

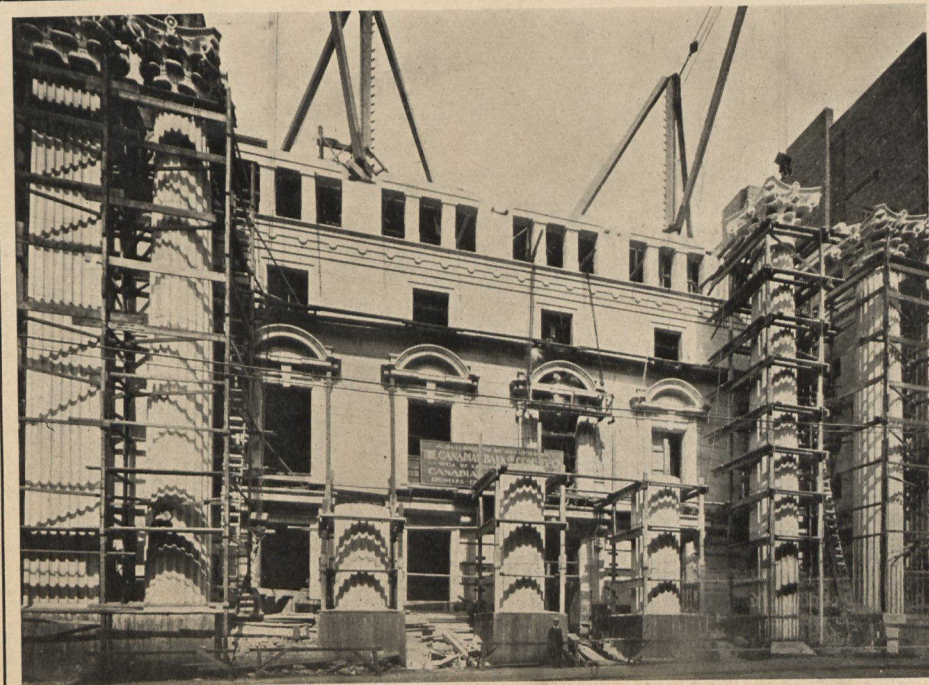
CONSTRUCTION

A JOURNAL FOR THE BUILDING AND
ENGINEERING INTERESTS OF CANADA

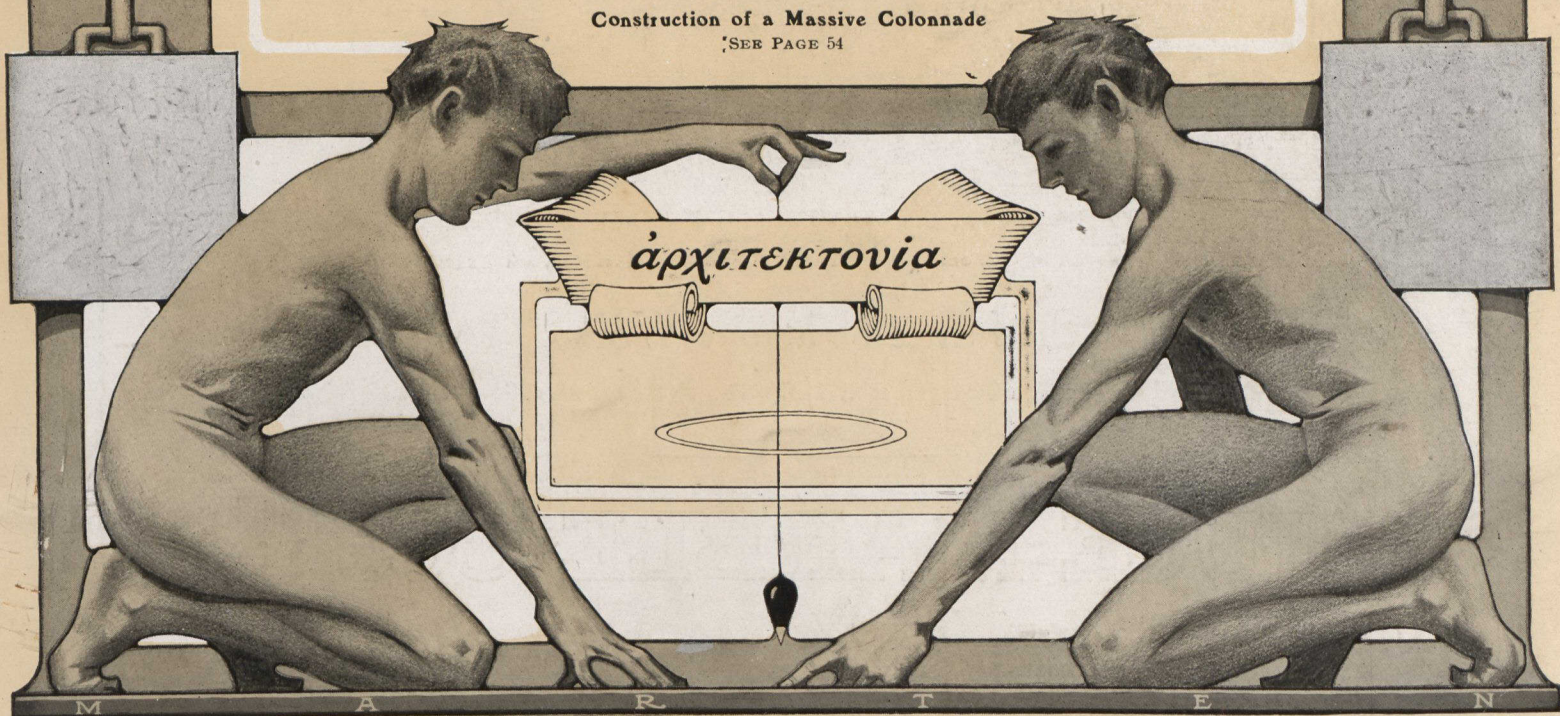
Vol. I, No. 9.

JULY, 1908

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Construction of a Massive Colonnade
*SEE PAGE 54



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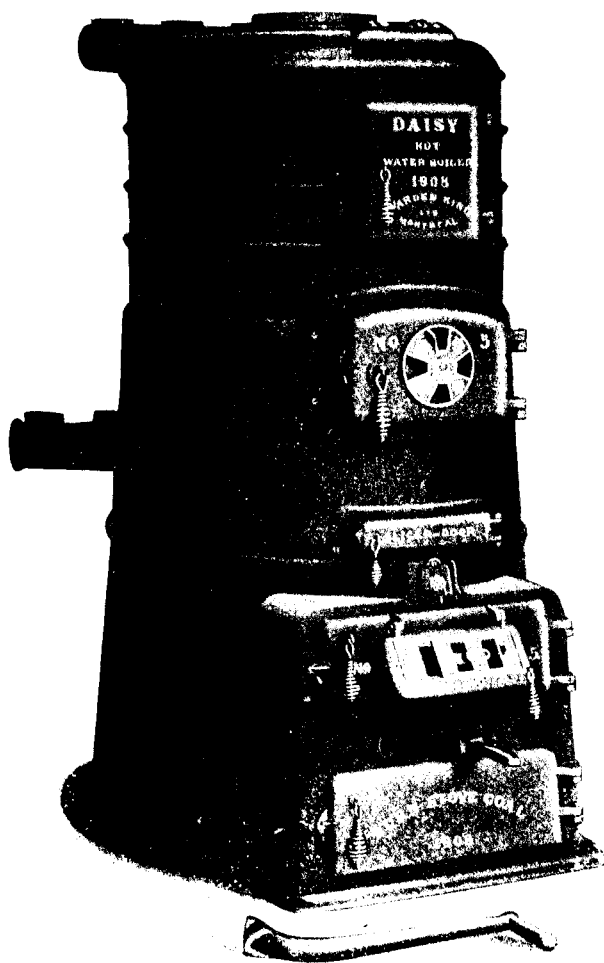
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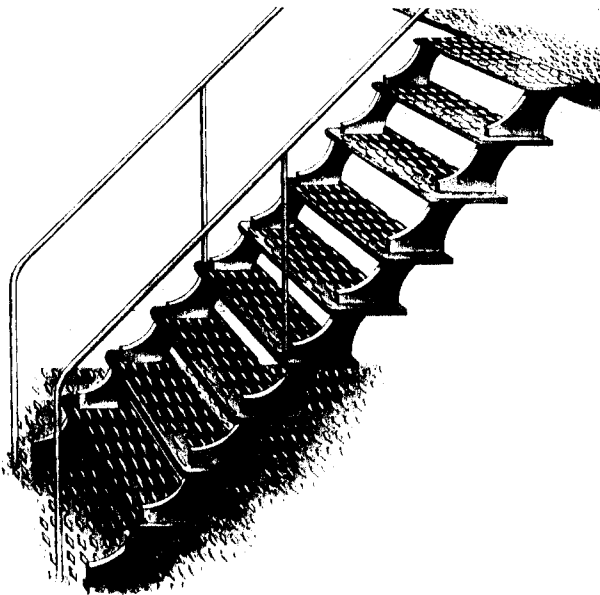
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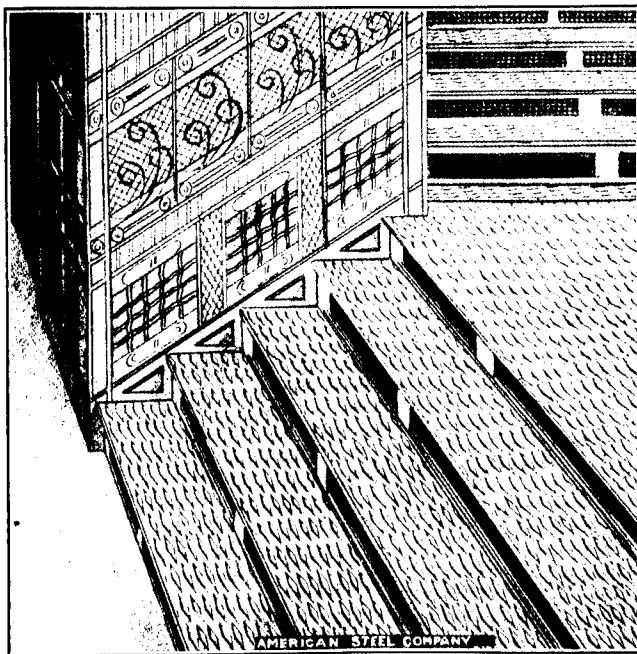
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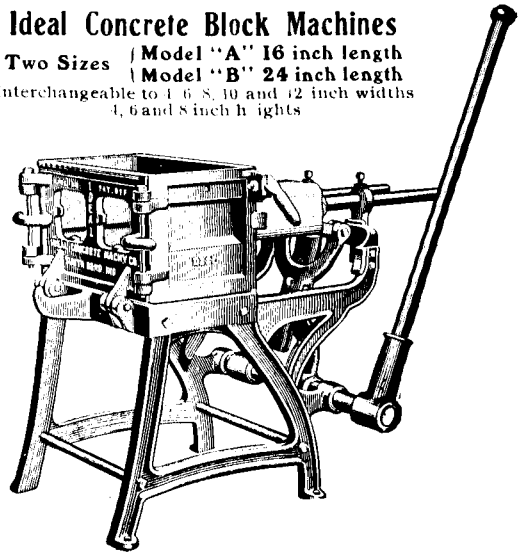
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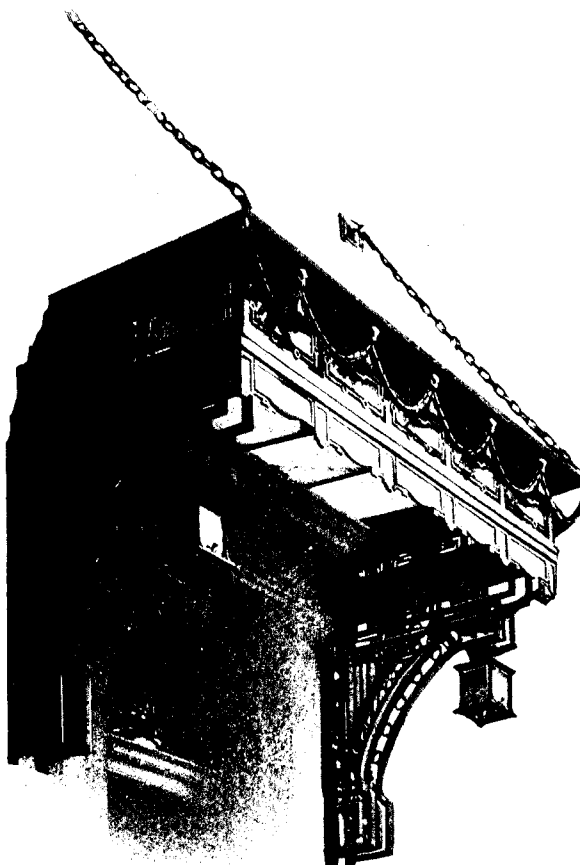
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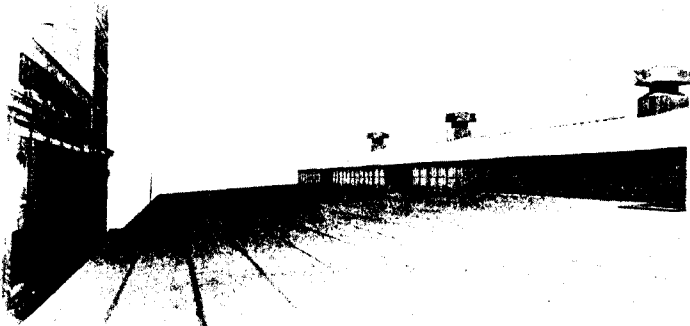
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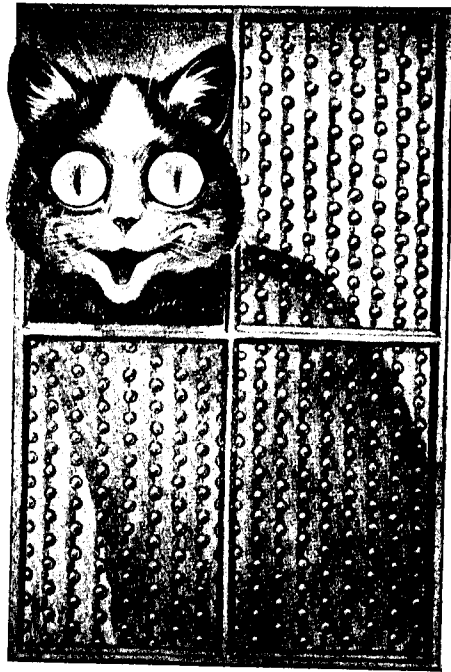
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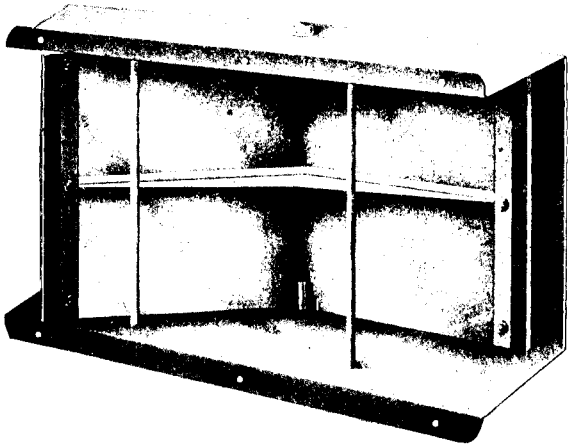
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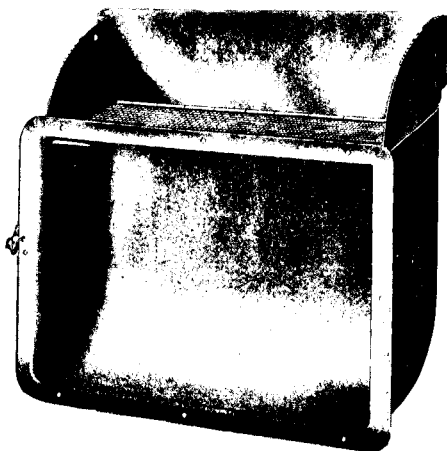
Interior of Hood, Showing Valve



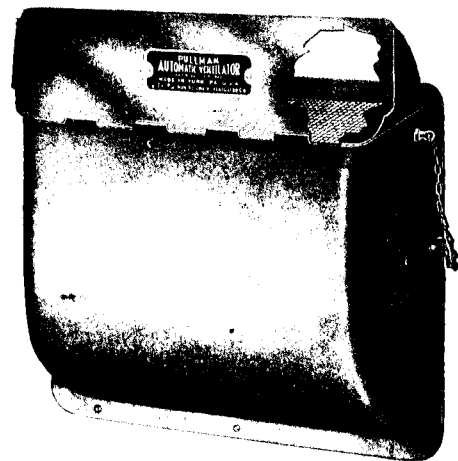
Exterior of Hood



This Style
of
Ventilation
is a
Nuisance



Interior of Diffusion Box



Exterior of Diffusion Box

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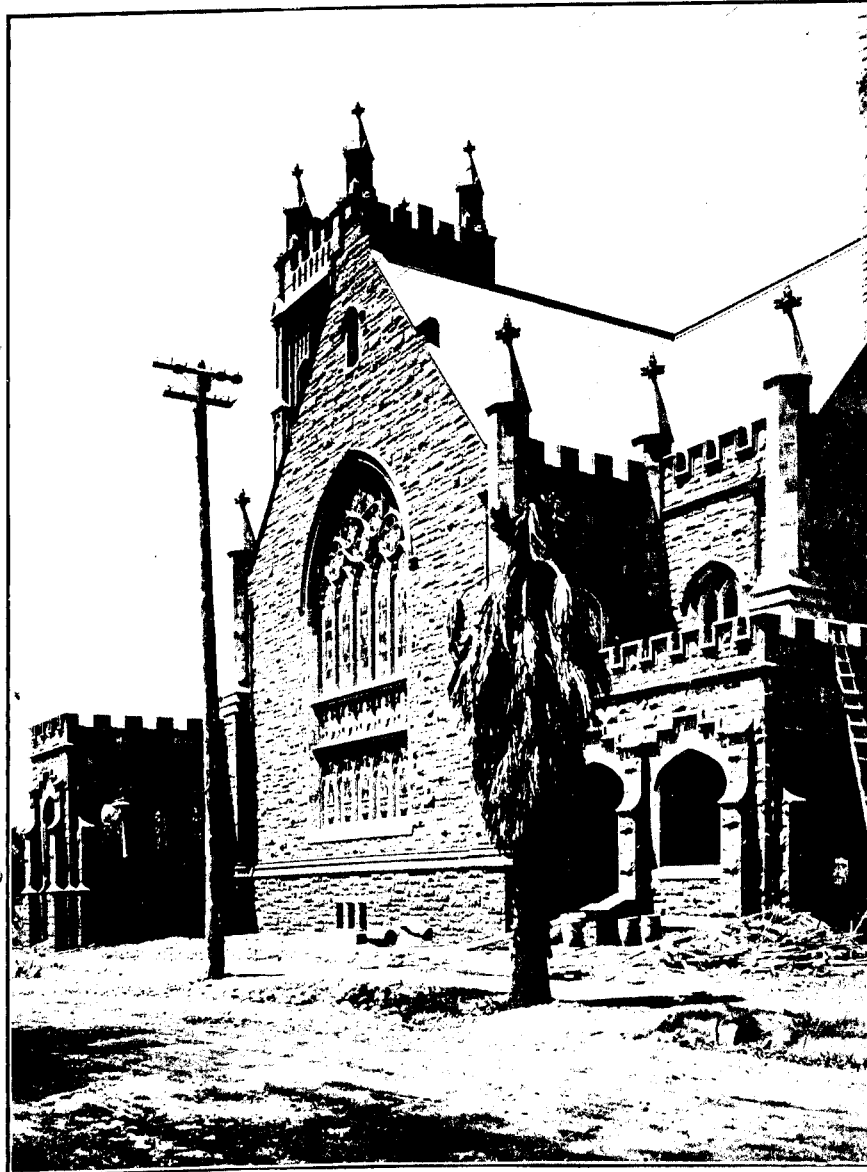
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'CONSTRUCTION'

A JOURNAL FOR THE BUILDING AND
ENGINEERING INTERESTS OF CANADA

Vol. 1

July, 1908

No. 9

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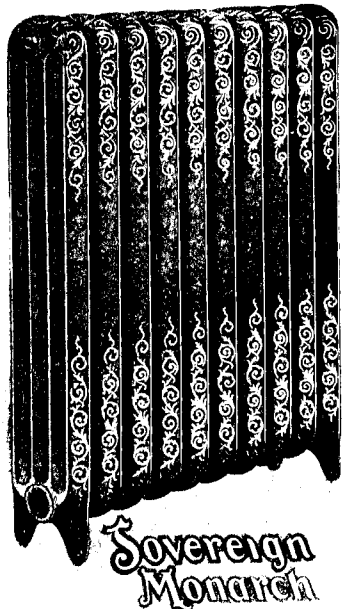
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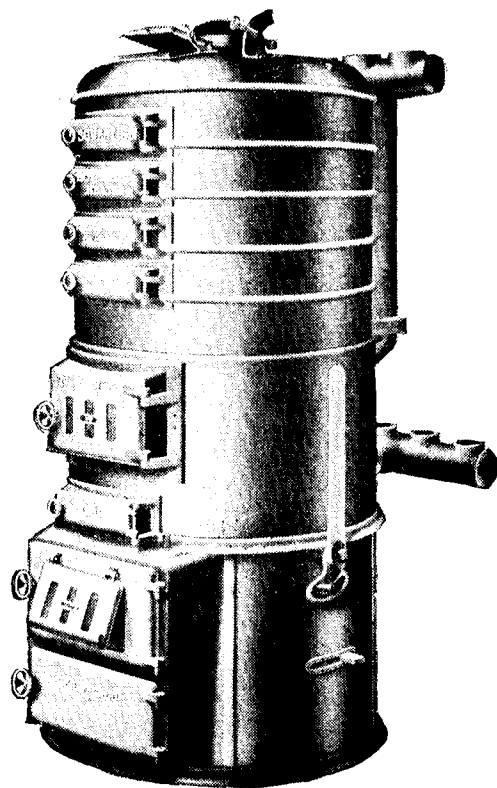
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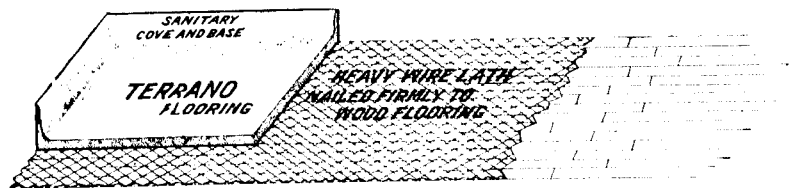
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IN a previous advertisement in “Construction” we went into the question of low-cost construction in NIAGARA SYSTEM of Reinforced Concrete. In this number we wish to give particular attention to the SIMPLICITY, and what we call the “ELASTICITY OF APPLICATION” of the NIAGARA BAR to the problems of construction in concrete.

☐ Under the “Niagara System” the shear members may be attached to any form of plain or deformed tension bar now on the market—with only slight variation in the shape and size of the clip—such as “Ransome,” “Johnson,” “Thacher,” “Twisted Lug,” or “Kahn Cup,” bars, making the simplest method of attaching stirrups which it is possible to devise, and increasing the efficiency of any one of these bars.

☐ We have a preference for COMMERCIAL PLAIN BARS under ordinary condition, usually in squares and flats, and have found that the results are satisfactory in actual practice. Beyond this broad nature and simplicity of attachment of shear members to many types of tension bars is the important point of the varying length of the shear members, which at all times may be sufficiently long to enable homogeneous action in the stem and tee of a T beam.

