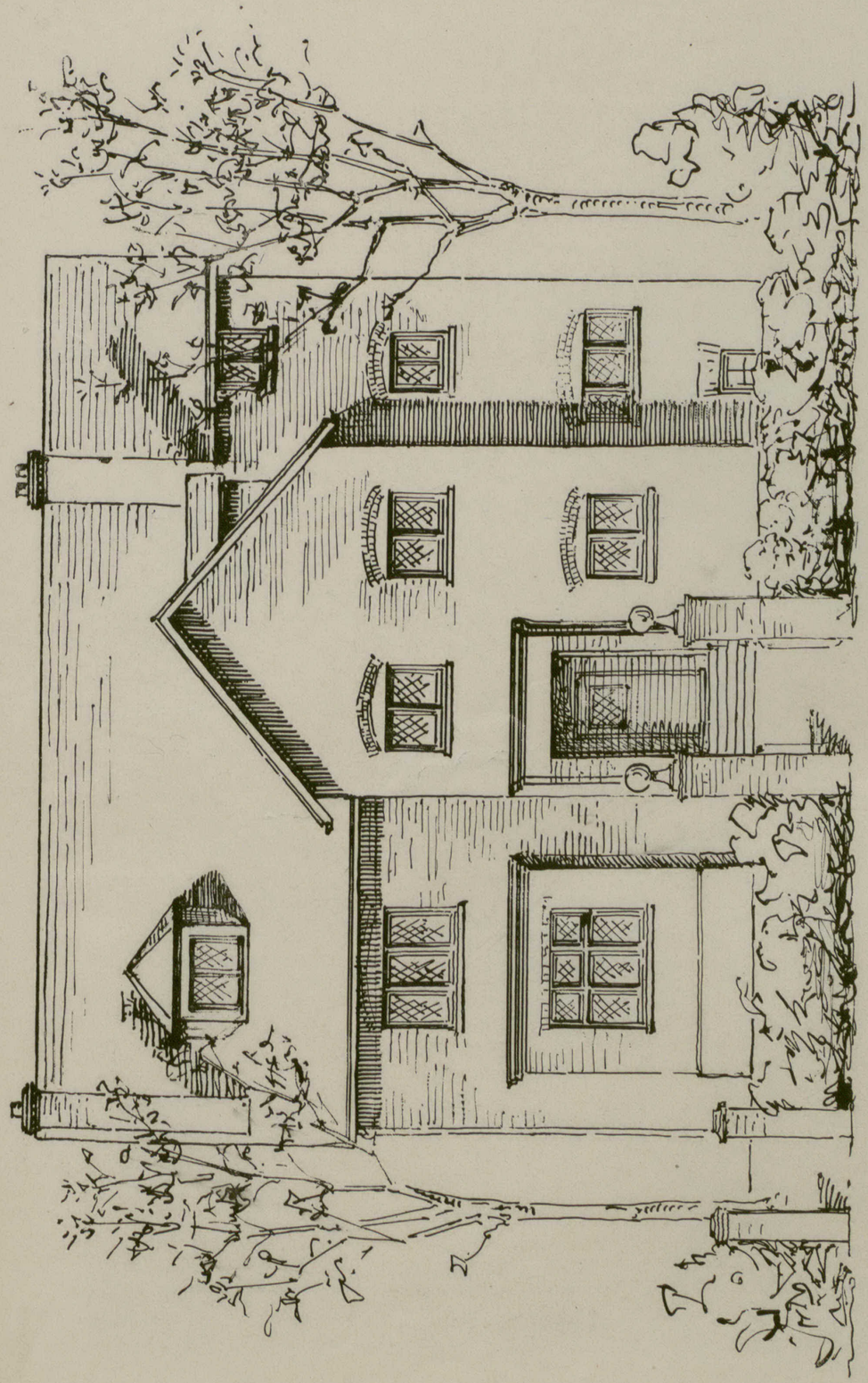

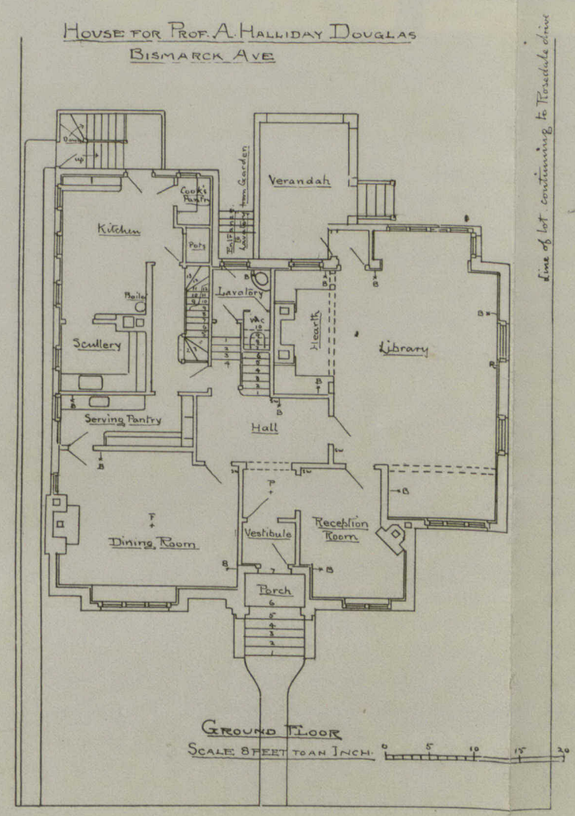

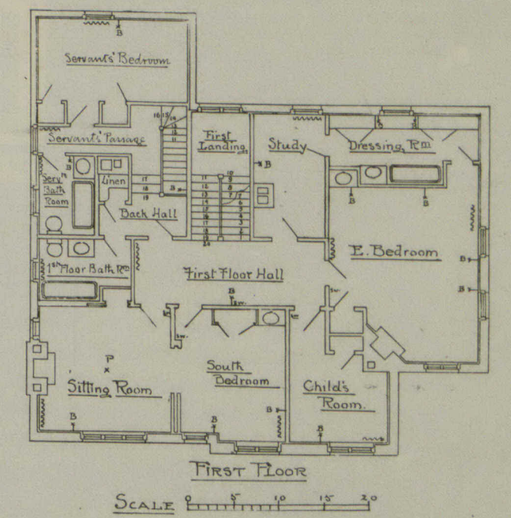