☐ The T beam is the type most important and most used in concrete, and the reinforcement against shear should in all cases extend up into the floor slab. In our design of the Niagara Bar we use three quarters of an inch as the standard dimension in width, thereby making it possible, at all times to design in economical sizes of beams. Increase of steel area is made by increasing in depth of bar, in accordance with the logical development of a beam for heavy loading.

☐ We have the most ECONOMICAL reinforcing bar on the market. The NIAGARA BAR is of the HIGHEST EFFICIENCY. Our EXPERIENCE and SERVICE is at your command.

PIT T & ROBINSON

Architects and Engineers

IMPERIAL BANK CHAMBERS

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*FOREIGN ARCHITECTS AS DESIGNERS OF
CANADIAN STRUCTURES—A REFLECTION
ON NATIONAL ENTERPRISE AND ABILITY—
A MATTER OF GRAVE CONCERN. . . .*

HAVE WE ARCHITECTS in Canada who are capable of designing our better class of structures? Is the volume and character of building construction in Canada of sufficient importance to develop architects equal to the task of designing our buildings? Can we ever hope for a Canadian architecture that reflects the national traditions, tastes, habits and social and commercial character of our people and climatic conditions and general nature of our country.

These questions are all of grave importance, not only to the profession and the building industries but to every ambitious loyal citizen in Canada. The problems involved are not only of national importance, but have a strong commercial aspect.

To the first question, there are only two answers: "Yes," or "No." For argument's sake, we will say "No." We will allow that we have not at present architects who have had sufficient experience to enable them to intelligently design our larger modern structures, and give the builder the fullest value for money expended in the erection of his building, in the matter of design, plan, construction and equipment, and that to get this service he is obliged to employ a foreign architect whose work in his own country has given him an opportunity to more fully study from actual, practical experience the requirements of a modern structure to be erected for certain purposes and under given conditions and how best to provide for these requirements in the most economical and practical manner. It must, however, be remembered that the very fact of his having procured an experience in his own country, that gives to him an international reputation thus rendering his services sufficiently valuable to be sought by a prospective builder in Canada or some country other than his own, is evidence of the fact that his own countrymen did not employ foreign architects to design their early structures, thereby robbing him of his only possible opportunity of gaining experience and securing to him a broad reputation.

Allowing, then, that we have not at present architects capable of designing our larger buildings, we ask the question: How can we ever expect to develop designers if we give all our bigger work to foreign designers?

And if our buildings are built by foreign architects whose work must necessarily be influenced by the conditions prevalent in their own country, how can we ever hope to develop a Canadian architecture that will reflect our national traditions, our tastes, and our social habits and commercial pursuits? And if we are to have no architecture peculiar to us as Canadians, how can we ever boast of being a nation? A pitiable condition it

would be indeed if our finer structures, in which we must necessarily take national pride, bore no mark of the handiwork of our own people, but were the product of foreign designers whose work was influenced by the traditions and conditions of the country from whence they came.

In view of these obvious facts, it is most unfortunate that many of Canada's largest institutions, in which Canadians have a right to take pride, find it necessary (so they say) to employ architects from the United States. They tell us they would prefer to give the work to a Canadian architect, but they can find none who have had sufficient experience in designing the especial type of building they desire. Even though this were true, it would be a most un-Canadian stand to take. We would ask how can we ever have architects with experience in designing large buildings if we give this work to foreign architects? We must be a nation of highly unbalanced incompetents if our business institutions find that they require structures of a type that cannot be built by Canadians, to house a business created and maintained by Canadians. Some of our financial institutions are the worst offenders in this particular, in institutions whose success depends upon the development of our country more than those in any other branch of business. They say to us, "We have been successful in handling your money to the extent that we are enabled to build a stately, dignified home for our business, a structure that will be a monument to Canadian industry and enterprise, an indication of our confidence in Canada's future. But this building is to be better than you can build." The cost of such a structure is surely a monument to Canadian enterprise and commercial development, but the building itself is nothing short of a monument to our national incapacities and unbalanced development.

But is this contention of owners who employ American architects, right? We answer "No, decidedly No." It is true that we have not architects in Canada who have the international reputation of some of the American designers; they have not had the opportunity to establish their fame, but as far as capabilities are concerned, recent work of Canadian designers has established the fact that no country in the world possesses a more highly cultivated, capable class of architects, as a whole, than does Canada. Buildings from the Atlantic to the Pacific, bear evidence of the careful, studious work of our designers. They stand as unmistakable evidence of the fact that these sober, studious men have realized the importance of their duties and are carefully and intelligently dealing with each problem that presents itself and applying themselves assiduously to the task of giving Canada an architecture suited to her traditions, her climate, the habits, the tastes and the ideals of her people, and adapted to the use of the materials nature has given her. Contrast the work of Canadians

influenced by their knowledge of all that is Canadian with that of the American designer, controlled by American influences, and the difference may be defined as that which exists between the characteristics and ideals of a Canadian and those of an American.

Of the several large structures recently erected in the Dominion after the designs of foreign architects, there is not one that possesses any exceptional features that could not have been developed by some architect in Canada unless it may be those which might mark the structure as being influenced in design by those things which are American rather than Canadian.

The reason for the employing of American architects on Canadian buildings is simple. Owners get an exaggerated idea of the importance of their project. They assert that they will build something greater than has heretofore been attempted in Canada, and having been dazzled by the exaggerated greatness of things American, they believe that to accomplish this end they must go beyond the borders of Canada for an architect.

The United States has many highly capable architects well suited to the conditions prevalent in their own country, but they are not as well fitted to execute work especially adapted to conditions in Canada as are our own designers. If we want to develop an American architecture in Canada, we should employ American architects, but if we have sufficient national pride to desire an architecture distinctive to Canadian traditions, life and conditions, it must be developed by Canadian designers.

It is often argued that new constructive problems arise in the erection of the modern structure, of the nature that our development demands we build, and that our Canadian architect has no practical experience in handling such problems. If this is the case, he may call into consultation with him an architect or engineer who has had such experience, but the Canadian architect should always be the dominating influence in the work.

EMPLOYMENT OF OUTSIDE HEATING AND VENTILATING ENGINEERS—UNFAIR ADVANTAGES IN FAVOR OF AMERICAN MANUFACTURER—SOME INSTANCES. - - - -

MANY ACTUAL INSTANCES may be cited in justification of our contention that the employment of a foreign designer is a much more serious proposition than is generally anticipated by the prospective builder. We could point out many American designed structures in which our every claim with regard to the preference given to imported materials and appliances has been justified. Not only does this condition arise in the matter of the employment of architects, but the employment of American heating and ventilating engineers, by even our school boards, has resulted in a most unfair advantage in favor of the American manufacturer. This fact is instanced in the following letter from a prominent heating engineer that recites some highly unpatriotic and shady business transactions on the part of those from whom we have a right to expect something better. Realizing the importance of this question, we reproduce Mr. Fortune's communication in full:

*Editor "Construction,"—*In a late issue of the "Engineering Record" my attention is drawn to the following paragraph, among the building notes:

"The building committee of the Board of Education, it is stated, has decided to employ Geo. Hughey, of Boston, Mass., to instal the direct heating and indirect ventilating system in the Sophia Street School, Hamilton, On."

Upon reading this I began to wonder how often this same thing is done in Canada, and in the past three and a half years since I have been here I can recall many instances nearly parallel to this. Not only is the designing of such installations given entirely to American engineers, but the contracts for the material awarded to manufacturers in the United States, without even giving the Canadian manufacturer a chance to bid at all. If he is allowed

the privilege, the influence and supposed reputation of the American designer is brought to bear to such an extent that the Canadian made goods are hardly given a second thought.

Nearly all specifications gotten out for the mechanical heating and ventilating of public buildings in Canada specify American made goods, and the contracts are so handled that the installation of these goods is accomplished.

Among some of the recent such installations are the Convocation Hall at the Toronto University, the new Public Library and the Royal Alexandra Theatre. Three new Collegiate Institutes that are being erected in the Province of Ontario are having American goods installed.

I might mention that the appliances that I make reference to are such as are used in the mechanical heating and ventilating, as fans, sectional base heaters, etc. This line is manufactured in Canada, of a quality in every respect equal to that made in the States, and yet the same goods are being brought in here nearly every day.

If some contend that the price is higher on the goods here than on those imported, there may be a reason, but there can not be a great difference. One reason may be that most of the angles and plates used in the construction of steel plate fans are not manufactured in Canada, so are imported from the States with a high duty. Why do not Canadian rolling mills roll all the shapes necessary for this class of work, both in angles and "I" beams? And if the mills will not roll this stock, why does not the Tariff Board readjust the duty on these classes to protect our manufacturer, either by lowering the tariff on what we might term "raw stock," or raise it on the manufactured article coming in here?

Not long ago the Dominion Government sent to the States for an expert to give his opinion in regard to the ventilation of some public buildings in Ottawa. I consider this entirely useless. There are in Canada to-day engineers who have made this branch of engineering a study of years, and who are perfectly capable of designing any installation in this class.

This step of bringing in outside consultation is the first great one towards bringing in the foreign importation of the machinery required, as most of the boards or committees, who have the letting of these contracts, are too apt to be influenced by this "consultation" and by the architects, who, while their ability as architects may be unquestionable, are far from being engineers.

An incident of this may be of interest. A firm of architects in a Canadian city were retained by the school board to make plans for alteration upon a school building, which were to include a modern heating system. The architects sent to a firm of Canadian engineers asking that a representative call upon them in regard to the matter. An engineer was sent and gave them, free of charge, all the information required. The firm whom this engineer represented did have a chance to tender on this work, but—? In this city was a steamfitter who did most of the best work and was a member of the school board, and was also "tied up" with an American firm making this class of goods. The result was the architects turned their information over to the steamfitter; he indirectly secured the contract, and the American goods were installed.

I hardly dare take up any more of your time in regard to this matter, but lay these facts before you, hoping that you may use them in some way to the good of the Canadian manufacturer. I beg to remain,

Very respectfully yours,

CHAS. W. FORTUNE.

Galt, Ontario.

COMMERCIAL ASPECT AN IMPORTANT ONE—FOREIGN MATERIALS AND WORKMANSHIP—HOW CANADIAN INTERESTS ARE AFFECTED. - - - -

ASIDE from the architect's standpoint, and the general national sentiment against the employment of foreign architects, there is the commercial aspect, which is a most important one. The contractor, the manu-

facturer of building materials and appliances, as well as the artisan, all have a very important interest at stake in this question.

If a foreign architect be employed to prepare plans and specifications for a given building it is only reasonable to expect that foreign materials and workmanship will be employed in its construction. We will say, for argument's sake, this architect comes from New York, where he has practiced for many years, during which time he has erected many large structures. We know that every architect has certain contractors that he would prefer to do his work. They have done work for him before; they know how he wants certain things done; they know his methods, his ideas, and can follow his specifications with greater intelligence than could some contractor who had never done work for him. The architect knows the contractor; he knows how he does his work; he knows his strong points and his weaknesses; he knows how much to expect of him on certain classes of work, and he knows just how much rope he can give him. The architect has become accustomed to certain makes of building materials; he has specified them in many buildings; he knows under what conditions he can use certain makes to the best advantage; he knows the effect he can produce with these materials under various conditions. The manufacturer of these materials knows from long connection what the architect desires for this and for that work. His salesmen know the architect; they know his peculiarities and they govern themselves accordingly. The architect, likewise, has used certain appliances and has learned how to plan his structures to get the best results from the use of these appliances. He has become accustomed to the designs of certain makes of fittings, etc., and knows which manufacturer can suit him best with certain designs of various types. These manufacturers, through long experience, know best how to serve the architect and his peculiar notions with regard to the various fittings or appliances they are called upon to supply him with. This is true with every branch of work necessary in the erection of a building. Years of experience in a certain community, forms between the architect and the contractor and manufacturer a certain common interest and unity of purpose that asserts itself in almost every architect's design. The structure, when completed, not only represents the architect's conception, but is a completed combination of ideas, suggestions and efforts of the architect and the contractors and manufacturers that the business phase of architecture has brought together.

When a foreign architect is employed to design a Canadian building, he is selected because of the character of the work he has executed in his native country. In the execution of this work he has used certain materials and appliances with success, and when he plans the structure and prepares his specifications, the connection formed from many years of business association with the manufacturers of these materials and appliances is bound to show its influence. We have not only employed the architect, but we have also brought with him his connection.

The New York architect does not know our contractors; he does not know our brick, our stone, our cement, our appliances or our fittings. He only knows the contractors and materials he has had long experience with in his work in New York. He does not care to know things Canadian. He is employed to erect a building Canadian designers were not equal to, and he is not inclined to investigate materials that are untried in a work of such great magnitude. Why should he bother experimenting when he knows the actual worth of materials he has had long experience with, especially when he has been employed because of this long experience? Why should he experiment with untried contractors on large work, when there are many he knows in his long experience in New York?

The almost invariable rule is, therefore, that the American architect will use his influence with the owner in favor of the contractor he has tried and the materials he knows. Thus, while possibly the owner may have

originally intended to only employ a foreign designer, he finds, when his building is finished, it is purely an American production. Almost every dollar expended in its erection has been forever lost to Canada, Canadian money, produced in Canada, by Canadians, from Canadian industry and resources. In return for this we have a magnificent, stately structure, planned by an American architect, built by an American contractor, constructed of American materials and fitted with American appliances. We should have reason to take great pride in such a structure. We should feel gratified in pointing out such a structure to our visitors, a great monument to Canadian incapability and incompetence.

We wish to make it plain that we quite understand that we are obliged to use many foreign makes of materials in our buildings, but we have Canadian made materials and appliances that may be used to advantage if the designer knows these materials and feels favorably inclined towards them. This cannot be expected of the architects who never used our materials, and does not know them.

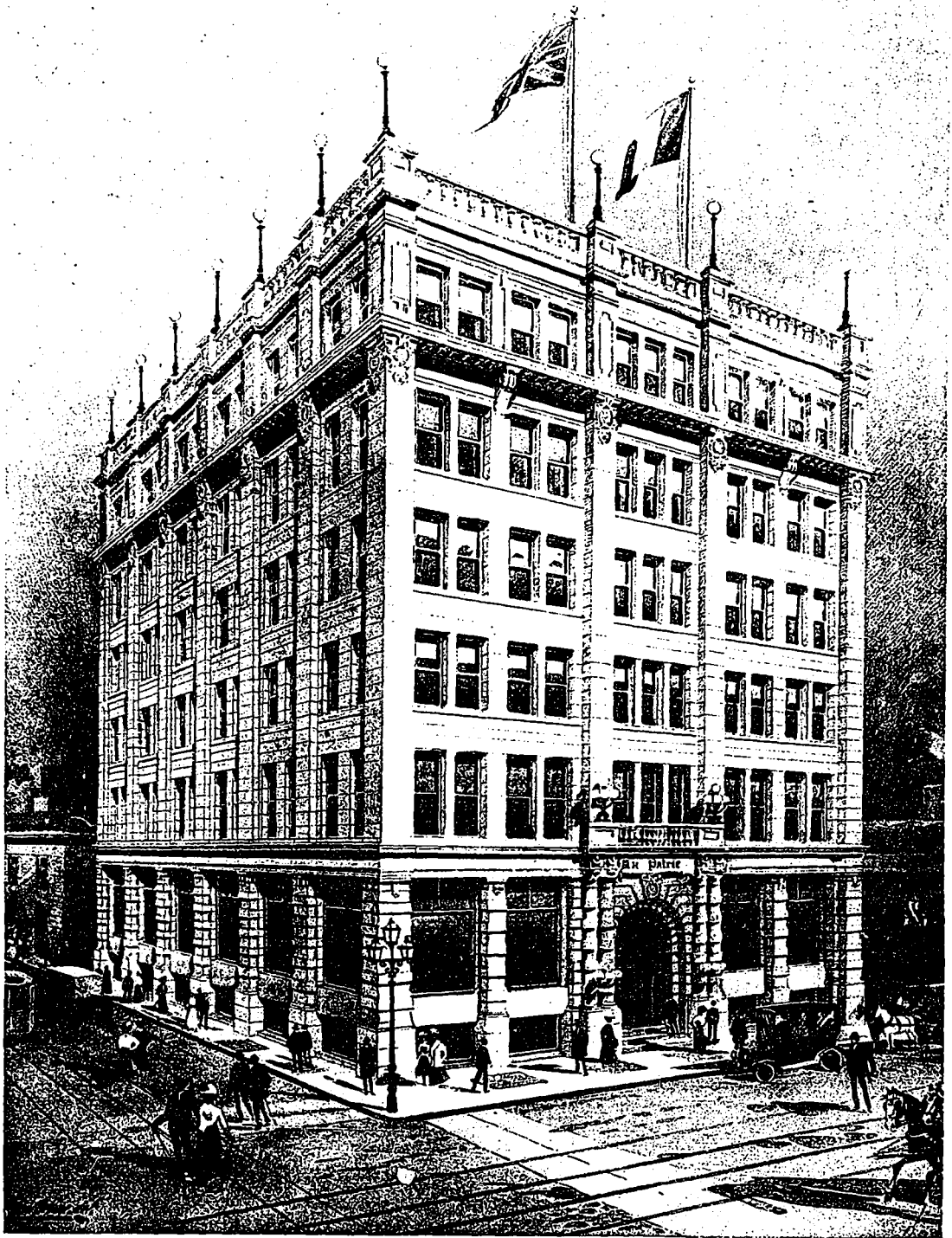
This is a condition overlooked by many, created by the un-Canadian notion that our architects are not equal to the task of designing larger buildings. Every Canadian institution, whether financial or commercial, whose success depends upon the development of our country, should be exceedingly slow to bring about a condition that will unnecessarily take money out of the country even though they have no patriotic sentiment or national pride in the development of a Canadian architecture.

EXTRAVAGANT ECONOMY OF BUILDING PUBLIC—DISPLAY AT THE COST OF STABILITY—NEED OF BUILDING LAWS TO MEET MODERN CONDITIONS. - - - - -

MUCH HAS BEEN said in these columns about the inadequacy of our present municipal and provincial building laws and the criminally lax enforcement of the laws we have. Month after month we have pointed out the awful consequences of the extravagant economy practised by the building public in the use of inflammable, inferior building materials and the adoption of cheap ramshackle methods of construction.

Our fire statistics prove beyond all doubt the importance of this grave national weakness, the only remedy for which lies with the province and the municipality. Our authorities must exact a better order of construction. The layman is too deeply engrossed with his business, of today, to give (what he considers) a technical subject sufficient study to teach him how to provide for to-morrow. The average owner will build no better than he is required to by law. His great mistake is in the poor policy that dictates economies in initial cost of construction and the placing of extravagant ornamentation upon the exterior at the cost of the proper protection of the structure; a shoddy love of display; an attempt to make the building appear to be that which it is not; a desire to make it look to be worth more than it is.

Architects and engineers know, or should know, what is good and what is bad construction, and should labor with their clients in teaching them the infinitely greater importance of good construction rather than exterior effect, and insist in so far as his position will permit of, upon the elimination of shoddy materials and ramshackle methods of construction. But the fault does not lie wholly with the architect. He must be backed up by active Government officials who strictly enforce the laws without favor or bias, and officials must be backed up by adequate building laws. It is quite evident that people will build no better than they are obliged to by law, and it therefore behooves a paternal Government to enact such laws as are suited to modern conditions and which are sufficiently stringent as to render impossible the erection of structures as are a menace to public safety and commercial welfare. Officials should be appointed that are active, honest and capable, who must see to it that these laws are strictly enforced and lived up to, to the letter.



PERSPECTIVE OF LA PATRIE BUILDING, MONTREAL, MESSRS. G. A. MONETTE & J. O. TURGEON, ARCHITECTS. THIS ILLUSTRATION IS PARTICULARLY NOTEWORTHY IN THAT IT IS AN EXACT REPRESENTATION OF THE BUILDING AS IT APPEARS TO-DAY.



INTERIOR OF BUSINESS OFFICE, LA PATRIE BUILDING, MONTREAL. MESSRS. G. A. MONETTE & J. O. TURGEON, ARCHITECTS.

LA PATRIE'S NEW BUILDING.---Imposing Edifice Recently Erected at Montreal for French Publication.- -Designed Primarily as a Newspaper Building.---Structure is Highly Commendable Both Architecturally and Constructively.

THERE is probably no commercial structure in Montreal that has attracted more attention than has the La Patrie Building, the new home of the well known French newspaper of that name.

Designed for the housing of the various departments of this publication and the heavy presses and different appliances required in its production, this building both from architectural and constructive standpoints possesses many exceptional features.

The main elevation of the building fronts on St. Catherine street at the intersection of City Hall avenue. The site was selected by the owners with a view of placing the publication in the very centre of its clientele of readers and without appreciably separating it from its advertising patrons.

The La Patrie Building is one of the largest modern structures in Montreal, covering a quadrilateral measuring 75 feet on the side of St. Catherine street, by 94 feet in depth.

Rising above the level of the street to a height of six storeys it proudly overtops all the buildings of St. Louis ward, of which it marks the centre. The tall graceful edifice stands out strikingly in these surroundings, and from Notre Dame street on the south, from the heights

of Bleury street on the west, from Sherbrooke street on the north, and from the far distance towards the gently sloping east, its form is clearly outlined in space.

The principal elevation and the side elevation in City Hall avenue are built entirely of Indiana limestone, on a foundation of Stanstead granite. A striking feature in these immense grey walls, is the multitude of openings to admit the light.

Owing to the number and the good disposition of the windows, every storey is perfectly lighted throughout its whole extent, without the assistance of the skylight in the roof, which serves rather for ventilation than for lighting. This has dispensed with reserving in the centre of the building a space for bringing light from above, as is done frequently elsewhere, and has made it possible to utilize the whole superficial area of every storey.

The foundation extends more than 24 feet below the pavement. The columns rest on bases 10 feet square, with sides covered with a grill-work of iron and mortar. They rest on a base of massive cast iron three feet in length and width and 15 inches thick. The framework is entirely of steel, including the structure of the floors and ceilings. The exterior and interior walls, as well as the floors, are cased in porous brick, "terra cotta,"

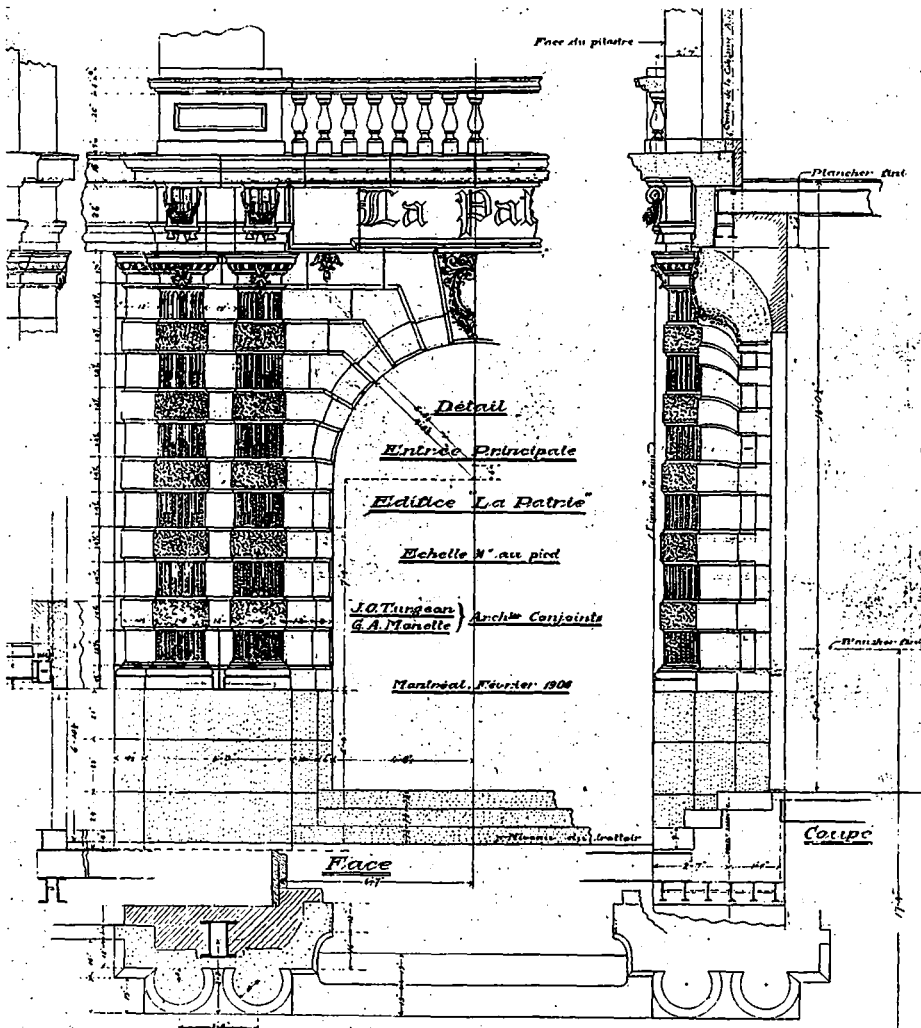
occupying a thickness of from 9 to 10 inches. A layer of four inches of porous brick also envelops the columns.

The building has a volume of 563,718 cubic feet, above the level of the street, and 144,000 cubic feet below. At the rear is a light well, measuring 36 feet by a little less than 7 feet.

To return to the principal elevation. At the centre, the wide entrance is surmounted by an arch in full semi-circle, ornamented with an artistic grill-work in wrought iron, and flanked by two engaged columns, of the modern

lateral ends of the facade. The four pilasters of the facade are decorated, at the top of the sixth storey, by panels which bind together the ensemble of the ornament at the crown, represented by a massive stone balustrade which runs round the whole upper perimeter of the building.

The side elevation on City Hall avenue, with the exception of the monumental entrance, is on the same lines as the front elevation. The most remote corner is practically a vast door for service, opening on a freight elevator which runs to all the storeys.



DETAIL OF MAIN ENTRANCE, LA PATRIE BUILDING, MONTREAL. MESSRS. G. A. MONETTE & J. O. TURGEON, ARCHITECTS.

doric style, richly carved and decorated by a cluster of electric lights (raised in a cluster). These columns are at the level of the first storey, joined to the rectangular pilasters which run upwards to the roof. The arch of the monumental entrance is itself surmounted by a balcony ornamented on each side by a massive bronze candelabrum, and closed in by a stone balustrade. Under the cornice of the balcony is sculptured in relief the name La Patrie, on a stone supported by finely chiseled consoles. The symmetry of the plan of arrangement is happily completed by the cornice of the fifth storey, in solid stone surmounted by overhanging eaves and resting on consoles artistically sculptured, and by the pilasters of the

walls opposite to the two facades are of Laprairie brick resting in cement.

The Interior.

On entering the building three granite steps precede, in the main entrance, the heavy oak doors with large panels of English glass. The whole vestibule is marble. Nine steps which cross through its whole length are of grey Tennessee marble; the bases are of antique green marble; the panels of Skyros marble. The floor is tile mosaic vitrified with color, composed of small hexagonal blocks. The ceiling is subdivided into nine coffers with sculptured and moulded friezes. This entrance of the La

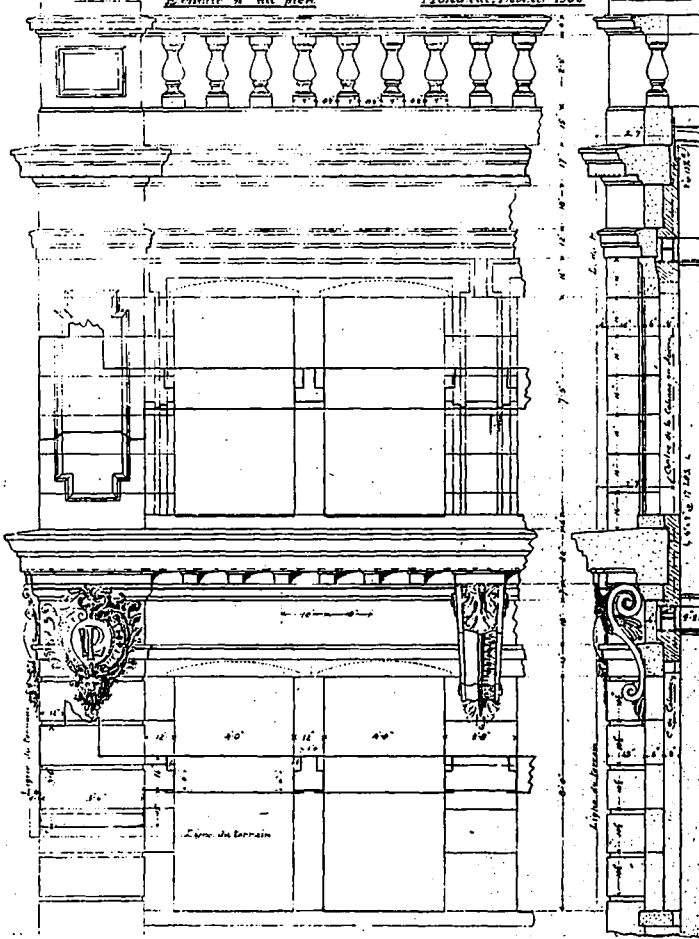
L'édifice de "La Patrie"

Détails de corniche, balustrade, etc. Rue Ste. Catherine

J.O. Turgeon Archt. Conjoint

G.A. Monette Montréal, Février 1906

Echelle "a" au pied



DETAILS OF CORNICE, BALUSTRADE, ETC., LA PATRIE BUILDING, MONTREAL. MESSRS. G. A. MONETTE & J. O. TURGEON, ARCHITECTS.

iron grill work, finely executed and decorated with the monogram of La Patrie, and on each side by large high doors of wrought iron grill work overlying large panes of English glass.

These doors open on the left into the business offices of La Patrie, and on the right into the rented offices of the Eastern Townships Bank.

The stairway, of Italian marble, starts from the cage of the elevator and ascends to the full height of the building. The first and second storeys are rented as offices. A part, however, is occupied by the bindery department of La Patrie.

The printing plant occupies the third storey, while the fourth and fifth are entirely taken up by the editorial rooms and by the photo-engraving and typesetting departments of the paper.

The partitions throughout the different floors are of chestnut, with the upper portion of rough glass. The floors are covered with cherry wood, except in the work shops, where they are cement. The plumbing is of the modern style, open, and all the pipes and taps are nicked. The sinks and basins are enameled iron. The stairway that leads to the top contains 142 steps, without counting the 28 leading to the basement.

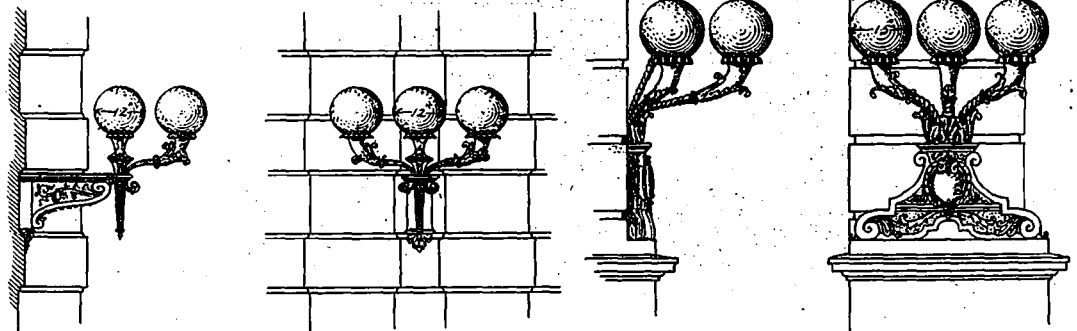
There was used in the construction of the building, 1,175,900 lbs. of steel, 10,000 square yards of glazing, 6,000 yards of cherry flooring, 2,500 square feet of English plate glass, and 13,555 square feet of window glass, 58,756 square feet of porous brick "terra cotta" and 883,000 bricks.

Administration Offices.

The administration offices of the directors of La Patrie occupy three-quarters of the superficies of the

Patrie building is particularly sumptuous and imposing. The richness of the material, the sobriety of the ornamentation and the harmony of the arrangement produce a marvellous effect.

The vestibule is further embellished, at the bottom, by the cage of the elevators, composed of artistic wrought



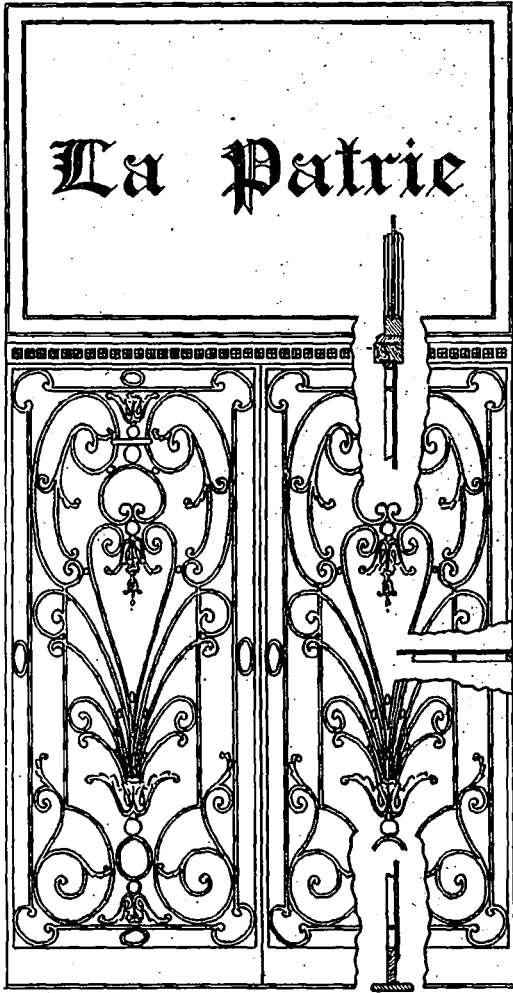
DETAIL OF BRONZE BRACKETS ON EACH SIDE OF MAIN ENTRANCE, LA PATRIE BUILDING, MONTREAL. MESSRS. G. A. MONETTE & J. O. TURGEON, ARCHITECTS.

ground floor. These offices are entered from the vestibule by a large door with wrought iron grill work. A counter of green antique marble, of "vert-vert" marble, and of Skyros marble, runs from one extremity to the other, in one immense piece, resting on a floor of vitrified tile mosaic similar to that of the vestibule. It is surmounted throughout the whole length by rich bronze grill work, in which at regular intervals, are the wickets of the various clerks. The furniture is all of solid oak, and the counter table of golden oak.

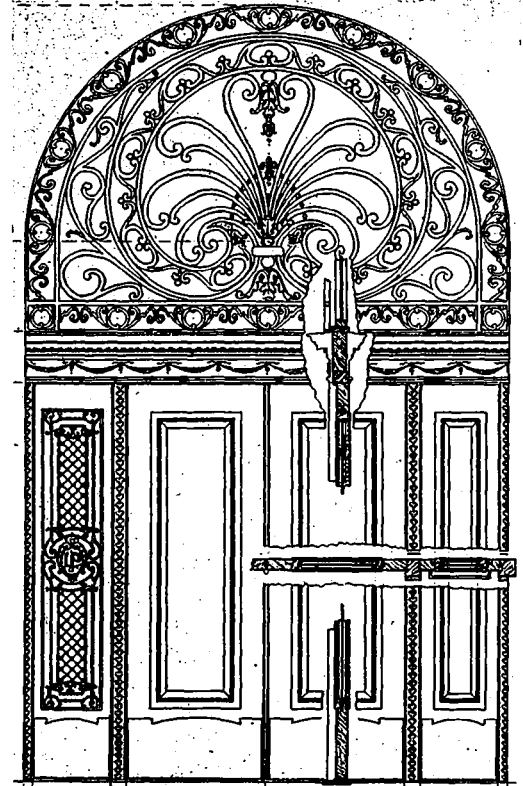
Below, in a recess behind the elevator cage is install-

light of the administration offices permits the employees to enjoy all the comforts compatible with their work.

At the extreme end of the administration offices is the



DETAIL OF WROUGHT IRON GRILLED DOORS AT ENTRANCE TO BUSINESS OFFICE, LA PATRIE BUILDING, MONTREAL. MESSRS. G. A. MONETTE & J. O. TURGEON, ARCHITECTS.



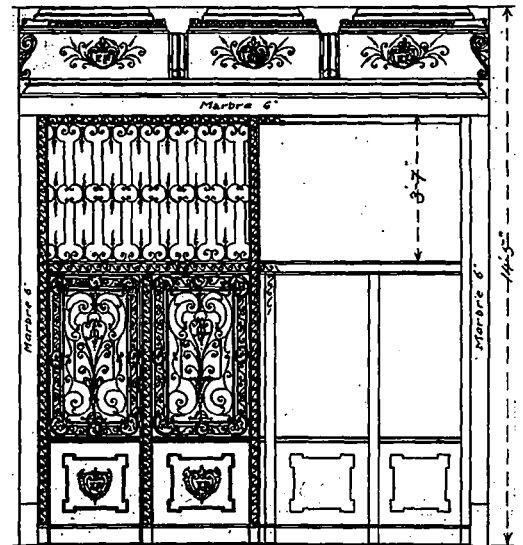
DETAIL OF MAIN DOORWAY, LA PATRIE BUILDING, MONTREAL. MESSRS. G. A. MONETTE & J. O. TURGEON, ARCHITECTS.

private office of Mr. L. J. Tarte, president and manager of La Patrie Publishing Company. The office communi-

ed a safety vault, of special design.

The ceiling is richly ornamented with cornices of classic style, with graceful consoles and shields with the monogram of La Patrie. Numerous bronze electroliers, in original and pleasing shapes, are distributed throughout the extent of the offices, to which electric lights are suspended in groups of five, covered by porcelain globes. The offices are most generously provided for as regards lighting. This will be readily agreed when we say that they can be inundated with the light of 300 incandescent lamps.

The offices actually receive a profusion of lights from half a dozen of the windows on the St. Catherine street side, and from all the windows of the ground floor. The



DETAIL OF ELEVATOR ENCLOSURE, LA PATRIE BUILDING, MONTREAL. MESSRS. G. A. MONETTE & J. O. TURGEON, ARCHITECTS.

cates on one side with that of the secretary of the company and on the other side with an ante-chamber where the two private secretaries of Mr. L. J. Tarte and Mr. Eugene Tarte, the vice-president, attend to visitors.

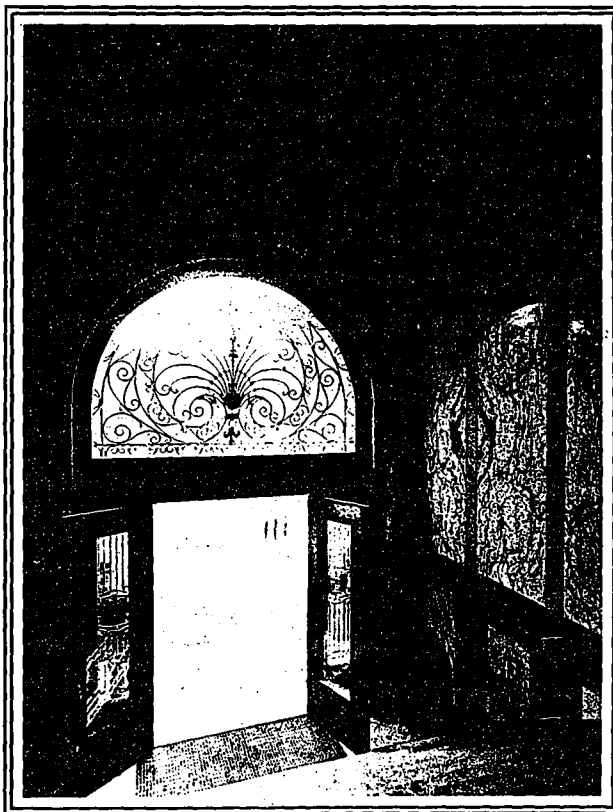
Offices of the Bank.

Sumptuous banking offices have been fitted up on the ground floor of the building. These offices are on the side opposite the offices of La Patrie. They are entered from the vestibule by a similar door with wrought iron grill work. The floors also are vitrified tile mosaic; the marble counters are surmounted throughout the whole length by a bronze grill work. The furniture is solid oak, and a large safety vault for the exclusive use of the bank. Like the administration offices the bank is plentifully supplied with daylight.

The architects of the building were Messrs. Messrs. G. A. Monette and J. O. Turgeon.

The contractors were:

Masonry, stone, brick and terra cotta, P. Lyall & Son; steel frame, The Phoenix Bridge and Iron Works, under the direction of Mr. Ones Cote, engineer; carpentry, Messrs. Pauze & Son; plastering, J. Chamberland; wrought iron decoration, H. R. Ives & Co.; marble, tile mosaic, T. Rochon & Son; plumbing, heating and roofing, D. Ouimet; painting, L. E. Poirier; elevators, Otis Fensom Co., Ltd.; steam boilers, E.



INTERIOR OF VESTIBULE, LOOKING TOWARDS ENTRANCE, LA PATRIE BUILDING, MONTREAL. MESSRS. G. A. MONETTE & J. O. TURGEON, ARCHITECTS.

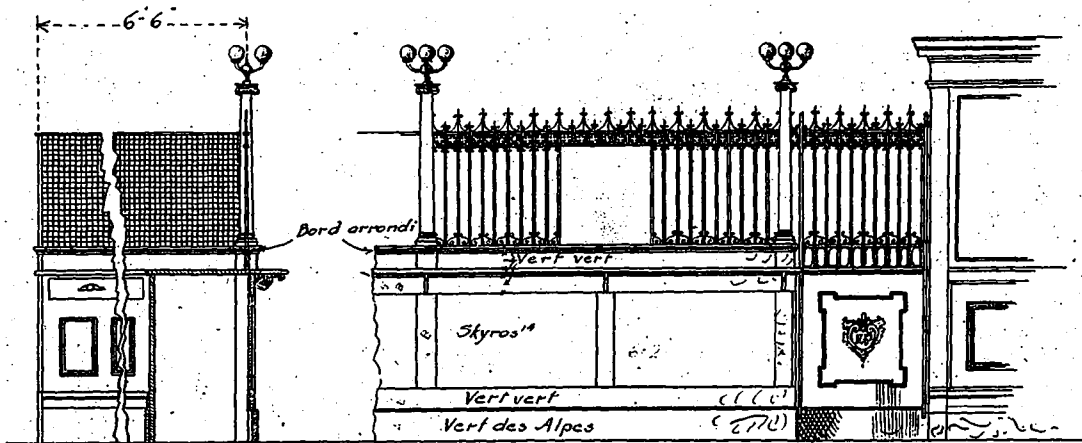
Leonard & Sons, London; electrical work, W. J. O'Leary & Co.

WATERPROOF ASBESTOS.

ACCORDING to a German publication a firm in Munich has succeeded in artificially rendering asbestos waterproof, and has put upon the market this new kind of asbestos under the title of asbestos slates.

These asbestos slates, it is claimed, are as hard and as strong as the natural slates, and can, therefore, be laid on wall or roof constructions without any wooden laths being necessary. They are very easily worked, and can be bored, nailed and cut just like wood, without any danger of splitting. They form a fireproof covering for inside and outside wooden walls, are valuable for insulation work of all kinds, even for electrical purposes; are of great use in building railway carriages as insulating material under the seats, for

use in postal telegraphic work for insulating the switches; for covering iron and wooden constructions; for use as fireproof doors for closing off single rooms in stores, warehouses, etc.; for lining wooden doors, and for covering walls and ceilings of all kinds so as to protect them from fire, heat, cold, dampness, disease, germs and vermin.



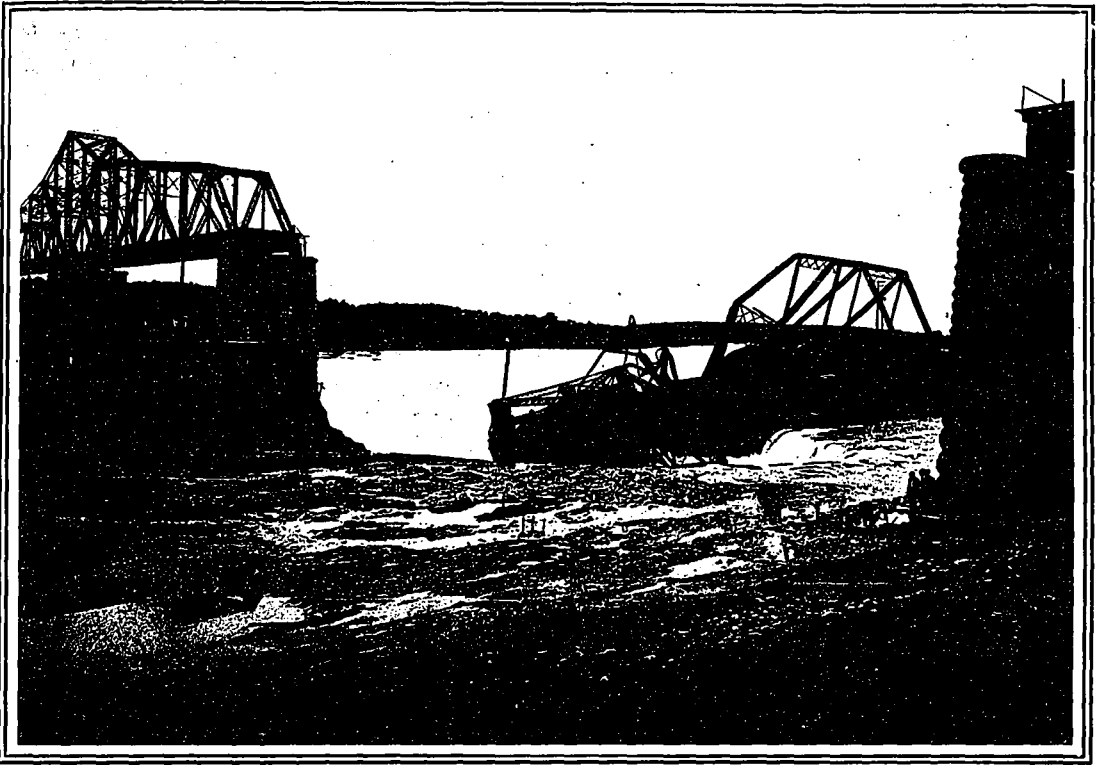
DETAIL OF MARBLE COUNTER AND GRILL WORK, LA PATRIE BUILDING, MONTREAL. MESSRS. G. A. MONETTE & J. O. TURGEON, ARCHITECTS.



VIEW OF THE WRECKED BRIDGE OF THE ONTARIO AND NEW YORK RAILWAY, WHICH WAS CAUSED BY THE BREAK IN THE CORNWALL CANAL.



ANOTHER VIEW OF THE WRECKED BRIDGE, SHOWING THE COLLAPSED PIER IN THE FOREGROUND, AND THE COMPLETELY DEMOLISHED SUPERSTRUCTURE.



ONTARIO AND NEW YORK RAILWAY COMPANY'S SWING BRIDGE, SHOWING THE ENTANGLED MASS OF THE SUPERSTRUCTURE WHICH FELL FOLLOWING THE COLLAPSE OF THE CENTRAL PIER.

WORK ON CORNWALL CANAL BREAK.---Plan Adopted to Repair Damage and Restore Navigation.---Excavation of New Channel and Construction of 500 Foot Crib an Interesting Piece of Engineering.---Progress of the Work.

ACTIVE operations in repairing the break in the Cornwall canal, which occurred June 22, about 100 feet above lock 18, are well under way and it is expected that in the near future communication will be fairly re-established. The break was the most disastrous in the history of the canal, completely tying up navigation and entailing a loss of approximately \$150,000.