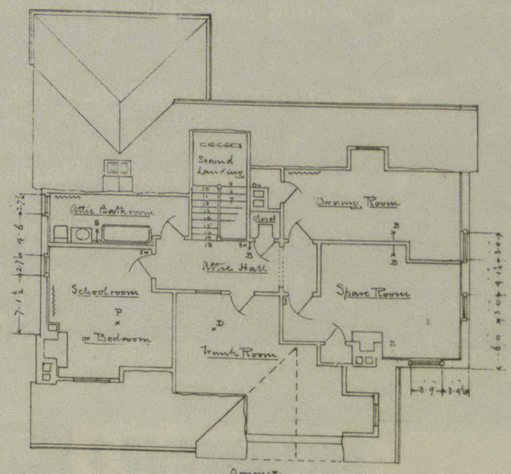

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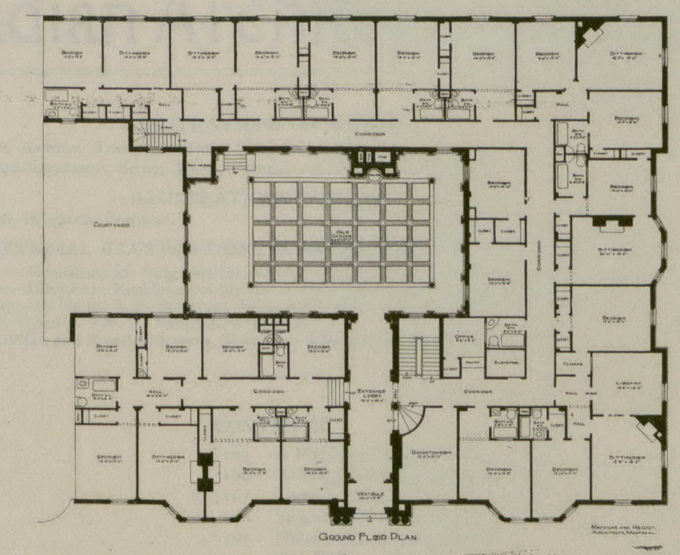

GROUND FLOOR PLAN.