When first discovered, the leak was about two or three feet in diameter, but this aperture rapidly widened until 150 feet or more of the embankment had been torn through and washed into the river, which is twenty-five or thirty feet lower than the level of the canal. The canal bank at this point tapers uniformly from a width of 40 feet at the top, to 100 feet at the bottom, both sides being faced with heavy stone ripraping.

The force of the current which swept the huge blocks of stone before it, also undermined the pier of the Ontario and New York railway swing bridge, located 50 feet below the point where the rupture originally occurred, causing the 200 feet superstructure to collapse and reducing it to an entangled mass of steel and iron.

Following the break, immediate steps were taken to repair the damage and to restore navigation at the earliest possible date. Superintendent Weller, of the Welland canal was placed in charge of the work and orders were given to build a crib as far to the south as the conditions would admit, and to dig a new channel to the north of the pier of the New York Central. Excava-

tion for the foundation of this dam was started immediately. Owing to the nature of the bottom of the canal, in which quicksands are numerous, it was necessary to dig a trench two feet wide along the face of the crib, and fill it with clay, thoroughly puddled.

This was the most important work on the job, as the slightest leak under the enormous pressure of water would soon carry the whole temporary structure into the river.

Within a remarkable short time, the woodwork of the curb was completed and the stone work in place. As soon as the sheeting and puddling was completed, two dredges attacked the solid ground from both ends, thereby letting in the water.

The face of the crib is sheathed with three-inch planks, tongued and grooved, wedged at the bottom, and driven down to solid ground. This is covered with canvas, oiled, and lapped for four or five feet on the puddled clay, more soil being added to weight it down.

As a further precaution, a concrete wall has been put in on the south side and centre of the crib, and where possible it is braced with timbers against the canal bank.

The crib is 500 feet long, 18 feet high, 20 feet wide, and contains 25,000 cubic feet of timber, weighed with 4,500 yards of stone. Between 12,000 and 16,000 yards of earth was removed by the dredges in about three days' time, besides the enormous amount which was taken

out by the large force of men working on the eastern end of the cut.

To allow room for the new channel, a part of the approaches to the swing bridge of the New York Central was removed by a wrecking crew while operations were in progress. It is intended by the railway company to erect a temporary swing bridge, swinging from the north side of the new cut, and also a trestle to be thrown across the old channel, on which tracks will be laid to the main bridge. The large quantity of stone necessary in carrying on the work was obtained from the neighboring farms, the greatest amount of it being brought in over the Ottawa & New York Railway from points along the line, while some came by barge from the foot of Cornwall Island.

The full working force consisted of over 1,000 men working in three shifts, and probably 100 horses. The thorough manner in which the work was undertaken and the commendable way in which it was executed, is certainly a triumph of well directed effort and perfect organization, and also a glowing tribute to Canadian engineering enterprise and ability.

POPULARITY OF WOOD FOR INTERIOR FINISH.---Present Demand Greatest in Twenty Years.---Varieties of Wood in Use.---Dull Finish Generally Preferred.

THE quantity of wood in use bears out the statement of a well-known decorator that the present demand for wood fittings and trimmings in private dwellings exceeds anything he has encountered in a business experience of two decades, and that the varieties of wood in use are even more surprising than the quantity demanded.

"Dull finished woods," he continued, "have gone ahead of polished woods in most cases. Everybody is clamoring for natural oak, chestnut, mahogany, walnut, etc., and there are a dozen different ways of treating these woods.

"For the time being few persons who come here will look at polished walnut or mahogany or rosewood for wall panelling. Everything and anything of dull finish, with the grain of the wood much in evidence, leads in popularity, and the brighter browns have given place to ash browns and grays. Let me illustrate."

The decorator led the way to one of the show rooms, a library, whose walls to a height of nearly six feet from the floor were covered with wood divided into panels, two and one-half feet wide by strips of the same wood, four inches wide. Both panels and dividing strips were perfectly flat and plain without carving or mouldings of any description.

The decorator said the wood was oak. To a novice it looked quite unlike oak. In color it suggested a two-toned, mottled arrangement of dull gray and grayish green, and the natural grain of the wood, every appearance of grain at all in fact, had been obliterated.

The oak, it was explained, had been treated with a solution of lead, rubbed well into the pores and then finished with a dull stain only.

Mahogany, treated to accentuate the warmer tints, was the feature in a room. There was no wainscoting here. The wood was applied in a base-board, ten inches deep, in a fifteen-inch cornice and frieze, in a narrow moulding, dividing the room into an upper and a lower section of one-third and two-thirds, the lower wall being treated plainly, the upper in conventional figure design.

All the woodwork in the room, including the mantel, was of red mahogany, and the novel features were the tint of the wood and the cornice. In all the rooms mentioned the wood cornice and frieze took the place of a beamed ceiling and this, the decorator declared, was a variation which is now finding much favor in spite of the fact that it is in direct contrast to the fashion taken up a

few years ago of omitting the wooden moulding near the ceiling.

In a colonial dining-room, designed for the country house of a New Yorker, a cornice and frieze, fifteen inches wide, of white enamelled wood, topped a plain delft blue burlap-covered space, which in turn topped a seven-foot high wainscoting of white enamelled wood. There may be a question as to the gracefulness of the wooden cornice but no difference of opinion, the decorator thought, as to its good style for the time being.

Dull finished walnut, quite unlike the walnut of our grandmother's day, is in great demand for lofty foyer hall's, where dark effects are desired, its gloom being relieved with touches of gold leaf on capitals and columns.

But it is in the drawing-room, perhaps, that the growing popularity of wood and vagaries of color are most noticeable. Interiors so'ely of wood, excepting the ceiling, are more and more asked for, and enamelled woods, cream, pure white, and of many tones of color, are the favorites.

White mahogany, really a pale ecru in color, is much admired for the same purpose, but because of its higher cost is less frequently ordered. By way of illustration the specialist cited the drawing-room of an uptown New York dwelling just completed.

The color scheme is French gray and white, done in enamelled wood panels of varying widths, and carved in a leaf and vine, Louis XV. design. The wider gray panels are bordered with carving, the six-in. wide white panels are almost covered with the same decoration, and the windows, doors, and mantle, in which gray and white wood are combined, are similarly treated.

There is no gold ornamentation to detract from the simple effect, the ceiling of the room, too, being of cream white plaster.—House Beautiful.

BONDING OLD AND NEW CONCRETE.---Some Useful Information on the Subject.---Methods Employed.

SOME useful information on the subject of bonding old and new concrete may be gathered from the following extract from Taylor & Thompson's "Concrete, Plain and Reinforced":

"In a foundation or other structure where the strain is chiefly compressive, the surface of the concrete laid on the previous day should be cleaned and wet, but no other precaution is necessary. Joints in walls and other locations liable to tensile stress are coated with mortar, which should be richer in cement than the mortar in the concrete, proportioned 1 : 2 being commonly used.

Some engineers spread the cement dry upon the wetted surface of the old concrete, while others make it into mortar; the latter method is necessary in many cases to seal the joints between the top of the old concrete and the bottom of the raised forms.

The adhesive strength of cement or concrete is much less than its cohesive strength, hence in building thin walls for a tank or other work which must be water-tight, the only sure method is to lay the structure as a monolith, that is, without joints. If the wall is to withstand water pressure and cannot be built as a monolith, both horizontal and vertical joints must be first thoroughly cleaned of all dirt and "laitance" or powdery scum, wet, and then covered with a very thin layer of either neat cement or 1 : 1 mortar, according to the nature of the work. As an added precaution, one or more square or V-shaped sticks of timber, say 4 or 6 inches on an edge, may be imbedded in the surface, or placed vertically at the end of a section, of the last mass of concrete laid each day. In some instances large stones have been partially imbedded in the mass at night for doweling the new work next day.



A JOURNAL FOR THE BUILDING AND
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ADVERTISEMENTS.—Changes of, or new, advertisements must reach the Head Office not later than the first of each month to ensure insertion. Advertising rates on application.

CORRESPONDENCE.—The Editor will be pleased to receive communications upon subjects of interest to the readers of this journal.

Vol. I July, 1908 No. 9

Current Topics

LONDON'S WATER SUPPLY is to be increased by the installation of a new 3,000,000 gallon reservoir at Chingford, in the valley of the River Lea. Construction work on this huge basin has just been undertaken.

* * *

THE TIME FOR CLOSING the Building Art and Technical Industry Exposition now being held at St. Petersburg, Russia, has been extended from August 28 to October 14, so as to afford a greater opportunity to foreigners desiring to take part therein.

* * *

ONE OF THE SIXTEEN temporary cables that will carry two footpaths to be used in stringing the permanent cables of the Manhattan Bridge in New York City was raised into place on June 15, connecting for the first time the towers of that structure.

* * *

OFFICIALS ARE NOW ENGAGED in estimating the limits of the valuable pine forests of the French river district, which have been surrendered by the Indians to the Dominion Government. The pine is worth in the neighborhood of \$1,000,000 and the proceeds of the timber, which is to be sold by auction, will go to the Indians.

* * *

ELECTRIC MOTORS OF FIVE HORSE-POWER each are being installed at all the lock gates along the Welland canal. This improvement is regarded as an important one, as it is claimed that the motors will open the gates in 30 seconds, where it now takes four minutes, thus saving three hours in the passage of vessels through this waterway.

IT IS PROPOSED TO BUILD a medical college at Lucknow as a memorial of the visit of the Prince of Wales in 1905, at a cost of \$1,250,000. It is to be the most complete of any institution of that character in India, and will have all modern appointments and an European faculty.

* * *

EIGHTEEN CEMENT MILLS, all located within a radius of six miles, is an industrial distinction to which Allentown, Pa., lays claim. These mills employ 12,000 men and their output for 1906 was 13,000,000 barrels of Portland cement, or about thirty-six per cent. of the total product of the United States for that year.

* * *

ALL LICENSE INSPECTORS OF ONTARIO have been notified by the Provincial Secretary's Department that they will be held personally responsible for the strict enforcement of the law regarding fire protection for hotels in their respective districts. They have been ordered to immediately see that all hostleries are adequately provided with fire escapes.

!!

* * *

WHILE BUILDING OPERATIONS were unusually active in Fort William during 1906, the class of buildings erected are not in keeping with the phenomenal growth of that city. According to the statistics recently published by the Provincial Bureau of Labor, 2,674 structures were erected at a total cost of \$1,079,740, which brings the average cost down to a little over \$400.

* * *

CANADA HAD TWENTY-FIVE fewer trade disputes in April than in the corresponding month of 1907 and the loss of time to employees shows a decrease of 84,750 working days. April's disputes amounted to only 11 in number, involving 695 employees and loss of time estimated 5,400 working hours. While this is three more disputes than the preceding month experienced, the number of working days lost were 4,550 less.

* * *

A PARTY OF SURVEYORS has been sent by the Interior Department to lay out the townsite of Fort Churchill, the future metropolis of Hudson Bay, and terminus of the proposed Hudson Bay railway. This is the initial move taken by the government in establishing a new outlet for western exports to the seaboard. Plans and drawings of the harbor are also being prepared by the department.

* * *

PERMITS FOR 595 BUILDINGS aggregating in cost \$1,055,405, were issued by the City Architect at Toronto during the month of June, as compared to 587 permits, amounting to \$1,445,230, granted in the corresponding month of last year. This is a highly creditable showing, especially so in view of the fact that in June, 1907, a number of permits for large structures were taken out. Most of the applications last month were for the erection of dwellings, the largest permit issued amounting to \$22,000.

* * *

TORONTO'S SCHOOL BOARD has decided to "take time by the forelock" and remedy many of the existing defects in her school buildings during the holiday season. The improvements as mapped out by C. H. Bishop, Superintendent of School Buildings, include the replacing of all wooden partitions by brick walls, the removal of wooden stairways and the installation of iron ones, the thorough fireproofing of all basements and the introduction of metal doors. Fire escapes, however, are evidently still regarded as being quite unnecessary and representative of wanton extravagance.

TWO THOUSAND POUNDS ANNUALLY, says The Slate Trade Gazette, of Hull, Eng. is spent annually in painting the Forth Bridge, to protect the metal.

* * *

AN INTERNATIONAL exposition is contemplated, to be held in Brussels, which, while it will be of a very general nature, will be largely devoted to electrical matters. A special hall will be devoted to the exhibition of small motors and appliances made use of in household practice. The exhibition ground will occupy 200 acres adjoining the Bois de Cambre.

* * *

A SUBMARINE VESSEL recently built in France for sponge fishing is said to have proved successful in trial manoeuvres. It has a cylindrical steel shell about 16 ft long by 5 ft. in diameter, and with rounded ends. This shell is not equipped with propelling machinery, but is manipulated from a tender and only fitted with submarine lamps and sponge grapples.

* * *

THE NATIONAL ARCHITECTURAL EXPOSITION for the United States, the first annual affair of its kind in that country, will be held during the week of September 14 to 19, at Madison Square Garden, New York City. The features will be exhibits pertaining to architecture, engineering, painting, sculpture, the trades, manufacturing and craftsmanship.

* * *

SAND-BLAST CLEANING of the steelwork of the new high-level bridge at Newcastle-on-Tyne was tried during the erection of the structure and found to cost 4.32 cents per square foot, or three times the cost of hand work. The engineers for the contractors found there were difficulties in working on a large scale, which prevented the method from being used for more than experimental work.

* * *

IN AN EXAMINATION of defective foundations at the Mt. Royal water works pumping station, Baltimore, it was shown that in the poorest concrete there was practically no cement while in the best to be found the mix was 1 to 11. Specifications called for 1 part cement to 7 parts of other materials. Thus the cement was able to prove an alibi, but as usual was made defendant before the matter was investigated.

* * *

A SEA WATER PROOF CEMENT, or ore cement, is being manufactured at Hemmoor, Germany, a small village on the Oste river, about fifty miles from Hamburg. It is produced under the German patent No. 143604 and is called Erzcement "Aegir." The product, it is claimed, is of especial value for works constructed in sea water, in tunnels, etc. The raw materials used in its manufacture are: (1) pure chalk, that is, chalk containing 99½ to 100 per cent. of pure carbonate of lime; (2) roasted flint stone, very finely ground; and (3) finely ground ferric oxide.

* * *

AFTER A SERIES OF EXPERIMENTS extending over fourteen years, it is stated that Prof. Spencer B. Newberry, one of the most eminent authorities on cement in the United States, has perfected a process for the manufacture of a pure, white Portland cement which is equal in strength, setting and hardening qualities to the very best gray Portland cement on the market, and that mixed with white sand, crushed white quartz, ground marble or ground white limestone, it will produce a brilliant white concrete suitable for every character of finish and decoration at but little more cost than that of ordinary Portland cement concrete.

A MOVEMENT IS UNDER WAY for the construction, equipment and installation of a waterworks system in Saigon, Cochin China. The Chamber of Commerce of that city recently made an announcement relative to the specifications for this project.

* * *

NEW ZEALAND AND AUSTRALIA both offer a ready market for building stone from Canada, particularly for slates. In a communication to the Department of Trade and Commerce, J. S. Larke, Canadian Trade Commissioner at Sydney, states that if the deposits of this article in British Columbia were developed and quarries of suitable material were opened, the product would find a brisk demand at either of these places.

* * *

AN INGENIOUS MATHEMATICIAN has figured out an interesting proposition, using as a basis the amount of concrete that will be consumed in constructing the locks of the Panama Canal. This vast amount of concrete he figures would suffice to construct 22,842 city houses, two storeys and basement in height, 30x30 ft., each containing eight rooms and having concrete floors and roof. Allowing each of these homes a 75-foot lot, they would make a continuous street from New York to Philadelphia, with enough houses left over to make a row on one side of the street from Philadelphia to Washington.

* * *

BRAZIL'S IMPORTATION OF CEMENT in 1906 was nearly 100 per cent. greater than in the preceding years, amounting to about 750,000 barrels, valued at \$2,180,000. Of this amount Germany supplied \$954,000 worth, Belgium \$566,000, Great Britain \$344,000 and France \$302,000. The demand for cement is constantly increasing, due principally to the extensive work that is being undertaken in the construction of hydraulic power plants, harbor improvements, bridges, improvement to sewerage systems and other similar enterprises. The price for the best grades averages about \$3.60 per barrel in large quantities.

* * *

A SINGLE CABLE ROPEWAY divided into a 13,100 ft. and a 9,000 ft. section has been built at the Asturiana mines in Spain. The total fall is 2,235 ft. in favor of the load, and the single rope used both for supporting and hauling, carries from 30 to 35 tons per hour. The fall, according to The Engineer, London, is more than sufficient to run the ropeway, and the surplus power is absorbed by two water regulators, which, while allowing a great variation in the speed of the line, keep constant any speed desired without the use of friction brakes and attendants. A powerful hand brake is used for starting and stopping the line. The buckets hold 700 lb. of ore each. Steel towers, some as high as 82 ft., support the line. The maximum span is about 900 feet.

* * *

SEWER TUNNELS about three miles long have been driven in Hamburg, Germany. A 9-ft. 10-in. circular tunnel was driven with a shield without air pressure at about \$81 per foot, a 7-ft. 10-in. tunnel was driven by ordinary methods without air pressure at \$31.60 per foot and with air pressure at \$49.50 per foot. A 7-ft. 10-in. tunnel was driven with a shield and air pressure at \$66.50 per foot. The tunnels were lined with brickwork instead of cast-iron segments. Great difficulty was experienced with the air pressure, for if it was sufficient to permit work in the upper chamber of the shield, the water rose in the lower chamber, and when extra pressure was applied to keep the lower chamber dry, the air immediately escaped upward through the soil.

AS TO WHETHER SAND is a mineral is a question that has been agitating the Irish courts recently. By a deed made in 1672 a grant of the land of Breachville and Derry, comprising in all about 480 acres, was made in fee simple, with reservation of the mines and minerals. The Irish Court of Appeal has, overruling the decision of a lower court, now declared sand not to be a mineral within this reservation.

* * *

A RESPONSIBLE CORRESPONDENT at Glasgow, reports that a local engineer has astounded Clyde shipbuilders by producing a small rotary turbine engine, little more than a foot in diameter, capable of developing forty horsepower. The new turbine will be known as the Corthesy, and its Swiss inventor claims that it will revolutionize turbine propulsion. Only two blades are used, as compared with many hundreds in each of the Cunard turbines. The new turbine is to be fitted on board an experimental torpedo boat, and the inventor asserts that it will produce a speed hitherto unknown. All the necessary capital to float a company has been eagerly subscribed.

* * *

FIFTEEN BRIDGES WITH STEEL ARCHES of 500 feet or over have been constructed up to the present time, viz: Hell Gate, New York City, railway, 1,000 feet; Niagara, highway, 840 feet; Vious, France, railway, 721 feet; Bohn, Germany, highway, 614 feet; Dusseldorf, Germany, highway, 595 feet; Ludwig I, Bavaria, highway, 564 feet; Mungsten, Germany, railway, 558 feet; Niagara, lower arch, railway and highway, 550 feet; Garabit, France, railway, 541 feet; Bellows Falls, Vt., highway, 540 feet; Pia Maria, Portugal, railway, 525 feet; Eads bridge, St. Louis, railroad and highway, 520 feet; Grunenthal, Germany, railroad and highway, 514 feet; Washington bridge, New York, highway, 500 feet; Zambesi, South Africa, railway, 500 feet.

* * *

WORK IS PROGRESSING actively on the right of way of the Grand Trunk Pacific at Prince Rupert and eastward. Final instructions have been issued by Vice-President Morse to secure extra men to rush to completion the 160 miles of roadway which will comprise the extension, and the contractors expect to have the grading in full swing shortly, employing an army of between 5,000 and 6,000 men in carrying out the work. The heaviest work on the entire line will be encountered on the 100 mile section between a point ten miles east of Prince Rupert and Kitsalsa Canyon, where practically the entire distance of the grade will have to be blasted out of the solid rock. About 500 cars have been required in transporting the contractors' outfit to Vancouver. The improvement will cost \$10,000,000.

* * *

IT IS NO UNCOMMON SIGHT to see a great bucket running out on a single cable and emptying earth into a gorge or some other place to be filled in; but it is not frequent that we see a railway built on cables. Not far from Cleveland, however, some engineers have been using a track built in this way. It was necessary to fill in a section of very marshy ground, and as the soil was too soft to support the weight of a track, two cables were stretched high up in the air across the marsh. Upon these cables ties were laid and fastened down; then a narrow gauge track was laid upon the ties and the engineers were ready for business. Small locomotives drew whole trains of cars loaded with earth out to the desired point, where the earth was dumped. In another case a similar railroad was built over a gorge whose bottom was solid, but it was found that the cable railway was cheaper for the purpose than any other that could be employed.

SAWING A BUILDING IN TWO is a curious operation now in progress in the Rue St. Roche, Paris. One half of the structure is occupied by a branch factory of the Compressed Air Company. The excessive noise and vibration from the machinery caused considerable annoyance to the tenants in the other half, and the company desiring to abate the nuisance, decided after consulting an architect that the most feasible course would be to cut the partition wall in two from top to bottom. A specially constructed fine steel saw, electrically operated, is being used in this novel undertaking. As the wall is unusually thick the stability of the building will not be endangered. The task will take about a month, and when it is completed there will be an aperture of about an inch between the bisected walls.

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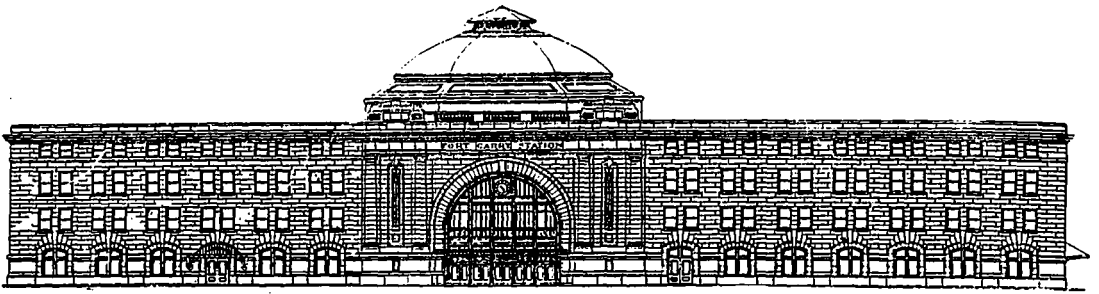
MANCHESTER, ENGLAND, HAS PASSED a new building by-law, the main object of which is to prevent the spread of slums and to promote the health and comfort of the people of that city. It will secure to the houses of the future more air space, wider streets, and an absence of long, monotonous rows. Hereafter no new street will be less than fourteen yards wide, an increase of two yards on the minimum width. Main roads must be 50 feet wide instead of 36 feet, the present minimum. No block of houses must contain more than ten structures of one pattern, nor cover a frontage of more than 100 yards. At the back of each cottage there must be an area of not less than .250 feet, an advance of 100 feet. No blind alleys will be allowed in future, and all passages must lead to main streets. The new measure is not retroactive and therefore does not affect building erected before the by-law was enacted.

* * *

THE PREVENTION OF BUILDING ACCIDENTS is attracting official attention in Washington, where the floors of an apartment house under construction recently fell, killing two men and injuring five others. The cause of the accident is uncertain, although it seems probable that the flooring was insecurely supported while being put in place, or the brick walls were so green as to yield under the load of the floor and allow the ends of the latter to drop. The cause of the accident is not so important, however, as the apparent determination to secure legislation to reduce the probability of such accidents in the future. Suggestions have been made that only licensed architects and contractors should be allowed to design and erect buildings in the district, but before passing such a law the Prussian building regulations for the same purpose should be studied.—*Engineering Record.*

* * *

A TWENTIETH CENTURY HOME has been built at Carrollton, Ill., by F. M. Sinsabaugh. It is two storeys high, 34x30 feet, of concrete block construction and cost \$3,500. The style of architecture is of the substantial mission type. A feature of this domicile is that it has no chimney. There is no ashes, no soot, no dangerous gases, nor other elements of the kind that add to the discomfort of mankind. Steam heat is carried to the house from a central plant by means of underground pipes. Electricity, in addition to being used for illuminating purposes, serves also for cooking all food. A turn of a switch and the electric teakettle is singing over invisible heat. With the same ease the frying pan, cereal cooker, griddle, broiler, vegetable cookers, etc., are made ready to do their share of the work of preparing a meal. The flat irons and other kitchen devices are of the electrical variety and the house is wired for electric heat in case anything should happen to the steam heating system.



FRONT ELEVATION OF FORT GARRY STATION TO BE ERECTED AT WINNIPEG. WHEN COMPLETED IT WILL BE ONE OF THE FINEST PASSENGER DEPOTS IN THE WORLD BOTH IN ARRANGEMENT AND GENERAL APPOINTMENT. WARREN & WETMORE, ARCHITECTS.

FORT GARRY STATION.---Model Passenger Depot and Local Freight Terminal to be Constructed at Winnipeg.---An Important Railway Development in Which an Intricate Problem in Engineering Has Been Solved. By J. D. MATHESON

One of the most important projects undertaken this year in Canadian railway development, will be the establishing of a joint terminal at Winnipeg by the Canadian Northern and Grand Trunk Pacific Railways. With the driving of the concrete piles, work on this proposed improvement has actively commenced and when completed, it will be the most modern terminal on the American continent, if not in the entire world. It will occupy the site of old Fort Garry, from which the station building proper will derive its name.

The great significance attached to this huge enterprise cannot be overestimated. It marks a history making epoch in the growth of our western country and in the exploitation of our natural resources. It tells of the prodigious proportions assumed by one railroad in the period of ten years, and of the rapid strides of another in its transcontinental march. Retrospectively and prospectively, it speaks most glowingly of the country's advance and the implicit faith reposed in the future greatness of Canada as an industrial and commercial power.

Aside from these engaging facts, the new terminal deals with an engineering problem of great magnitude, involving an extensive system of trackage, the erection of an imposing depot, of train sheds, freight houses, etc., and the construction of subways.

Believing that the readers of "Construction" will be interested in the admirable manner in which this intricate problem has been worked out, we publish in full an article from the Engineering Record, written by Mr. J. D. Matheson, assistant engineer to the architects, Warren & Wetmore, of New York City.—Editor.

PLANS have been completed and contracts are about to be awarded for the construction of the Fort Garry passenger station and a local freight yard at Winnipeg, Manitoba, for the joint use of the Canadian Northern and the Grand Trunk Pacific Railways. The ground to be occupied by these facilities is an area of 70 acres, located within half a mile of the center of Winnipeg, bounded by the Red river on the east, the Assiniboine river on the south, Main street on the west and Water street on the north. The site derives its name from old Fort Garry, which was built here in 1822, to protect the trading post established by the Hudson Bay Co.

The present passenger station of the Canadian Northern Railway, which is located near the corner of Water and Main streets, has been entirely outgrown by the rapid growth of Winnipeg, and the present freight shed is in poor condition. Adjacent to the freight house is a team yard of 150 cars capacity. An area of about 10 acres at the southeast corner of the plot is now occupied by the engine houses, car and machine shops and store houses of the Canadian Northern. A new layout

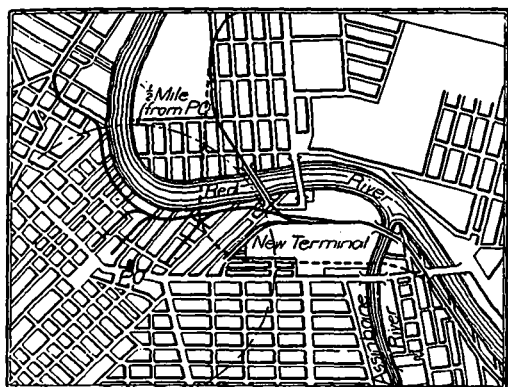
of engine and car facilities to replace these has already been constructed at the general yards of the railway company, one mile west of Main street. The railway companies have acquired at a large outlay the balance of the property within the area above described, with the exception of a few lots fronting on Main street. As the area is at present bisected by Broadway, leading to the Broadway bridge over the Red river, it was evident that the property could never be developed for railway terminal purposes, unless Broadway was closed between Main street and the river. This the city authorities were unwilling to do, owing to the fact that the Broadway bridge was recently constructed to accommodate vehicular and pedestrian traffic between Winnipeg and the town of St. Boniface, a rapidly developing community on the other side of the Red river. A compromise agreement was reached between the city and the railway companies allowing the location of the passenger station and office building on Main street opposite Broadway, thus closing the street, in consideration of which the railway companies must provide street connections between the east end of Water street and the Broadway bridge. It had previously been the intention of the company to locate the new station building at the corner of Main and Water streets, on practically the same site as the present station, which would be somewhat more convenient, because closer to the centre of the business district at Portage avenue and Main street.

The designers of the proposed terminal were instructed that they might disregard all existing facilities, including even the river bridges, and design a layout, using the total acquired area of property as noted above for a passenger yard, train shed, local delivery yard and freight houses, having a maximum capacity and offering the greatest advantage from the standpoint of operation and convenience to the public. The only predetermined feature was the location of the station building opposite Broadway.

The Canadian Northern Railway commenced operation in 1896, with about 100 miles of line. There are now 3,800 miles in operation and the lines are being rapidly extended. The traffic is increasing at such a rate that the past records of traffic handled were of little use in determining the probable future business to be provided for. The Grand Trunk Pacific Railway, being an entirely new road, mostly through new and undeveloped country and not at present in operation, offered no means of determining the requisite capacity, other than forecasts of the probable new business to be developed. It was at first intended to have the terminal site provide for the passenger coach yard and engine houses of both companies. After several alternate layouts had been made, it became evident that an ideal

C O N S T R U C T I O N

layout for the passenger yard, trainshed and the local freight delivery yards and freight houses, of a capacity which was estimated would be required in the near future, could be made only by devoting the entire area to these purposes. Accordingly, the Canadian North-



MAP SHOWING THE LOCATION OF PROPOSED TERMINAL AND CONTIGUOUS DISTRICT.

ern Railway has provided for its engine and coach facilities at the general freight yard, one mile west of Main street, in conjunction with its car and machine shops and storehouses. The Grand Trunk Pacific Railway has likewise provided similar facilities at its general yard now under construction, about three miles east of the new terminal.

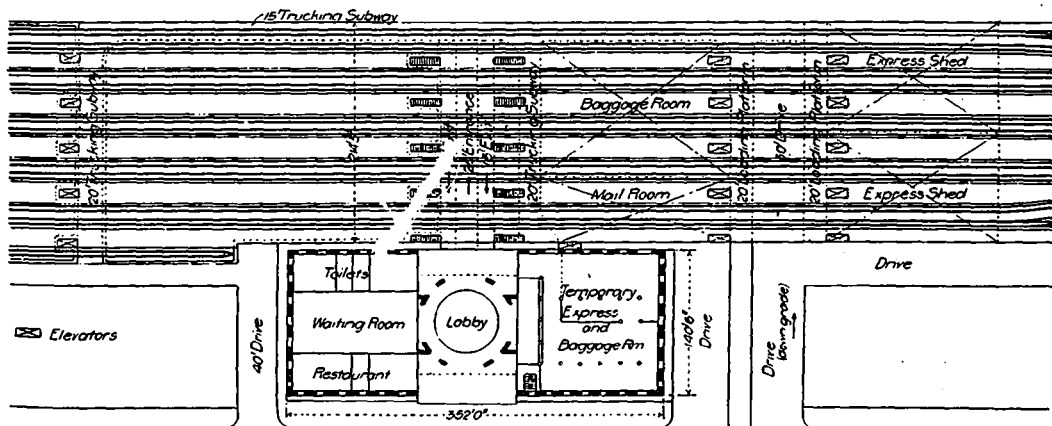
The first design contemplated a stub-end passenger station using a wye track across the Red river at St. Boniface and backing all trains across a new bridge over the Red river and into the station. The latter was laid out at an angle of about 45 degrees with Main street, the local freight yard and freight houses being between the trainshed and Water street. Using the same type of stub-end terminal, an alternate layout was made having the trainshed parallel to Main street, with the local delivery yard and freight houses adjacent to and reached by driveways from Water street. In this case the wye would be located directly south of the station, and therefore necessitate bridges over both the Red and Assiniboine rivers on the same straight line. The use of a wye on the St. Boniface side would have required

the abandoning of the present main line of the Canadian Northern Railway, about a mile west of Main street, crossing the Red river on a new bridge at that point and using an entirely new main line connecting with the present main, about 1½ miles east of the terminal. The advantages of this type of terminal were its avoidance of grade crossing of streets near the terminal, the suitability to the severe winter climate of Winnipeg, since the trainshed would be enclosed on three sides, and the accessibility of the platforms from the passenger concourse. These advantages were offset, however, by the fact that the distance between the wye and the terminal would be at least half a mile, thereby rendering impossible the efficient operation and dispatch of trains during busy periods and the necessary increase in running time of through trains due to this long back-up. These reasons led to the adoption of the through station type of terminal, as shown in the plan herewith, which is believed to include all of the advantages claimed for the stub-end terminal, and at the same time to afford efficient operation for both through and local trains.

Passenger Station.

In the through station layout, which has been finally adopted, the approach tracks are elevated over the intersecting streets, and are sufficiently above the main floor of the station to allow a passenger entrance subway beneath. There are eight through passenger tracks with adjacent platforms and two separate open-running tracks at the rear for through freight trains. The platforms are 20 feet wide and can be made 1,650 feet in length. By means of this great length and the use of the double crossovers, as shown, each track is capable of handling two trains of 11 cars each during periods of heavy traffic. The total capacity of the platforms will be two hundred 70-foot cars. The platforms will be of reinforced concrete raised 12 in. above the base of rail. Between each pair of tracks there will be three lines of pipe for water, steam and gas.

Passengers going to trains pass from the rear of the ticket lobby, which is on the level of Main street, into a subway 50 ft. wide with 10-ft. headroom, having 7-ft. stairways on each side leading up to each platform. The subway is so arranged by means of railings and gates that there will be no interference between passengers going to trains with those coming from trains. The elevation of tracks will be 10 ft. above the level of the main floor of the station, and a slight ramp



PLAN OF GROUND FLOOR OF PROPOSED STATION AND ADJACENT TRACKS, SHOWING THE ARRANGEMENT FOR HANDLING PASSENGERS, BAGGAGE AND EXPRESS. A SUBWAY FOR PASSENGER SERVICE, HAVING STAIRWAYS AT EACH END, CONNECTS THE LOBBY OF STATION WITH TRAIN PLATFORMS

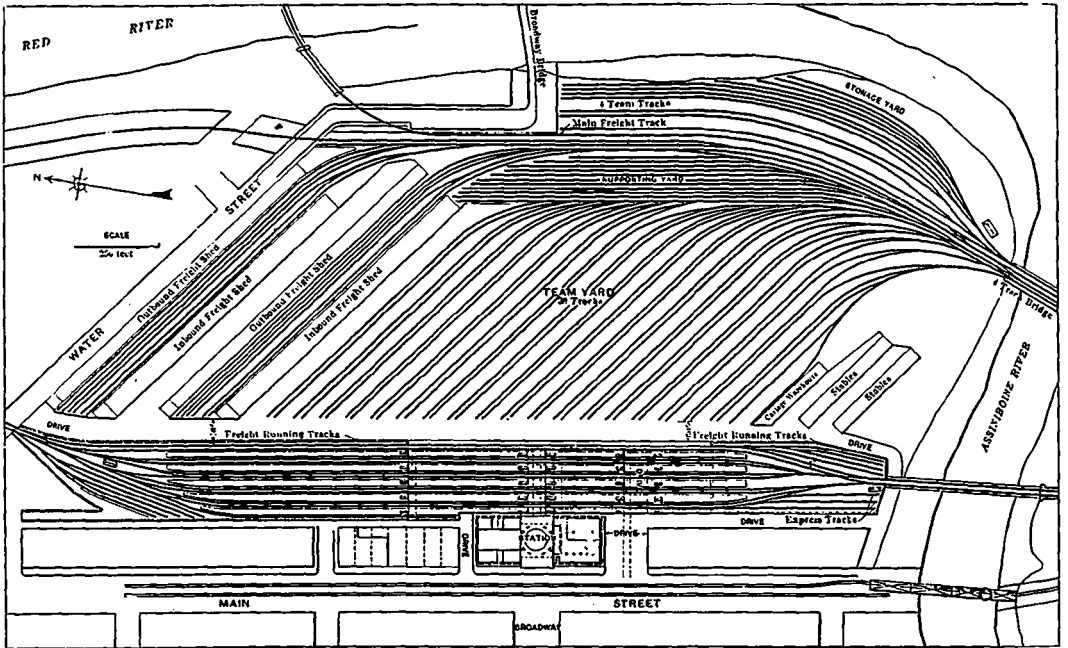
C O N S T R U C T I O N

down from the rear of the ticket lobby to the floor of the subway allows the clear headroom of 10 ft.

For the present the baggage and express business will be handled in the south wing of the station building, but at some time in the future these facilities will occupy space beneath the tracks, which will be carried by steel viaduct construction. The south wing of the station will then contain a baggage checking counter for the convenience of passengers, with pneumatic tube connections with the baggage room, and the remaining space can be used for an additional waiting room and for offices. All of the sheds beneath the tracks will have a clear headroom of 10 ft. They will be approached from a 50-ft. driveway, 3 ft. 6 in. below the floor of the sheds, reached by a 4 per cent. grade down from Main street, immediately south of the station building. On the south side of the driveway will be the express

street on a double track plate girder bridge, allowing an under-clearance of 14 ft. for the street. It will then cross the Assiniboine river on a new double-track steel truss bridge 400 ft. in length, one span of which will be a swing bridge, in accordance with government requirements. The east approach starts from the present main line at the St. Boniface station and rises on an earth embankment with the same gradient as above to the Red river, which it crosses on a new double-track steel truss bridge 900 ft. in length, containing one draw span. It then crosses on a steel plate girder bridge the Winnipeg Transfer Railway, Mill street, Notre Dame avenue and Water street. The proposed base of rail will be practically level from the Red river bridge to the Assiniboine river bridge at elevation 766, which is approximately 10 ft. above the level of Main street.

At each end of the passenger layout there will be a



GENERAL GROUND PLAN OF PROPOSED TERMINAL, SHOWING THE LOCATION OF STATION, PASSENGER TRACKS AND LOCAL FREIGHT YARD.

sheds, one for each road, with an available floor space of 15,000 sq. ft. in each shed. On the north side will be the baggage room with an available floor space of 20,000 sq. ft. and a mail room with an area of 10,000 sq. ft. On both sides of the Drive there will be a row of electric elevators, one to each platform. To supply the eastbound trains at points north of the station building, a 15-ft. trucking subway runs parallel with the tracks on the outside of the passenger trainshed to a cross subway, likewise provided with elevators to each platform. By these arrangements there will be no necessity of trucking of any kind on the platforms, thereby affording the passengers the unobstructed use of same. This system of handling baggage, express and mail beneath the tracks, with elevators to each platform, is similar to that now in successful operation at some of the largest passenger terminals in the United States and Europe.

The west approach to the passenger tracks at the station will start from the present main track on the north bank of the Red river, about 2,000 ft. west of Main street, and ascending on an earth embankment at a maximum ruling gradient of 0.4 per cent. will pass over Main

signal tower controlling all switches by the electro-pneumatic system. All track work will be of first-class construction, with 80-lb. rails and gravel ballast.

Station Building.

The station building will be an imposing structure, built entirely of stone, having a length of 350 feet along Main street and a width of 140 feet. The height of the larger portion of the building will be three storeys and basement, with an elaborate central portion surmounted by a dome rising 100 ft. above the street level. The main entrance will be off Main street at the centre of the building. The main floor is at street level and will be devoted entirely to station facilities, and its arrangement is considered exceptionally good for convenience to passengers and facility of operation.

Passengers going through the main entrance pass through a vestibule and arrive directly in the ticket lobby, which is a clear circular space 90 ft. in diameter entirely unobstructed by columns, seats or booths of any kind. This lobby is directly beneath the dome and will be exceptionally well lighted on all four sides by large arched windows. On the east and west sides these windows open through to the front and rear walls of the building.

and on the north and south sides to the large open courts. The ticket booths are arranged on the south side of the lobby, and passengers, after purchasing tickets, go directly to the baggage checking counter at the rear of the booths. They may then pass out from the lobby through the rear vestibule to the subway under the tracks, from which stairways lead up to the platforms overhead. On the north side of the ticket lobby spaces are provided in each corner for telephone and telegraph booths and newspaper and book stands.

The waiting room lies north of the ticket lobby, this arrangement being adopted so as to secure a quiet waiting room, as all passengers going to and from trains may pass directly through the unobstructed lobby without entering the waiting room.

Adjoining the waiting room on the west side facing Main street are a lunch room and a restaurant, both of which have separate entrances off Main street, for handling the local business direct. A carriage entrance is located at the north end. The central portion of the waiting room is covered over by an arched skylight, 40x100 ft., over which there is an open court, thus providing the waiting room with excellent light. The seats will be heavy oak benches of the movable type. The interior of the waiting room and the ticket lobby will have the effect of stone construction throughout, the wainscoting being of marble 6 ft. high and the floors of terrazzo. All stairways will be of iron with marble treads.

For the present the entire south wing of the main floor will be occupied by the baggage and express rooms. In the future, when more space is required, both the baggage and express will occupy space beneath the tracks and platforms as above described. A driveway for baggage and express waggons is provided at the south end of the building, 3 ft. 6 in. below the level of the main floor. It is reached by a short 5 per cent. grade down from Main street, and the waggons are loaded and unloaded on an 8-ft. platform outside the building wall. The baggage and express will be handled by hand trucks between the building and the train platforms, using the trucking subway and the elevators above described.

The entire north wing of the basement, the floor of which is 15 ft. below the level of Main street, is devoted to immigrants. There is a waiting room with an area of 10,000 sq. ft., a laundry and toilet and bath facilities for men and for women. The basement can be reached from the waiting room, from the trains or from Main street by separate stairways.

The second and third floors will be occupied by the offices of the two railways and by the National Transcontinental Railway. These offices are on either side of the corridor, the interior row of offices in each wing facing on the open court. Each floor provides an available office space of 25,000 sq. ft., exclusive of corridors, stairways, elevators and toilets. Provision has been made in the design of foundations and the steel structure of the building for the future addition of six office floors so that the building will then be capable of providing 200,000 sq. ft. of office room. The building is so designed that there will be no necessity of artificial lighting in any portion of the day. The heating will be done by steam, indirect system, with mechanical ventilation. The column loads will be supported at the foundations by Raymond concrete piles, this being necessary on account of the heavy column loads and the character of the blue clay underlying the city.

Local Freight Terminal.

The problem of obtaining a layout for local freight delivery yards and freight sheds, which would give sufficiently large team track capacity, long freight sheds and equal facilities for both roads, which would allow great accessibility for teaming, and could be properly

worked by switching, was complicated by the peculiar shape and conditions of the ground, and by the fact that the throat of the yard had to be located on a bridge across the Assiniboine river. The plan finally adopted gives the greatest car capacity, as well as the greatest facility of operation and access to teams of several tentative layouts which were drawn up and studied.

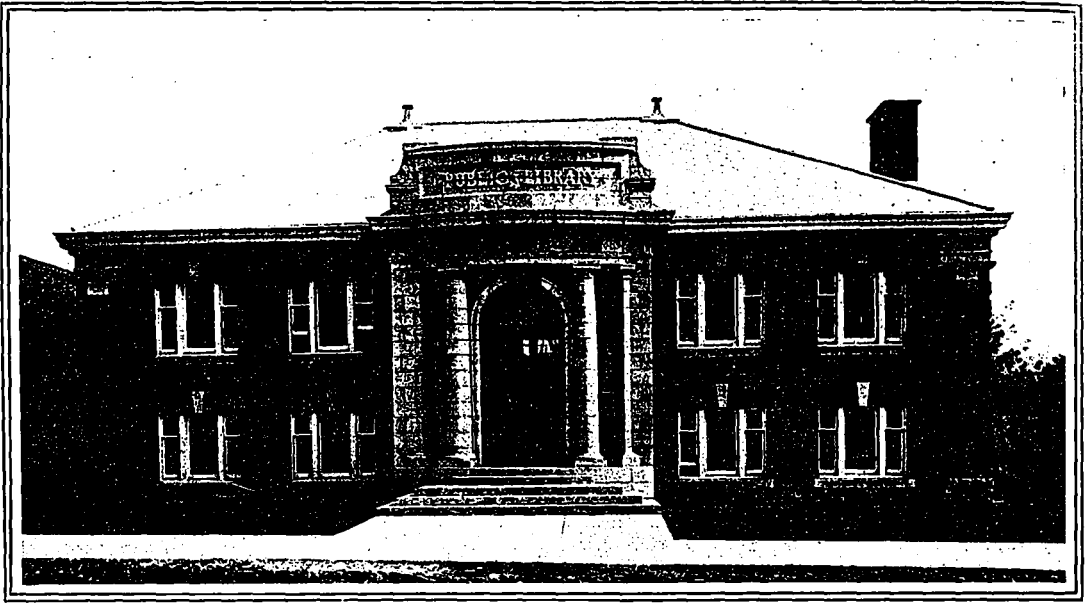
The team yard contains 42 tracks of the total capacity of eight hundred and thirty 40-ft. freight cars. The switching leads to the team yards are divided by cross-overs into three separate portions, each controlling 14 tracks, so that three switching engines may be worked at the same time. The usual length of team tracks is 800 ft. with a capacity of 20 cars each. The team driveways will be of stone block construction on a 6-in. concrete base. This construction is made necessary by the treacherous character of the clay soil, which when wet, will heave and swell, causing an ordinary light pavement to break and disintegrate. The driveways are 30 ft. wide between curbs, the tracks being on 40-ft. centres across the driveway. Adjacent pairs of team tracks are on 12-ft. centres. Tapping the ends of these driveways is a paved avenue from 60 to 70 ft. wide, running the full length of the yard. This avenue is accessible from Water street on the north, passing beneath the bridge carrying the east approach overhead, and from Main street near the Norwood bridge on the south passing beneath the south approach. The surface drainage from all the driveways will be by means of gutters on each side of each driveway, ending at catch basins, located at the ends of the driveways on the east side of the wide avenue. These catch basins discharge into a vitrified line of tile pipe running beneath the drive and discharging into the Assiniboine river.

The freight shed facilities consist of two inbound and two outbound sheds, one set for each road. The outbound sheds are 40 ft. wide and 1,000 ft. long, each served by four tracks. The inbound sheds are 50 ft. wide and 900 ft. long, each served by two tracks. Between these inbound and outbound tracks are 10-ft. transfer trucking platforms. Each road will therefore have a freight shed track capacity of one hundred and forty-four 40-ft. cars. The freight sheds will be one storey high, with steel columns and roof trusses and sliding doors on both the track and team sides, so that any portion of the shed may be opened.

The freight offices will be located above the ends of the sheds and connected by a bridge 40 ft. wide, spanning the intermediate tracks and connecting the outbound and inbound sheds. The freight agent's office will be located in this bridge, where he can view the loading and unloading of cars.