APARTMENT HOUSE, MONTREAL, QUE.

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LEGAL.

Our readers will be interested in the decision which the British Court of Appeal has given in the case of Warren v. Brown, which decides very important questions with regard to rights of light. It will now be the leading case on the question, and probably for very many years will regulate other decisions. The case arose at Leicester. The plaintiff complained that a new building had been erected on the other side of the street, and that it deprived his premises of the light which they had regularly received when the space was quite open. Mr. Justice Wright heard the case at assizes, gave himself much trouble, and presently visited the premises to obtain an accurate idea of what amount of inconvenience was sustained. He afterwards reserved judgment to hear a legal argument in London. He found that the premises undoubtedly could not now receive the same amount of light that they had previously received, and that substantial damage, which he estimated at £300, had been done, but at the same time he refused to give judgment for the plaintiff, as he thought abundance of light had been left the building for all ordinary purposes of residence or business, and he added these important words:—"Unless, indeed, there is some such limitation of the right to light for ancient windows, it is difficult, as Lord Hardwicke observed in Fishmongers' Company v. East India Company, to see how the ordinary extensions and improvements of towns could be carried on. If every house which has existed for 20 years is entitled to have all, or substantially all, the same light come to its windows as during the 20 years, no new houses could be built opposite to old ones, unless at a distance which would impose on servient tenements an unreasonable burden, and might involve grave public inconvenience." The plaintiff appealed against that decision. The argument was heard by the Court of Appeal, and Lord Justice Romer delivered the decision of the Court, the other members of which were the Lord Chief Justice and Lord Justice Vaughan Williams. They reversed the decision arrived at by Mr. Justice Wright, and practically said that if ancient lights are interferred with, and that if substantial and real damage ensues to tenant or owner, then the tenant or owner is entitled to relief. In so doing they refer to a quoted decision by Lord Justice Mellish, given many years ago, but which unfortunately seems often to have been forgotten. It was:—"I cannot think that it is possible for the law to say that there is a certain quantity of light which a man is entitled to, and which is sufficient for him, and that the question is whether he has been deprived of that quantity of light. It appears to me that it is utterly impossible to make any rule or adopt any measure of that kind. It is essentially a question of comparison—whether by reason of deprivation of light the house is substantially less comfortable than it was before."

THE ARBITRATOR AS ARBITRATOR.—The point at issue in a recent case before Justice Buckner relating to a school at Brigton, Eng., was the extent of an architect's powers as arbitrator in a work which was carried out under his superintendence. In 1897 a contract was entered into by Messrs. Peters & Son with the Roedean School Site and Buildings, Ltd., for the erection of a school at Brighton which was to cost over $43,000. The work was to be completed by September 1, 1898. It was agreed that all disputes were to be referred to the architect, Mr. J. W. Simpson. As the work was not finished on that date, and the builders became bankrupts, notice was given for determining the contract, and the building was completed under the architect's direction on June 27, 1901. A final certificate was prepared, which testified that some hundreds of pounds were due Messrs. Peters. Their solicitors then informed the Roedean Company that they claimed damages for improperly determining the contract. The company requested the architect to arbitrate on any differences which were raised. On one side were a Mr. Davis, who possessed an interest in the contractors' business, and a Mr. Belcher, who had advanced money to the contractors, besides others who had also claims on the settlement. When, however, the arbitration was about to take place, Mr. Davis's solicitor served on the arbitrator an injunction restraining him from proceeding with the inquiry. Another protest came from Mr. Belcher. The proceedings were delayed, but eventually the inquiry was held and the award issued on April 9, 1902. On the 11th the company sought to enforce the award, and on the 14th a writ was issued on behalf of Mr. Belcher, in which it was stated that the company had illegally obtained possession of the site and determined the contract. The company were unsuccessful in attempting to stay the action or to enforce the award. The case was therefore brought before the Court of Appeal, the question being whether Mr. Belcher should be permitted to continue his action, as the matters in dispute had been determined by the arbitrator. On the other side, it was contended that the trustee for the contrators had a rightful claim to be paid quantum meruit for work and materials. As they were not allowed to complete the work under the contract, the contract itself was at an end, and the whole should be measured up. The master of the Rolls and the Lords Justices came to the conclusion that as all the parties had agreed to the architect's jurisdiction as arbitrator, they could not after the close of the proceedings say the award was bad or that the arbitrator had exceeded his powers; the award should be enforced by the company, and Mr. Belcher's action stayed. The position of the architect as arbitrator has been therefore once more upheld in a case which presented some novelties.