The switching leads to the freight sheds are of such length that the tracks may be switched without the engine having to cross the bridge at the throat of the yard. The supporting yard has a total capacity of 385 cars. This yard is for the reception and storage of arriving trains of loaded cars to be switched into the team tracks, and for departing trains of empty cars which have been switched out from the team tracks. A connection will be maintained with the present Winnipeg Transfer Railway track, along which are located numerous industrial sidings, and over which cars for transfer with the Canadian Pacific Railway are handled. This connection will pass beneath the east approach of passenger tracks near Lombard avenue. The present main track crosses Assiniboine river on a wooden draw bridge, which will be replaced in the new scheme by a steel 4-track bascule bridge having two separately operated leaves. The Red river is crossed by the present main track on a comparatively new steel truss bridge. This bridge will be maintained for the proposed new layout and used mostly by the Grand Trunk Pa-

(Concluded on page 45.)



PUBLIC LIBRARY BUILDING RECENTLY COMPLETED AT PICTON, ONT. THE SIMPLE LINES OF THE EXTERIOR ARE RELIEVED BY THE DORIC PORCH WHICH GIVES A DIGNIFIED AND PUBLIC ASPECT TO BUILDING. PEDEN & MACLAREN, ARCHITECTS.

PICTON'S NEW LIBRARY.---One of that Class of Buildings Which Contributes to the Educational Advantages and Social Life of the Smaller Cities and Towns.---General Arrangement Well Worked Out.

IF PHILANTHROPY has done no more for the smaller cities and towns, it has at least been generous in endowing many of these places with suitable structures for their public libraries. The total amount spent annually in benefactions of this kind runs into the millions, and, judging from the numerous library buildings projected throughout the country at the present time, it would seem that the work of establishing structures for this purpose has only fairly commenced.

Hardly a day passes without some library board either soliciting a donation for a new building or recommending the acceptance of a proffered sum which will provide for an improvement of this character and municipal councils in various sections are engaged with the consideration of suitable sites. In this manner, the erection of library buildings has become sort of an endless chain and the workmen employed on these structures, if taken collectively, would mean an industrial army of a tremendous size.

Aside from the advantages obtained in the way of better facilities and accommodation, the library building, which is to-day being erected in the smaller cities and towns, offers a much higher standard of architecture than is usually found in these places. In every instance the buildings are substantially constructed, the design and plan being worked out to suit local conditions.

The public library at Picton, Ont., which was recently completed, is one of the latest additions to this particular class of buildings. It is the gift of Mr. Carnegie, and was designed by Architects Peden & McLaren, of Montreal. The problem worked out by the architects was a most interesting one as it involved not only the housing of a valuable collection of books, but also of providing accommodations for lecture, committee and general meeting rooms, and a place where the townspeople might gather

to exchange the time of day. To this was added the necessity of keeping the cost of the building within \$12,500.

The site is well selected both for convenience of access and out look. The lot slopes down from the street and permits an unobstructed view across the valley, toward the south, from the verandahs at the rear.

The building has a frontage of 56 feet and a depth of 45 feet, with a clear space on all sides and an extensive tract in the rear, which will eventually form a garden in connection with the library.

It was decided to adopt a modern expression of English Renaissance as the style best suited to give dignity and public character to the building, and at the same time to avoid pretentiousness.

The central feature of the building is a dignified porch of the Doric order, extending through the two stories and forming the main entrance. The walls are constructed of Picton brick, specially burned and selected, the darker shades predominating and giving a rich purple effect to the exterior. The stone trimmings were obtained from the Kingston quarries and the roof covering is of asbestos shingles.

Inside the main doorway the vestibule and staircase are combined, leading to the library above and the meeting rooms below.

The rooms of the library on the upper floor are so arranged as to come under the immediate supervision of the librarian. The stack room and the shelving in the board room will accommodate about 9,000 volumes. The general reading room, with its verandah for summer use, and fireplace for the cold days, is sufficiently spacious to comfortably accommodate the general readers. As the children use the library to a large extent, a room at the

end of the lobby has been assigned for their special use. A work room and ladies' toilet room are arranged off the stack room.

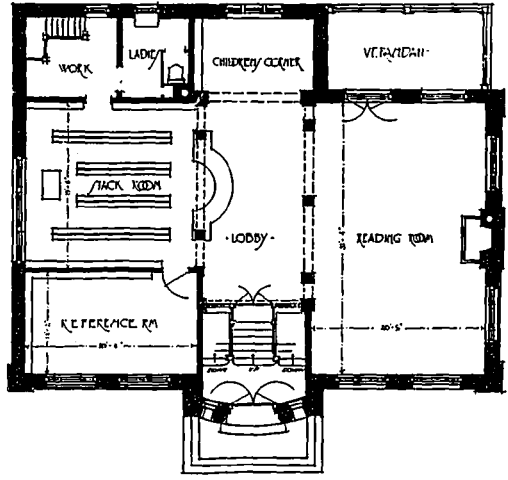
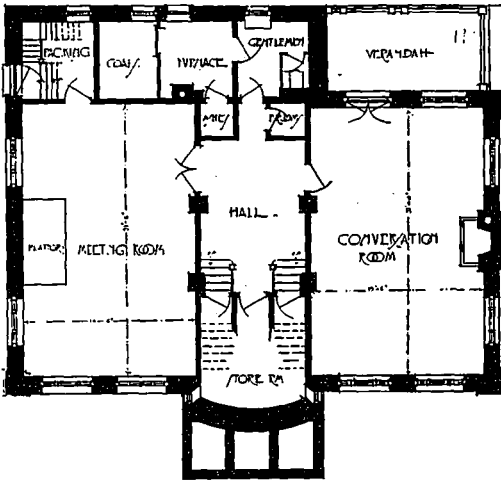
All finish and furniture throughout this floor and also the woodwork of the entrance is of selected red oak. The books are stored in metal stacks. Cork matting has been selected as the most comfortable, noiseless and sanitary material obtainable for the purpose of floor covering.

The lower story is occupied by a lecture room and a conservation room, one on either side of a central passage, and the furnace room and men's toilet, which are located in the rear.

Simple and effective wall treatment has been obtained by the use of stained burlap wainscoting and tinted rough plaster walls and ceilings. The predominating tone of the upper story is a warm buff to harmonize with the brown stain of the woodwork. The most striking part of the color scheme is the conversation room. The woodwork is stained a dark green and the walls are of a rich terra cotta color. A large open fireplace, faced with red

At the north end of the new Assiniboine river freight bridge there will be located a signal tower, from which will be controlled by electro-pneumatic interlocking all the signals, switches and crossovers of the tracks entering the bridge. The sharpest curves used in the layout are 14 deg., 410 ft. radius. The frogs used are mostly No. 7 with No. 10 for main track connections and main crossovers. The track construction in the freight yards will have 60-lb. rails and gravel ballast. As each railway company will have its own cartage company to handle all trucking from the freight sheds, as well as a large amount from the team yards, there will be provided, adjacent to the team yard, a warehouse and two stable buildings, each of the latter to accommodate 200 horses. Each of the joint railways will use its own passenger coach yard, engine houses and shops, in conjunction with this terminal.

Due to the inevitable future development of the great northwest territory of Canada, Winnipeg, will in time, it is predicted, occupy the same important position as the railway centre of Canada, that Chicago now occu-



GROUND AND FIRST FLOOR PLANS OF THE NEW PICTON LIBRARY BUILDING, SHOWING THE ADVANTAGEOUS MANNER IN WHICH ALL SPACE HAS BEEN DISPOSED. PEDEN & MACLAREN, ARCHITECTS.

tiles, further adds to the general attractiveness and comfortable effect of this room.

FORT GARRY STATION.

(Continued from page 43.)

cific Railway trains for local freight running between this terminal and the general freight yard located about 3 miles east. The adjacent shore span will need to be reconstructed to meet the change in alignment of the running track. This track will pass over the east end of Water street on a plate girder bridge, the street being somewhat depressed for this purpose. The driveway across the Broadway bridge over the Red river will be maintained as at present. The west approach to the freight yard will use the same line and be at street grade the same as the present main track. The length of all switching leads for each part of the freight yard is such that no switching whatever will be done across Main street. The only traffic across this street will be that of trains of local freight between this terminal and the Canadian Northern Railway general freight yard, one mile west. All the through freight trains for both roads will be run on the proposed new overhead line, passing around the rear of the train shed on the two open running tracks.

pies as the railway centre of the United States. The officials of the joint railways and the architects have made this fact the leading consideration in the layout and design of both passenger and freight terminals. The plans have been so drawn that the above scheme of operation may be realized in the future development, though the initial construction will involve only that portion necessary to handle the traffic presented by the requirements of the present and of the immediate future.

The railway officials who co-operated for the construction of these joint terminals, and who personally rendered valuable assistance in the work of design, are: Canadian Northern Railway, Mr. Wm. Mackenzie, president; Mr. D. D. Mann, vice-president, and Mr. M. H. MacLeod, general manager and chief engineer. Grand Trunk Pacific Railway: Mr. Chas. M. Hays, president; Mr. F. W. Morse, vice-president and general manager, and Mr. B. B. Kelliher, chief engineer. Warren & Wetmore, architects, New York City, had charge of the design of both the station building and the yards and will supervise the construction. Mr. A. R. Whaley, manager of the Grand Central Terminal of the New York Central and Hudson River R. R., New York City, was consulted in regard to the practical operating features of the track layout. The engineering features were in direct charge of the writer as assistant engineer.

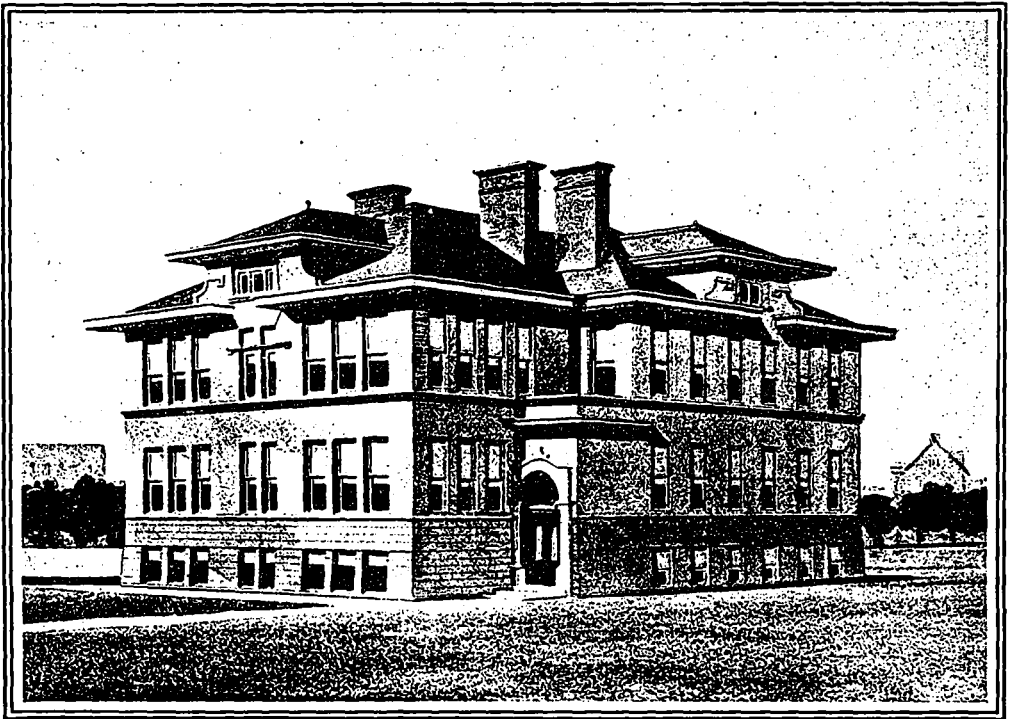
SCHOOL BUILDING CONSTRUCTION.---The Problem of Providing Suitable Structure in a Rapidly Growing Country Such as Canada---Present and Future Both to be Considered.---Some Good Examples in Schoolhouse Designs.

NO CLASS of building construction is engaging the attention of Canadian architects at the present time more than that of schools. Every country has constantly before it the problem of providing suitable structures for public schools, adapted to changing conditions, but in a rapidly growing country such as Canada, the ever increasing population makes these problems more difficult and of immeasurably greater importance, than in the older countries where the population is more settled. To avoid the necessity of the erection of temporary structures, which at the best are mere dangerous shells, school authorities are obliged to look into the future and measure the probable development of the community to determine the number of children that in the course of a reasonable period must be provided for, before they can intelligently pass upon plans for a permanent structure.

Much has been said in these columns relative to the danger of the use of inflammable materials and the im-

In plan it should be provided with large airy halls, wide staircases, high airy ceilings and adequate means of exit. It should be so planned that every room may be emptied at once without the least possibility of congestion in the passages to or from the stairways or entrance halls. A site sufficiently large to permit of a two storey structure should be selected. There is no community in which land is so valuable that it should become necessary to send children to class rooms higher in the air than two storeys. It is surely a peculiar state of affairs that renders it necessary to send our children to a school in which their lives are endangered by the fact that they must receive their early lessons in the third, fourth or fifth storey of a structure that had to be so constructed, because commercialism had placed such a high value upon the land, that a sufficiently large site could not be provided.

In construction the modern school building should be



DESIGN NO. 1.—COMBINATION PUBLIC AND HIGH SCHOOL BUILDING. THE ADVANTAGE OF A BUILDING OF THIS TYPE IS THAT WHEN A TOWN HAS GROWN SUFFICIENTLY TO AFFORD BOTH PUBLIC AND HIGH SCHOOL BUILDINGS, IT CAN, WITH FEW ALTERATIONS, BE UTILIZED SOLELY FOR PUBLIC SCHOOL PURPOSES.

portance of an intelligent plan in school building construction, and there is no class of structure in which more careful study should be given to plan, construction and materials than in school buildings.

In design the school building should show good taste. It should be simple and dignified. Its proportions should be intelligently worked out in every detail and every attempt should be made to eliminate useless ornamentation and meaningless decoration. The exterior color scheme should be cheerful, bright, attractive and rich, not cold and forbidding nor on the other hand gaudy and vulgar.

as nearly fireproof as circumstances permit and as attendant conditions demand. City school buildings should be as nearly fireproof as modern building science can devise. In smaller towns where there is not so much congestion comparatively safe schools may be constructed, if a fair amount of intelligence is used, along lines, while not absolutely fireproof, that may be termed semi-fireproof, at a very little greater cost than that of ordinary frame construction. Reinforced concrete has proven to be a most excellent construction that is well adapted to the smaller school building in the country town as well

C O N S T R U C T I O N

as a most excellent construction that is well adapted to the smaller school building in the country town, as well as to the larger building in the city, and the cost is very little greater than wood and brick. The brick schoolhouse may be made comparatively safe by using as little wood trim and interior finish as possible, and by plastering the interior walls with cement plaster on metallic lath, which forms a sheet of fireproofing on the entire interior of the building, thus protecting the wood beams and joists. The concrete block school house treated in the same manner makes a good building, that costs less than brick and a trifle more than frame construction. Another type of inexpensive semi-fireproof construction is the wood frame structure, cement plastered both inside and out on metallic lath. Excellent results may be obtained with the use of this method in the matter of design, and the cost is very little greater than unprotected wood frame construction.

In all school buildings it matters not of what they are constructed, the furnace should be enclosed in a room with solid brick or concrete fireproof walls in an isolated portion of the basement. Ventilation is one of the highly important problems that must be carefully dealt with in the preparation of every detail of the plans of a modern school building. The "little red schoolhouse idea" was a happy one for our writers of fiction, who wove around it many stories of the days of our grandfathers, but it looks well in the picture that hangs on the "parlor" wall, but modern conditions have rendered it worse than useless in actual use. We have learned that good ventilation is a most important factor in our physical and mental health and the young of to-day require plenty of fresh pure air in

the school room that they may be given every possible advantage, both physically and mentally, to fit them for the strenuous life before them.

Guided by these the general principles of modern school building design, the architect must proceed to plan his structure in accordance with the demands made upon him by local conditions, such as the number, size and location of class rooms, the shape of the site, its dimensions and location. In this matter the architect must be influenced by the school board and the principal.

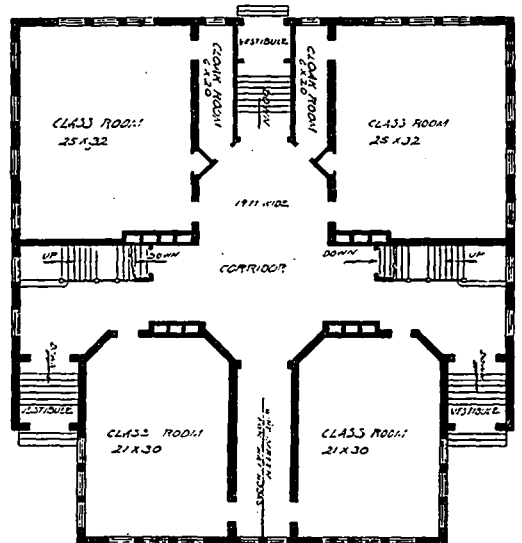
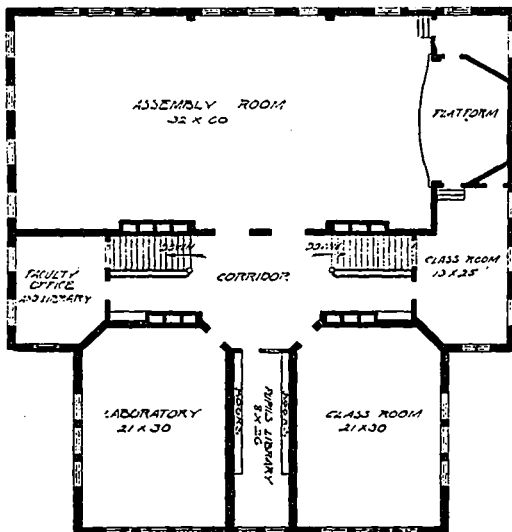
Realizing the interthis class of building construction, CONSTRUCTION has arranged to illustrate a number of school designs in a series which commences with this issue. We shall endeavor to select designs that are adapted to various conditions prevalent in towns of various sizes.

All three designs shown herewith may be executed in brick, concrete or cement plaster on metallic lath and are well adapted in plan and arrangement to the conditions they are designed to suit.

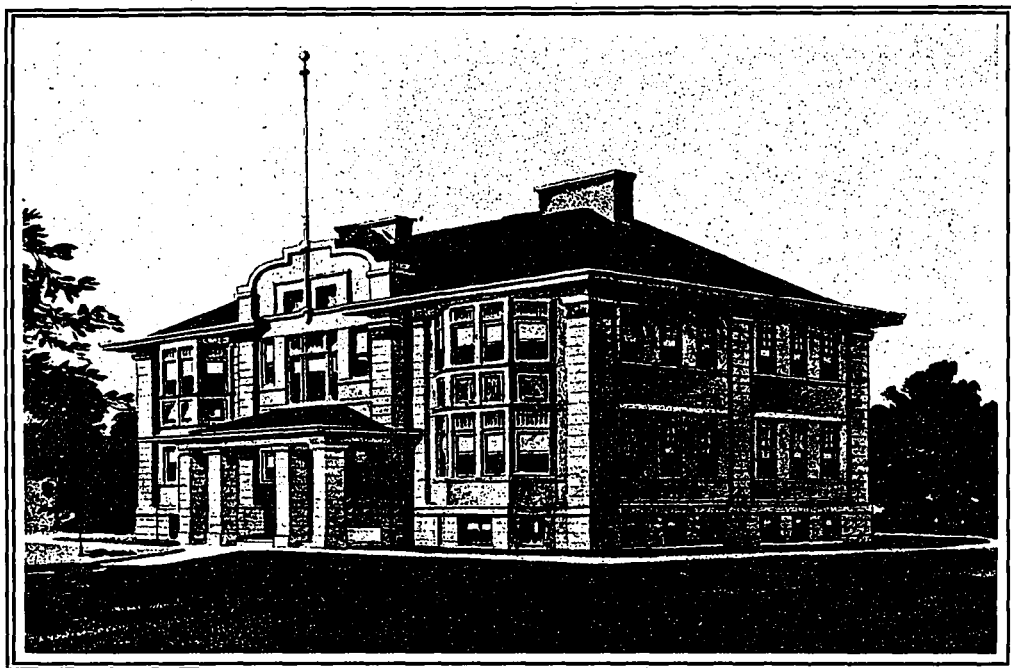


DESIGN NO. 1.—FRONT ELEVATION, COMBINATION PUBLIC AND HIGH SCHOOL BUILDING.

THE first design illustrated is planned for a public and a high school combined, the ground floor being devoted to the public school classes while the upper floor is planned and fitted up to be used entirely for high school purposes. This combination idea of one building for both public and high school classes has developed to a great extent in our smaller towns during the past decade, where it has been found expedient to give advanced training to graduates of the public schools, but where the number of pupils has not been sufficiently great to build a separate building for the accommodation of the high school classes. In a growing



DESIGN NO. 1.—FIRST AND SECOND FLOOR PLANS, COMBINATION PUBLIC AND HIGH SCHOOL BUILDING. THE TWO MAIN ENTRANCES AND REAR EXIT AFFORDS THREE DIRECT MEANS OF EGRESS FROM THE BUILDING. THE STAIRWAY FROM THE UPPER FLOOR LEADS DIRECTLY TO THE ENTRANCES WITHOUT A TURN.



DESIGN NO. 2.—EIGHT ROOM PUBLIC SCHOOL BUILDING. A DESIGN WELL ADAPTED TO THREE SYSTEMS OF CONSTRUCTION—BRICK WITH STONE TRIMMINGS, CONCRETE, OR CEMENT PLASTER ON METALLIC LATH.

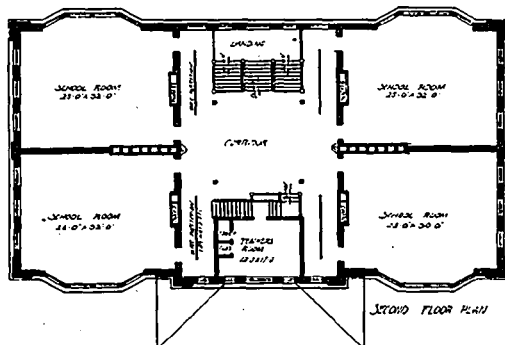
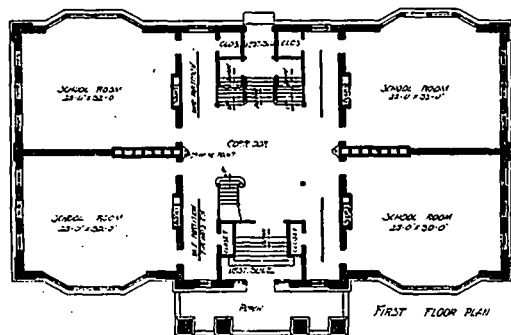
town (of which we have many in Canada) a structure of this nature could be built and would serve until such time as the town grew sufficiently to afford both public and high school buildings, at which time this entire structure could be utilized solely as a public school. If circumstances demanded the portion allotted to the assembly room could be divided off into class rooms, thus giving at least two more large class rooms.

The arrangements are such that from two to four classes may be in charge of one teacher in one room with the exception of the more advanced classes, where it may be necessary to have two teachers in a room. This, however, is a matter that could be easily planned by the principal, who might find it necessary to suggest some changes in the plan to suit his individual idea or conditions prevalent in his especial section or district. This, however, may be done without any confusion resulting.

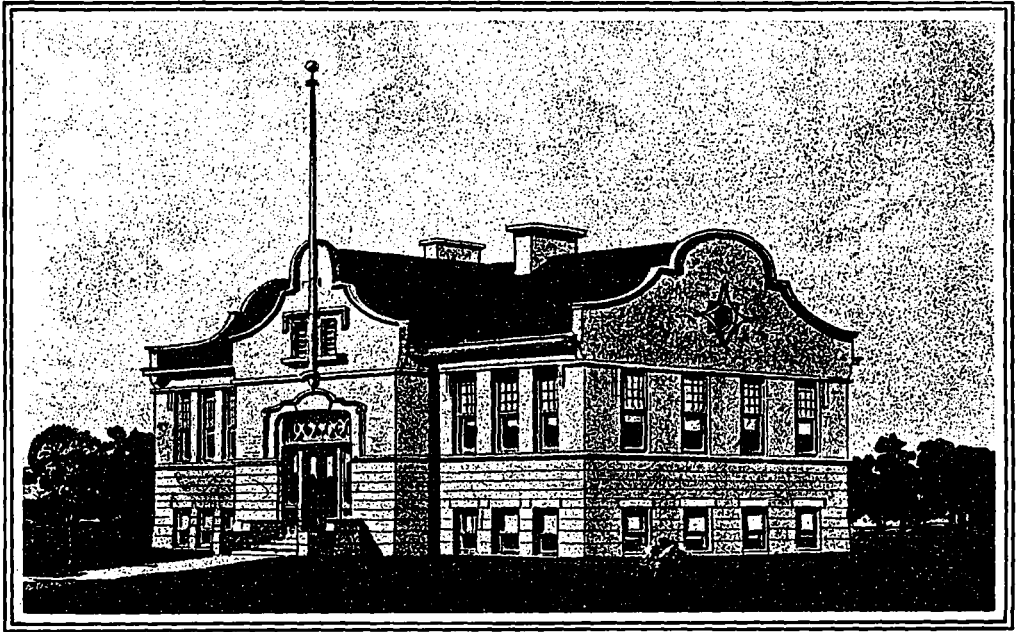
A splendid feature of this plan is the two entrances and rear exit, making in all three direct means of egress from the building. Also the two stairways on either side

of the building leading down from the upper floor. These stairways it may be seen lead down direct, without a turn, and land the pupil directly in front of the entrance on each side of the building. In case of fire the four class rooms on the ground floor could be emptied through the rear exit, thus leaving the two front entrances for the pupils from the upper floor, or the rear exit could be used by the pupils from the two rear class rooms and the two front entrances by those from the two front and two upper floor class rooms. In this manner confusion could be easily avoided, in case of a quick exit being required. This is a feature well worth the consideration of every school house designer.

The second floor of this school is divided into a large assembly hall, two class rooms, a laboratory, teacher's office and library. Should the lower floor be devoted to public school classes, the library room can be used by the high school students for a cloak room and the teacher's room may be used for a library. No high school should be without a library as it trains students to do



DESIGN NO. 2.—GENERAL ARRANGEMENT OF FLOORS, EIGHT ROOM SCHOOL BUILDING. ALL ROOMS ARE LARGE AND WELL LIGHTED, AND EACH IS PROVIDED WITH A BUILT IN BOOK CASE. INSTEAD OF THE USUAL CLOAK ROOMS A LOW WIRE PARTITION IS INSTALLED AT THE ENTRANCE OF EACH ROOM FOR WARDROBE PURPOSES.



DESIGN NO. 3.—AN ATTRACTIVE TWO ROOM SCHOOL BUILDING DESIGNED IN THE SPANISH MISSION STYLE. A HIGHLY DESIRED EFFECT IS OBTAINED IN USING DARK VITRIFIED BRICK IN THE WALLS AND BY HAVING THE ROOF OF GLAZED TILE.

outside reading which often serves as a most excellent educator that makes a much broader student than mere text books can ever develop.

It will be noticed that there is no space in the assembly room for blackboards and this is a splendid feature, for the assembly room is not a work room and should not be filled with chalk dust as the class rooms usually are. Whatever wall space there is should be used for hanging pictures, especially such as are appropriate. Pictures of history makers in Canada, or paintings representing important periods in Canadian history may be used to excellent advantage.

In exterior effect this design is simple yet dignified, the window spaces are well arranged and the heavy cor-

THE second design with floor plans is for an eight-room public school building. It is designed to be of brick with stone trimmings. The main cross walls are also of brick, thus making the rooms sound proof. This design, however, is well adapted to concrete or cement plaster on metallic lath and may be executed to good advantage in any of these three systems of construction.

The basement can contain the heating plant, fuel and storage rooms as well as toilet rooms and still leave space enough for a gymnasium or playground.

There are front and rear entrances leading to a large well lighted corridor. The main or front entrance is protected by a massive porch, which adds to the architectural effect as well as furnishing a protection.

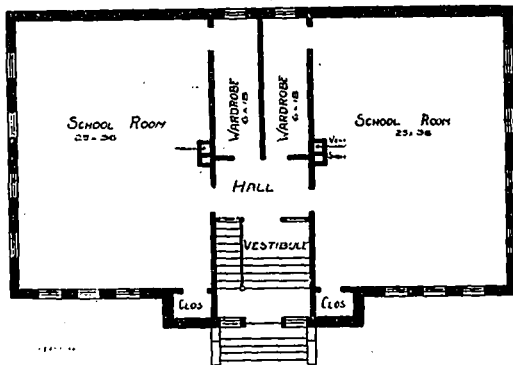
Instead of the usual cloak rooms a low wire partition is provided for each room, where the wraps are placed while passing from the corridor to the school room. Easy stairs lead to a similar corridor on the second floor, with the addition of a teacher's or principal's room which is some three feet below the level of the second floor and from which a commanding view can be had of both corridors. The school rooms are large and well lighted, each room being provided with a large bay-window, which adds much to the beauty of the room and with the bookcases give it a more home-like effect. The seating capacity is about forty-five to a room.

The sanitation is well provided for and the whole make up of the building is one that would be a credit to any city.

TWO ROOM SCHOOLHOUSE.

THE design of a two-room schoolhouse shown on this page is for a brick building with stone trimmings. There is a high basement under the entire building, one-half of which can be used for the heating plant, fuel and storage room, leaving the other half for a playroom for the smaller children, which is very essential in cold or stormy weather.

There is a well-lighted vestibule, from which a short



DESIGN NO. 3.—FLOOR PLAN, TWO ROOM SCHOOL BUILDING. HALF OF THE BASEMENT, THE UPPER PORTION OF WHICH RISES ABOVE THE GROUND, IS USED FOR PLAY-ROOMS. THE OTHER HALF CONTAINS HEATING PLANT, FUEL AND STORAGE ROOMS.

nice, dormer windows and large chimneys render what would otherwise be an extremely plain structure, attractive and tasty.

(Concluded on page 53.)

THE EVILS OF TRADE COMPETITION.---An English Contractor's Views on the Noxious Features Attendant Present Day Tendering.---Lack of Business Training and Technical Knowledge a Serious Handicap.---Architects Partially to Blame. By JAMES TOWNSLEY*

COMPETITION in connection with the building trades has grown up with the industry until it has come to be regarded as an integral part of our life; and in this respect the building trades differ very largely from many other methods of gaining a livelihood, even where transactions are of equal volume.

It is, perhaps, an easy matter for us who are engaged in building operations to persuade ourselves that, as a community, we are the greatest possible sufferers, and daily subjected to the most irksome and unfair conditions that can be imposed upon civilized man. The constant wail of building contractors and their associates, against the results of everyday competition leaves the public to imagine that we (the contractors) are the only victims to circumstances extant. Let us pursue our theme, however, and see how far our conditions of life are self-imposed or obligatory.

GAMBLING AMONG CONTRACTORS.

It might assist our reasoning a little to attempt some kind of definition of the terms "Contractor" or "Competitor." Is either of these terms synonymous with gambler or speculator? True, the word "gambler" does not sound quite so euphonious as the word "contractor;" yet there does seem to be much in common in the principles governing both. With each there is the element of uncertainty largely influencing their actions. The calling of each is, to say the least, very hazardous and largely precarious. The gambler who parts with his money gets no equivalent; so with the contractor who sinks money in a contract. Yet, with the personal knowledge I have of the contractors in this country, far be it from me to dub them as gamblers in anything like the sense by which we generally understand that word. It might be to our advantage as contractors, however, could we, as an organization, prevail upon the Government to pass such an Act as was passed against gambling some 385 years ago, which provided that anyone convicted of losing £10 at one time, or £20 within four hours, should be fined five times that amount for the benefit of the poor. What better antidote could we have against undue competition than to fine each contractor making a loss on his contracts five times the sum lost, for the benefit of our National Federation's reserve fund? In such circumstances we should hear very little about our loss on contracts, for higher prices would soon obtain.

THE MAIN CAUSES.

Competition in the building trade has become more common during the past 20 or 30 years, and to-day it is looked upon as indispensable. This leads us to ask: What are the main causes responsible for a practice that has long ceased to be healthy or advantageous to the contractor? Is it that this individual has become untrustworthy, and no longer regarded as a fair-dealing tradesman, or is it that the public have discovered the great possibility of having a building erected below cost by reason of the number and the quality of contractors who are ever ready to enter the arena, and who, by reason of their lack of capital, business training and technical knowledge, prove themselves altogether incompetent for the important position they attempt to usurp? I am inclined to the belief that more contracts are rendered unremunerative because of this class of contractors than by the efforts of the more *bona fide* builder.

Another evil, distinctly observable, is the readiness—the keenness—with which proprietors accept the lowest estimate sent in, regardless of the competitor's sta-

tus or past achievements. This eagerness to fasten upon an unduly low price submitted is so noticeable as to suggest a rapacious longing to gain something without giving an equivalent, for this is exactly what a proprietor does who accepts a tender and enforces its execution when, *prima facie*, the work cannot be completed for anything like the sum submitted.

THE FEDERATION AND ITS PRINCIPLES.

As a federation of contractors we should have a periodical stocktaking. Our strength must not be gauged by the regular attendance of executive members at our monthly meetings, for these are only evidences of the existence of a greater body, which is only as strong as its weakest point. That our organization should be strengthened and consolidated is, I take it, the wish of all, and to this end we must ever direct our efforts. The evils which we are now considering are not to be found outside the influence of this organization, but more generally within. We preach "preference" and "intertrading," but can we boast of really giving "preference" to each other, and does the intertrading rule dominate our actions? When we can answer these questions in the affirmative, then we shall find our Federation sought after by those firms who to-day hold aloof from us. All this has a bearing upon unhealthy competition, for while the trade remains a disorganized body, competition will continue unchecked and uncontrolled.

CONTRACTORS AND SUB-CONTRACTORS.

Other evils arise when a contractor secures the whole of the work, and then fails to accept those sub-contractors whose prices he has used to bring about his own success; or, before accepting them, places them for a second time in competition. Also there is cause for grievance when a full contractor neglects to hand over to his sub-contractor the proportion of money received on his behalf. A full contractor, I contend, has no right, moral or legal, to retain the money which rightly belongs to another, and to use it for an indefinite period in his own business, without asking consent. This practice is far too common to-day, and deserves most drastic treatment. Some day I hope it will be found possible to place these defaulters under the law applicable to a trustee, and then the punishment will be more commensurate with the offence. On other shortcomings of the contractor and sub-contractor towards each other we need not enlarge, for they are but of a minor character.

Amongst other things I hope for (though do not expect to see this side of the millennium) is that when a building requires erecting, or other work has to be done, the proprietor will select his contractor just as he selects his architect, and they together bargain for the work required to be done. Where the work is of exceptional character, they invite a limited number to submit estimates, each competitor to receive a premium for the trouble imposed upon him.

THE SURVEYOR'S POSITION

Then, again, we have the surveyor. His special duty is to check all accounts and figures appertaining to a contract, and to decide what amount the proprietor shall pay for extras, or what he shall claim for de-

* Paper read before the Yorkshire Branch of the National Federation of Building Trades Employers.

ductions. Why not have a surveyor retained by the contractor, and recognized by agreement with the proprietor, and whose duty it should be to go through the contractor's figures, and where deviations have been carried out at a loss, to amend such figures to a profitable transaction? To-day the principles of equity and justice are very largely absent from most building contract agreements.

INCOMPETENT CONTRACTORS.

The subject of my paper being the outcome of a circular note addressed to the members of this federation, which submitted to us, as a remedy for present-day unhealthy and ruinous competition, the adoption of higher prices, you may be looking to me for some expression of opinion on that semi-official note. We must all feel grateful to those friends in the trade who, actuated as we know them to be, by the highest motives, have given, so much time and thought to the bettering of the condition of their fellow-tradesmen. Their findings, however, have not resulted in any practical solution of our difficulty, and considering the perplexity of the question, we are not greatly astonished.

To express my personal view, I should say that the difficulty confronting us, and its remedy, lie far deeper than our friends appear to have gone. The building trade in this country, (England) in its normal state is not by any means sufficient for the requirements of the vast army of traders who are daily clamoring for an existence; and the facility of entrance into the trade is far too easy ever to hope that a better state of things may some day exist.

From close observation I do not hesitate to say that in the best interests of individual and community, one half of present day building contractors should retire from what to them is a most irksome pursuit; for it must be apparent that about one-half of the competitors to-day are totally unfitted for the position they hold. They lack the essential business training and those common amenities by which they secure the favor and patronage of others, their methods of executing work are obsolete, and their exchequer is so impoverished that in the light of reason they cannot hope to succeed.

ETHICS OF PRICE-CUTTING.

We have acquired the habit of censuring everybody except ourselves for the cutting down of prices. We constantly aver that this or that firm cannot make a profit at their contract price, and others say the same of us; yet, generally speaking, we go on living, and working, and competing, with all the effrontery of successful men. We far too often argue from the standpoint that all contractors are equal, and adopt identical methods of procedure, whereas the very opposite is the fact, and very different results are achieved by different people who start from the same standpoint. With self-preservation as the first law of nature, we must not expect this inherent quality to become subservient to the dictum of fellow competitors, or even to the ruling of a federated body. One competitor is not likely to do anything tending to reduce his chance of success while so many brother competitors are ready, willing, anxious, to rush in and destroy any effort he may feel inclined to make towards a reform of any kind. To simply advocate the raising of prices as a remedy to distressed conditions, while the constitution of the building trade remains as it is, is simply to check legitimate enterprise, and to encourage a greater number of unemployed operatives or co-operative workers to start out in pursuit of the larger game which their deluded eyes imagine they see as the result of becoming their own masters.

CHARGES LAID AT THE ARCHITECT'S DOOR.

Seeing that I have already advocated a sort of peaceful persuasion in reforms wherein our friends the architects are affected, it might seem a little incongruous for me to place at their door responsibility for many of the

evils which come to the contractor by reason of the competition into which he enters, yet such unfortunately is the case, and our efforts as a federated body should be directed to minimize all evils thus arising. To say that there is one condition in every agreement—and a vital one—which has never yet been carried out by an architect, might, in the strict letter of such statement, be proved incorrect, but it would not be untrue to say that every architect in England continually contravenes his own agreement and causes monetary loss to his contractor for which to-day there is no redress. I refer to the granting of certificates, and especially to the final certificates. In this particular I have not found even city architects or other corporate officials exempt. I submit that the handling of his money on the day it falls due is not only of immense moment to the contractor, but has an important bearing on the financial result of a contract, often little understood by the man who has made no study of finance. Every building contract agreement should provide that whenever the final or other payment becomes due, and is not at once paid over, interest at the rate of 15 per cent. should begin. Why should a contractor provide money, free of interest, which should be found by the proprietor? Or, again, why should a contractor be deprived of his money (when due) for any period without receiving compensation for such convenience as he thus renders to the proprietor or to the architect? Stress of business on the part of an architect, or absence from home, whether in pursuit of business or pleasure, should not be admissible in defence of non-payment to the contractor. While architects are allowed to be the sole arbitrators of their own doings, and contractors quietly submit to flagrant wrongs imposed upon them, they must not complain of unremunerative contracts.

Another evil which I would lay at the door of most architects is one that strikes at the root of the entire question. Wherein lies the cause of unhealthy competition, and why are contracts in the main rendered unprofitable? My answer is because of the vacillating and compromising character of architects themselves. A milk-and-watery sort of architect induces speculation on the part of the contractor, who plays upon the prospect of varying the specification, and thus securing a profit which he hopes may not be seen by a brother competitor. The habit becomes general, and the result debasing. An architect should specify what he means, and mean exactly what he specifies. If this be impossible or difficult to be certain of, then the contractor should not be made to suffer in consequence, neither should he gain at the expense of the proprietor. A rigid specification faithfully demanded is in the best interests of the trade generally, for, deprived of the opportunity of making money out of a weak specification, prices would automatically stiffen, and tendering would approximate at least to a more legitimate practice.

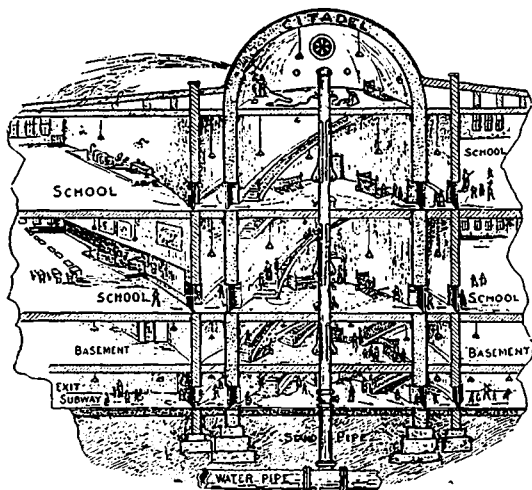
There exist many other evils in trade competition, for which penalties are provided; hence I need not dwell on them here.

Had time permitted, I should have said a word on "competition as a natural outcome," comparing present-day methods with the Guilds of the Middle Ages, and the life and purpose of the Hanseatic League, in the history of which there are valuable experiences to be found; a study of which could not fail to prove of great interest to such a Federation as ours, who in a large measure are living over again the life of some of these organizations, which largely ruled the destinies of those countries in which they operated. Just as the strength of these defunct organizations became their weakness and ultimate downfall, so will it be with the Federation we now seek to uplift, and with which we are identified, unless we learn the important lesson, usually ignored, of placing the correct estimate upon victory, which in some measure we have achieved, but not yet completed.

A CITADEL OF REFUGE.---Unique Plan Advanced as a Means of Protection and Escape From Both Fire and Panic in School Buildings.---Connects Directly with Every Floor and Its Series of Rooms. ---An Advantage in Fighting Fire.

THE accompanying illustrations are designed to show tentative plans for building construction of a most radical order as applied to that class of structures adapted to house great assemblies of people and especially to safeguard school children and their teachers against constant peril from both fire and panic, such as recently occurred in that awful holocaust of school children at Collinwood., Ohio.

This method of construction has been devised by W. I. Ludlow, 402 Chamber of Commerce Building, Cleveland, Ohio.



SECTIONAL VIEW, SHOWING ARRANGEMENT OF CITADEL IN RELATION TO SCHOOL ROOMS, WITH SUBWAY EXITS.

Briefly stated, the central or fundamental idea embodied in the plans herein presented for school buildings, is to form, centrally, within the walls of the building structure, a veritable fire proof citadel, or place of refuge, which shall be instantly available through fire doors within its walls connecting directly with every floor and its series of rooms, and which shall have sufficient capacity to temporarily house and safeguard all the occupants of the building and from which by ample stairways they can leisurely wend their way to the outer air through a protected causeway in the basement, unhampered by fire, smoke, or even undue heat.

But while the saving of human life is the primary object of this novel feature in building construction, a secondary object of very great significance to our city fire departments and to the public generally, is the ready success to, and the means employed for fighting the fire centrally, and at close range, without in the least imperiling the lives of the firemen, and thus vastly contributing to the safety of this class of property.

I might here add, a third feature of much incidental value is the direct access which the citadel gives to every room in the building, and their inter-connections, and especially its value as a means of ingress and egress of the pupils, without in the least disturbing the occupants or recitations in any of the other rooms in the building.

Referring to the accompanying views, one shows a central longitudinal division of the citadel proper, while the other presents a cross sectional view of the same,

or the prism of the citadel on the plane of one of its floors.

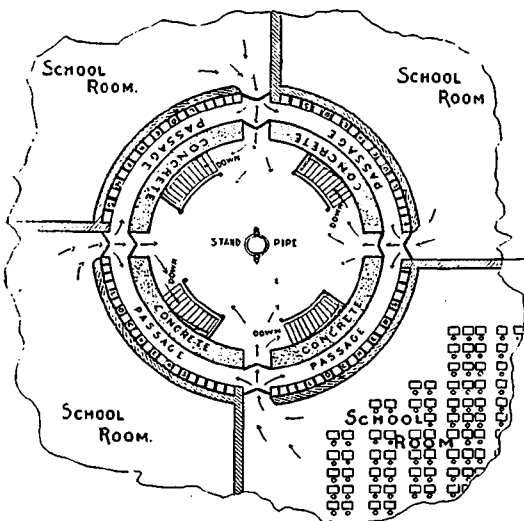
The citadel proper, save for numerous fire-floors connecting with each floor and basement causeway, is a closed and independent structure resting on its own foundations and extending from basement to roof, which is capped and fire proofed, presenting no opening save for firemen's use and for artificial ventilation.

It is provided with floors inter-connected by stairways, which floors are coincident with those of the building proper, and are rigidly secured to the inner walls of the citadel.

This citadel, in structure, may be of brick or reinforced concrete and though, as herein shown, is of circular form, may be of any desired prism and of dimensions suitable for any special requirement. Being a closed structure and absolutely fire proof, no fire can originate within its walls, nor fire and smoke enter from without, as no draft can be created in either direction, except voluntarily through artificial means. However, under normal conditions an electric fan or blower in the dome of the roof, will serve for purposes of ventilation.

The intermediate space between the walls of the citadel and the outer building serve the purpose of continuous connection of every school room, with all the fire doors, while the space is aptly located for lockers, cloak rooms, closets, etc.

It may be here stated, that without reference to the citadel as a refuge in case of fire, it is designed to perform another function of great utility as a shorter, eas-



CROSS SECTION OF CITADEL, SHOWING STANDPIPE, STAIRWAYS, CONCRETE FIREPROOF WALLS AND OUTSIDE PASSAGE WAYS.

ier, and quicker means of entrance and exit of teachers and pupils to their various rooms, and also the general use of these central rooms as places of recreation, especially in the cold or stormy weather, to which the pupils have such ready access.

It is proposed to make the citadel the exclusive means of ingress and egress to and from all parts of the build-

ing, thus eliminating all outside stairways and conserving both room and expense.

The pupils will enter the building on the first floor, passing through hallways directly to the citadel, and thus to their respective consignments, but of course, if blocked by fire or smoke in making exit at any time, they will pass down through the fireproof causeway, in the basement to the outer air.

It must not be assumed that this feature of the school building will take on the character of a cold, dark, neglected affair. On the contrary, spacious and roomy, amply ventilated, electrically lighted, finished and furnished, in keeping with its many functions and uses, familiarized by the pupils in daily practice, it will have a more inviting character than any other feature of the school building.—*Cement Age.*

NEW TUNNEL UNDER THE THAMES.---
Connecting Link between Rotherhithe and Stepney
Opened for Traffic.---Work Completed Sixteen
Months Ahead of Contract Time.---Cost £1,000,000.

ON JUNE 12 the Prince of Wales formally opened the new tunnel beneath the Thames, connecting Rotherhithe on the south side with Stepney on the north side. A little over a century ago, when an unsuccessful attempt was made by the Thames Archway Company to make a tunnel from Rotherhithe to Limehouse, engineers declared that it was impracticable to perform a work of such a character that would be commercially useful. The tunnel opened makes the thirteenth now in existence beneath the river. The first in date of construction is the Thames Tunnel, commenced by Brunel in 1823, and completed, after many disasters and a spell of seven years' abeyance, in 1843, the total cost being over £600,000. That tunnel is now used by the East London railway. At different times there have followed the Tower Subway, at present only used for the accommodation of water mains, the four tunnels of the City and South London Railway, two of which only are in use; the two tunnels of the Waterloo and City Railway, the two tunnels of the Baker street and Waterloo Railway, the Greenwich Tunnel, the Blackwall Tunnel and now the Rotherhithe and Stepney Tunnel, the most important of any in respect of dimensions; and one of the most costly, the constructional work having absorbed about £1,000,000, and the purchase of property to permit of the approaches being made about another £1,000,000.