BUILDING REGULATIONS.

The loss of the lives of several firemen at a recent fire in a warehouse in Toronto has served the useful purpose of focusing public attention upon the necessity for proper inspection of buildings, and the adoption of building regulations suited to modern requirements. Nothing short of a disaster of this kind would apparently cause the city council to move in the matter. The Ontario Association of Architects and the Toronto Architectural Eighteen Club have jointly addressed a communication to the council as follows :

That the architects of the city, understanding that it is proposed to reorganize the City Commissioner's Department, believe that it it would be to the city's interest that a committee of architects should be consulted in reference to the appointment of a City Architect and the revision of the Building By-laws.

While the architects are of the opinion that it is exceedingly important that the very best man obtainable should be appointed as head of the building department, they think tdat for the designing and erection of the more important city structures better and more artistic results may be obtained by employing architects of known ability.

The architect or engineer in charge of the Building Department should be thoroughly competent to judge of the stability of the most complex structures, with ability to calculate strains and stresses, and with a thorough knowledge of all kinds of building materials and processes.

The chief concern of the architects, however, is the thorough revision of the Building By-laws.

The Building By-laws Committee of the Toronto Chapter of the Ontario Association of Architects spent a large amount of time some seven years ago preparing a set of by-laws which were then presented to the Property Committee, and which, after one or two meetings for their consideration, were quickly shelved.

About eighteen months since, the Toronto Architectural Eighteen Club also entered into correspondence with the Property Committee regarding the revision of the Building By-laws, after having obtained information regarding Building by-laws from some six or eight American cities, and with no more tangible results.

It has been for many years a fact patent to all interested in building operations, that the Building By-laws are entirely behind the times and out of date, while some of the most usual and modern methods of construction are not even hinted at.

Among the latter may be mentioned steel cage construction, fireproofing in various forms, and cement mortar in substitution of lime mortar, giving stronger walls with less thickness.

Many abuses have crept in through the by-law permitting flimsy additions to buildings by means of so-called mansard roofs, which are practically wooden buildings, having a slope of but a few inches from the perpendicular, while they are just as inflammable as any other wooden building.

Some of our largest buildings in the first-class fire limit are thus topped-out, and the license to use such a hazardous method of building is a menace not only to adjoining property, but the city at large.

An ordinance should be framed regulating the frontage line of buildings, especially in residential districts. There is scarcely a residential street in the city which is not marred, and the value of property adversely affected by the non-observance of a common frontage line.

An ordinance should also be framed to protect the owners of residential property from the incursion of shops and business places. The value of whole sections has been seriously reduced, and the character of the neighborhood changed or lowered by the facility with which a shop may be introduced into a first-class residential block, and without any corresponding advantage to the residents.

There are many other matters which should receive immediate and careful consideration, if our city is to be kept abreast of the times. To accomplish these objects, we would respectfully suggest that your Board accept the offer of a committee to assist in putting the by-laws in satisfactory shape."

The Toronto Board of Trade has appointed a committee of its members to look into the matter of the building by-laws with a view to assisting in bringing about their much needed revision.

It is to be hoped that before the recollection of the recent disaster shall have faded from public memory, public sentiment will compel the Council to deal in a definite way with this important subject.

A JAPANESE EXHIBITION.

In pursuance of the policy pursued during the last decade, of investigating and learning as much as possible of Western business methods, Japan is making arrangements to hold a World's Exhibition in Osaka, her principal city. The Canadian government is arranging for an exhibit of the native and manufactured products of this country. As the required space for an adequate exhibit is not available in the Japanese buildings, a Canadian building will probably be erected. If this is done, the building should be so designed as in itself to form an attractive and valuable exhibit of Canadian building materials for some of which, no doubt a market could be found in Japan. The country has a population of about 40,000,000 of wide-awake people who are fast adopting western customs and methods and who for some years at least will be buyers of western goods.

According to the Irish Builder fire-proof partitions may be constructed of iron joists fixed vertically, filled in with silicate cotton or slag wood, or asbestos. A light partition can be made of angle iron or light iron joists covered on each side with wire netting plastered. It has been conclusively demonstrated by actual fire test that whereas the combination of either iron and concrete, or iron and terra-cotta, rapidly yielded to the influence of heat, silicate cotton and iron was, to all intents and purposes, fireproof, it having been found impossible to affect it in the slightest after being subjected to the extreme heat of a blast furnace for seven hours.

TECHNICAL EDUCATION.

It is quite natural that the Canadian Manufacturers' Association should be interested in trying to secure proper technical instruction for the artizan classes in this country. In reports on this subject presented to the Association recently, the Toronto Technical School as recently reorganized is declared to be on a satisfactory basis to impart the needed instruction, if supplied with adequate funds. The Board of Control of the City Council is censured for having reduced by $2000 the yearly appropriation for the school, thereby crippling its usefulness.

The council of arts and manufactures of the province of Quebec is commended for the work it is doing in Montreal, but the fact is emphasized that it also is hampered in its operation by lack of funds and the need of a suitable building. Comparison is made with a Philadelphia institution doing work of similar character, in which the annual outlay per pupil is $68.66, as against $2.55 per pupil in Montreal.

Fireproof floor are most desirable. They may be made of concrete or brick arches between iron girders, in which case there is no space between the flooring of one room and the ceiling of the room below. When timber is used it should be dry and well seasoned with sound boarding, to ensure separation between the rooms and to prevent either water leaking from the floor to the ceiling below or air passing from the room below to the above. Good flooring evidently serves to protect the ceilings of the rooms below. When there is space between the flooring and the ceiling and still more especially where a wooden flooring is placed over a concrete or other foundation laid on the ground, it is necessary to provide for ventilation of the space below the flooring. This is usually done by placing a perforated iron grating, instead of a brick, here and there in the outer walls, so that air can pass freely in or out below the floors. For this purpose bricks with conical holes through them would no doubt be found very useful.

PERSONAL.

Mr. Richard Dinnis, a veteran contractor of Toronto, has recently returned from a trip to California, British Columbia and the Canadian Northwest.

Messrs. Burke & Horwood, architects, have removed their offices back to the Union Loan Buildings, Toronto Street, Toronto, which has been refitted since the fire which seriously damaged the interior a few months ago.

Mr. D. B. Dick, architect, who left Toronto for Europe a few months ago in search of health, is at present in Ireland, after having spent some time on the continent. His Canadian friends will be pleased to learn that his health is steadily improving

Mr. Fred B. Gullett, a well known architectural sculptor, of Toronto, died at sea on July 6th, while returning from a visit to England, in search of health. Mr. Gullett, who was in his 61st year, was a native of Devonshire, England. In conjunction with two sons, he conducted a marble business in Toronto.

A cargo of about 15,000 barrels of Antwerp cement has been ordered for the substructure of the Fraser river bridge at New Westminster, B. C. The cement is valued between $40,000 and $45,000.

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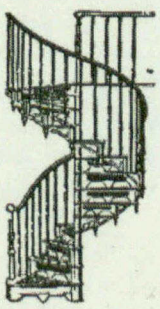

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