Rotherhithe is midway between Blackwall Tunnel and the Tower Bridge, which are two miles apart. A great saving of time will therefore be effected by using the new crossing place, as well as the relief of traffic both at Blackwall and at the Tower Bridge. The approaches to the new tunnel are conveniently placed, one opening into Rotherhithe street, by the Commercial Docks, and the other end into Shadwell High street, by the Fish Market.

The work throughout has been constructed to the design and under the supervision of the chief engineer, Mr. Maurice Fitzmaurice, by Messrs. Price and Reeves, contractors, 17 Waterloo place, Mr. E. H. Tabor acting as resident engineer, and Mr. James Brown as engineer and agent for the contractors. A beginning was made in April, 1904, and the tunnel was opened for traffic fully sixteen months before the expiry of contract time. So admirably has the work been constructed, so perfect has been the machinery employed, that hardly a drop of water from the river has found its way into the tunnel, and no serious accident to the workmen has occurred.

From street level to street level the work is 6,883 ft., or about a mile and a quarter, in length. Of this 2,036 feet is in open approaches, 1,122 ft. in brick tunnel,

and 3,581 ft. in iron-lined tunnel actually beneath the river. The gradient of the approaches and brick tunnels is 1 in 37, and in order to secure this a curved course has had to be taken. On the south side the brick tunnel passes beneath the South Metropolitan Gas Works, and on the north side beneath land thickly built upon. One of the principal features of interest in the undertaking is the bridging of the Rotherhithe Station of the East London Railway at a low part of the southern approach. This was effected without any interference with the traffic of the line.

There are two steel shafts opening into the works on each side of the river, and through these all the excavating has been done. The tunnel may be reached by the shafts nearest the river, staircases being provided. Each shaft is 60 ft. in diameter, and the depth varies from 67 feet to 101 feet.

The driving of the tunnel beneath the river and the property adjoining the river was effected with shields under compressed air, the air pressure being regulated to suit the rise and fall of the tide from 13 lb. to 22 lb. The iron tunnel has an inside diameter of 27 ft., which permits of a 16 ft. roadway and a 4 ft. causeway on each side. Eight feet separate the tunnel from the bed of the river. Throughout the tunnel and the approaches are lined with white glazed brick and tiles, and the covered parts are lighted by three rows of electric lights. Great care has been taken to provide against failure of light. In the first place, there are five circuits, so that the failure of one will leave an ample reserve; and, in the second place, if the current generated by the tunnel plant wholly gives out, an immediate attachment can be made to the street supplies. Asphalt is used for the level roadway of the iron tunnel, but the gradients are paved with granite.

A better appreciation of the magnitude of the undertaking will be possible from a statement of the quantities of material used. There were employed:

- Steel in shafts, stairways and domes, 3,500 tons.
- Cast iron in tunnels, 25,000 tons.
- Bricks in cut and cover tunnels, 4,000,000.
- White glazed bricks, 500,000.
- Tiles in tunnel lining, 1,300,000.
- Asphalt, 24,000 square yards.
- Cement, 20,000 tons.
- Shields (two), 670 tons.
- Excavation removed, 300,000 cubic yards.
- Concrete, 90,000 cubic yards.

SCHOOL BUILDING CONSTRUCTION.---
The Problem of Providing Suitable Structures in a Rapidly
Growing Country Such as Canada ---Continued
from Page 49.

flight of stairs leads to the main hall and also to the basement.

From the hall there are doors leading direct to the school rooms, besides entrance to the same may be had by passing through the cloak rooms, 6x18 feet in size, and which are designed for the pupils to leave their wraps, and lunch baskets while passing to the school room. The rooms are 25x36 feet in the clear and will accommodate fifty pupils.

The light is taken in from two sides only and the seats can be so arranged that the light will fall from the rear and left side of the pupil. The blank wall affords excellent space for the necessary blackboards. Each room is provided with a large closet for the teacher's exclusive use.

The architecture of the building is of Spanish mission style which has become very popular in the United States. For the best effect the walls should be dark vitrified brick and the roof covering of glazed tiling.



NEW BUILDING FOR THE CANADIAN BANK OF COMMERCE, NOW IN PROCESS OF CONSTRUCTION AT MONTREAL, SHOWING THE STRUCTURE AS IT WILL APPEAR WHEN COMPLETED. DARLING AND PEARSON, ARCHITECTS.

SOLID MASONRY IN MONUMENTAL DESIGN.---Difficult Constructive Problems Encountered in the Erection of the New Canadian Bank of Commerce Building at Montreal.---Description of Methods Employed.---Monoliths Quarried in Canada. By JOSEPH WECHSELBERGER

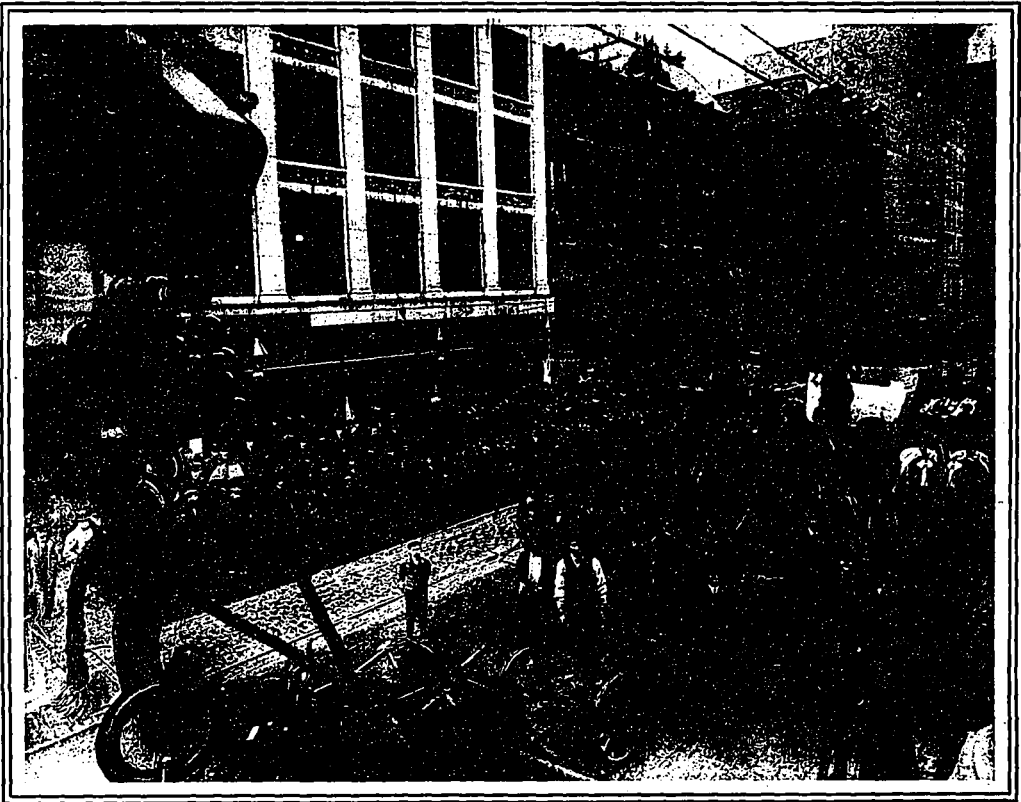
THE CONSTRUCTIVE problems encountered and solved in the erection of the new building for the Canadian Bank of Commerce on St. James street, Montreal, are worthy of notice and should be of especial interest to those engaged in the erection of large buildings. This is one of the few large buildings lately erected of a monumental design and of solid masonry construction, and a description of the methods employed and difficulties encountered would not be complete without some mention of the quarrying, cutting, shipping and placing of the exceptionally large monoliths used in its construction.

The site originally contained a building seven stories in height covering the entire area. While this building was being wrecked test holes were made to learn the

granite columns; the sand was in the lower level and supports the walls forming the large banking-room.

The safe bearing capacity of the sand found is 4 to 6 tons, and of the gravel 8 to 10 tons. All the footings were proportioned for a uniform load less than 4 tons to the square foot; the building faces on St. James street, and Fortification Lane at the back, which has a distance of feet below the level of St. James street.

After the old building was entirely removed all the footings were immediately laid of concrete of the usual proportion of 1, 2 and 4, Portland cement, good coarse sand and broken lime forming the ingredients. The footings under all the walls were made continuous, but those across the front of the colonnade were isolated.



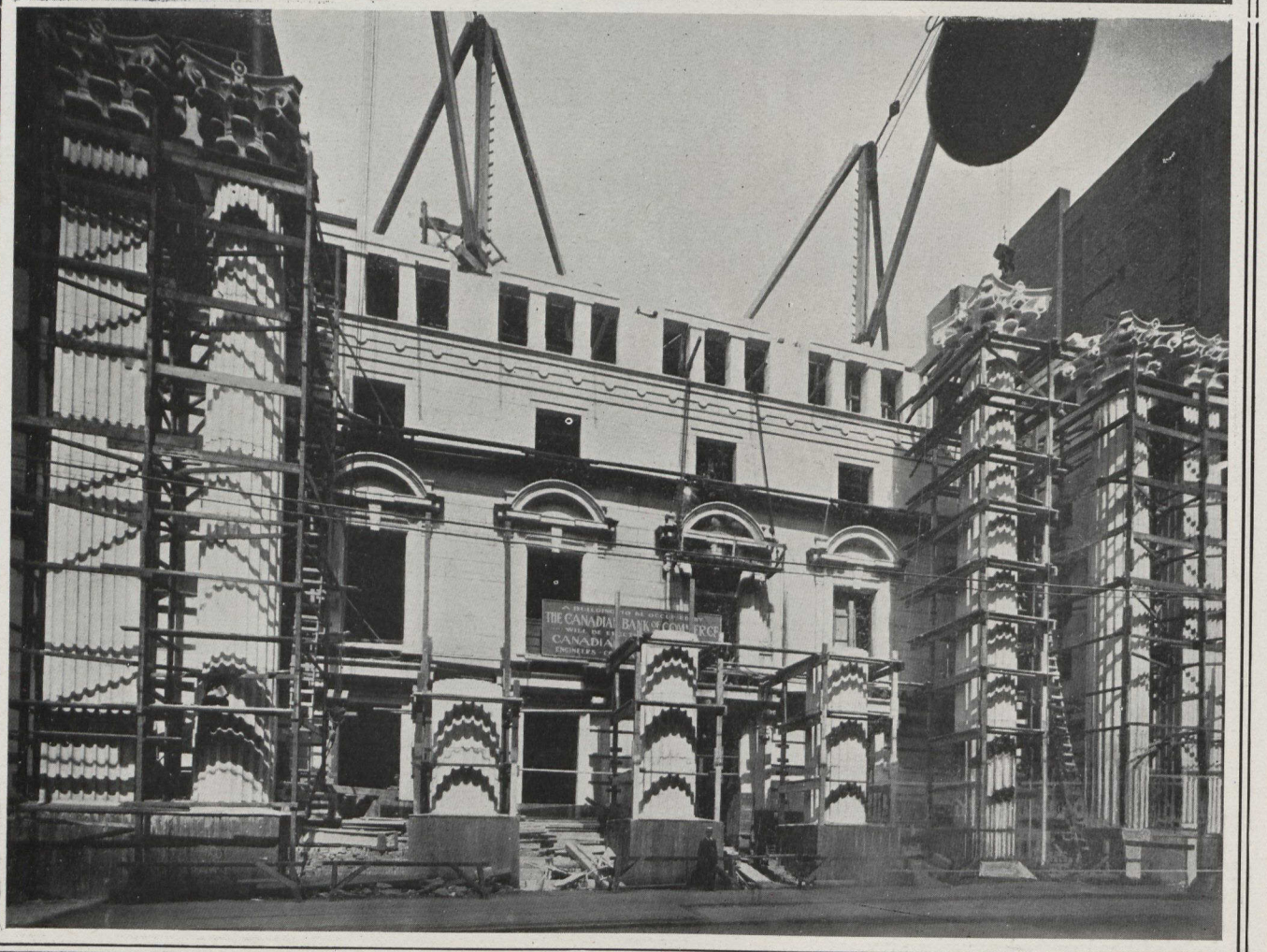
CARTING ONE OF THE 26-TON PLINTH BLOCKS. VIEW SHOWS IN THE FOREGROUND THE LARGE SELF LUBRICATING TRIPLE BLOCK PULLEY OF ONE OF 25-TON STILL LEG DERRICKS READY TO LIFT BLOCK INTO POSITION. THIS PULLEY HAS 16-INCH SHEAVES THROUGH WHICH PASSES 3-4-INCH FLEXIBLE WIRE HOISTING CABLES.

character of the soil at different points on the site; this was particularly necessary, as the foundations were carried to different levels in different parts of the building. The soil was found to be uniform at the different levels; one level uncovered the bed of an old stream which was entirely of hard packed gravel and coarse sand; the other level being coarse well packed sand.

The gravel was in the higher level which is under the front portion of the building and supports the large heavy

Very little under-pinning was required, as the building on the west is excavated to very nearly the same depth that the Bank of Commerce excavations extend. On the right a retaining wall was built some distance away from the adjoining building and the footings carried around on the same level with those under the colonnade.

Within a few days after the footings were laid, the foundation walls were built of hard building brick laid in Portland cement, were bonded and carried up to the



CANADIAN BANK OF COMMERCE BUILDING NOW IN COURSE OF ERECTION AT MONTREAL, SHOWING THE CONSTRUCTION OF THE HUGE COLUMNS WHICH WILL FORM THE MOST MASSIVE COLONNADE ON ANY BUILDING IN CANADA. DARLING AND PEARSON, ARCHITECTS.

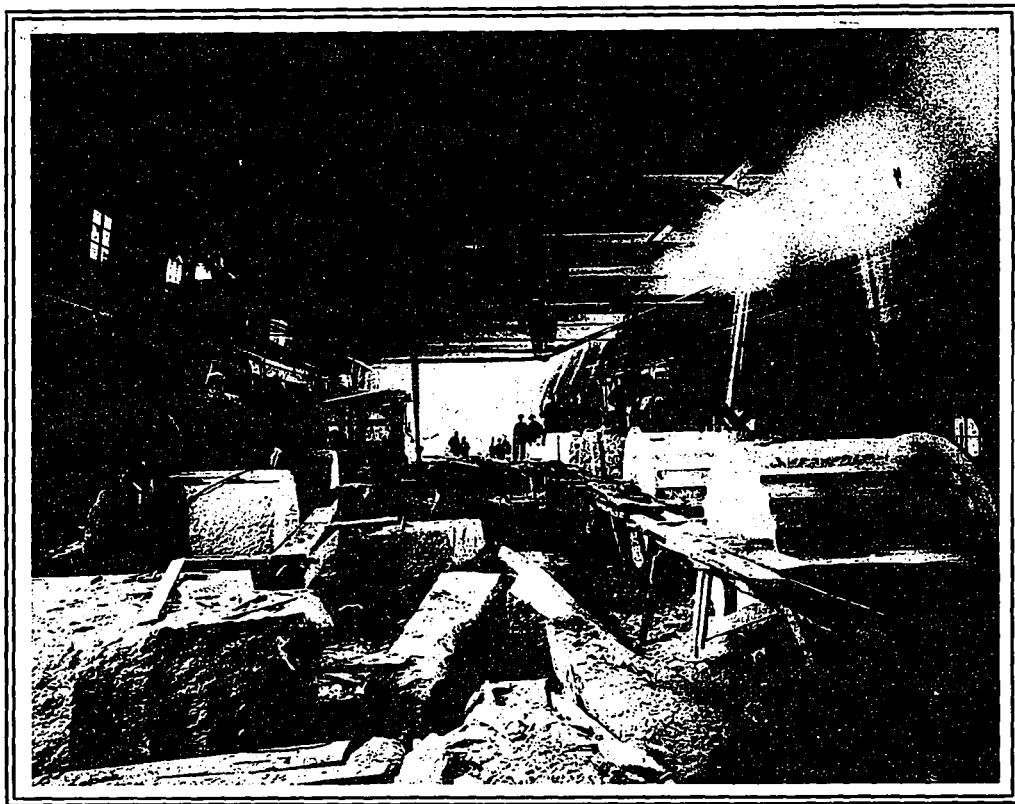
ground level; the season had advanced so far and steel delivery for floors not being expected, it was decided to carry up the walls forming the large banking-room to receive the steel trusses supporting the ceiling and roof to enable work to continue in the building during the winter months. This made it necessary to carry the walls up a clear height of 8 feet and lengths up to 121 feet without lateral supports in the face of winter weather, for this reason, free standing scaffolding was erected sufficiently rigid for all purposes without resting pudlocks in the walls. Hoists were carried within this scaffolding to provide for raising the requiring materials.

The brick walls were carried to the levels of roof truss bearings late in November and all trusses erected in place by the end of December, 1907, at which time the walls were carried up an additional fifteen feet to the copings, and a temporary roof erected over the entire

vary in height according to street grade and weigh from 20 tons to 26 tons each.

The lintels forming architrave and the cornice members are proportionate in size, considerable care therefore is called for in handling these large pieces of material, to do this derricks were erected at points shown on diagram plan herewith, to reach all points of screen walls and of colonade.

Some difficulty was encountered in solving the question of materials for this work, not only is sound material of the dimensions required scarce, but properly equipped plants to handle work of this magnitude with despatch are also scarce. This question was met by the company who secured the contract to furnish this material, by increasing their plant considerably; they also installed pneumatic tools throughout, heavy travelling cranes, and



MAIN WORK SHOP AT QUARRIES AT STANSTEAD, P.Q., SHOWING CUTTERS WORKING ON THE 13-TON DRUMS FOR THE COLUMNS.

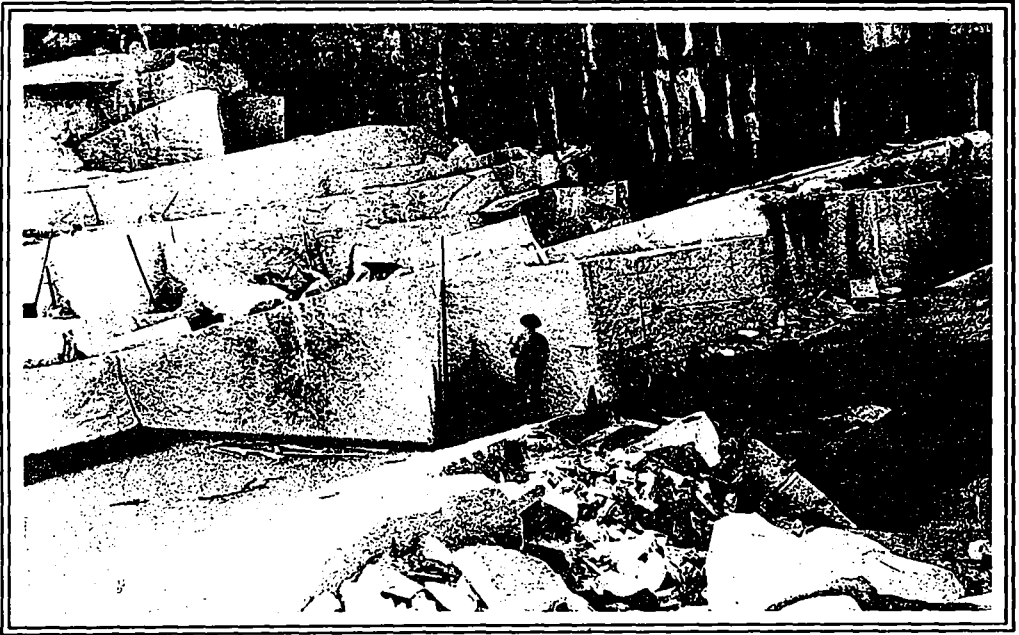
room while permanent concrete roof was put in place and the work of finishing the room commenced.

The trusses are of a heavy type and of such dimensions that it was necessary to deliver them unassembled, they were hoisted from the free standing scaffolding on temporary crane and assembled by aid of a system of gin poles, utilizing the scaffolding uprights.

In the meantime the work on front portion of building facing St. James street was being pushed along consistently with the class of the work and the deliveries of granite. All this work is of granite blocks of large dimensions, the courses forming the ground story being 34 inches thick and drums for pilasters and columns being 6 feet in diameter and 5 feet 9 inches in height. These drums range from 10 to 13 tons each as the entasis varies the diameter of columns. The plinths under the columns

a blast heating system to permit of work throughout the winter months.

The handling of the granite was done at the shop by travelling crane, the cars on arrival at Montreal were shunted under a 50-ton crane, and granite lifted from the cars to drays on arrival at the building either one or two cranes were used to lift the blocks free of the wagon. Two 25-ton stiff leg derricks are used, placed so that the full swing of both covers entire front of building; the timber used in the derricks is of the best selected long leaf yellow pine, the mast is 16 inches by 16 inches by 26 feet; the boom is 14 inches by 14 inches by 40 feet, fitted with forged steel connections and points. The blocks used are of the type known as self lubricating triple block type, with 16-inch sheaves. The cables are flexible $\frac{3}{4}$ -inch hoisting cables. The ends of stiff legs are



SECTION OF GRANITE QUARRIES AT STANDARD, P.O., SHOWING DEPTH OF SEAMS FROM WHICH WERE TAKEN THE GRANITE FOR THE COLUMN DRUMS AND PLINTH BLOCKS.

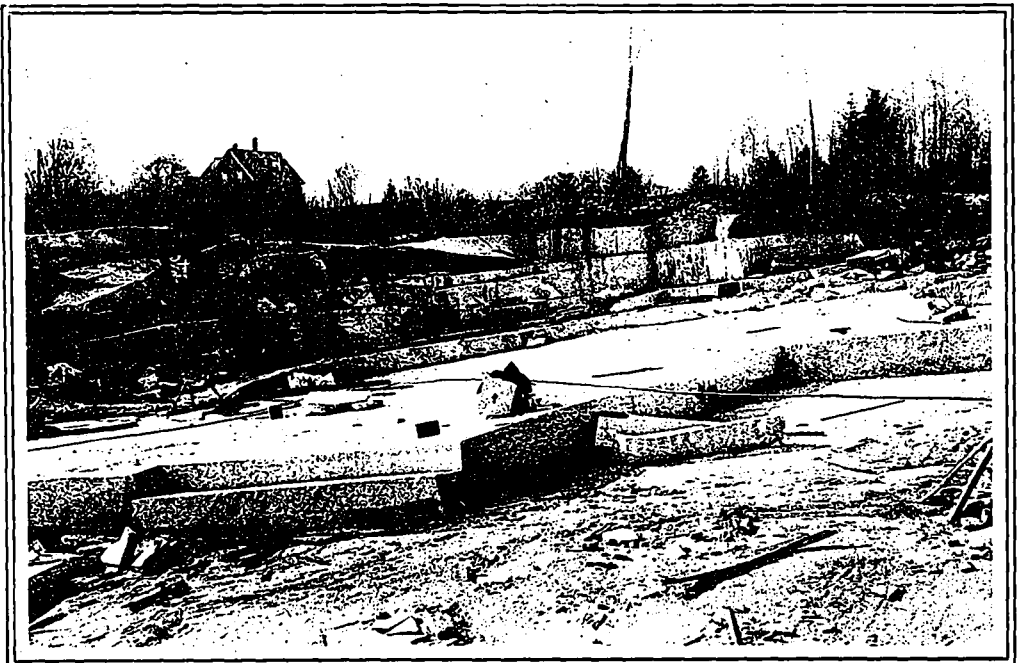
anchored to steel beams below with six strand $\frac{3}{4}$ -inch cables.

All granite on Fortification lane was set up with two 35-foot breast derricks of six ton capacity each.

A clearer idea of the dimensions of the building will be obtained by considering the dimensions of the various parts in detail. The front covers a space 118 feet in height and will be 100 feet high to parapet coping. Col-

umns are 6 feet in diameter, 60 feet in height; the plinths are $8\frac{1}{2}$ feet square; the capitals are 7 feet high above neck molds and 8 feet spread; the fluting is 11 inches in width. The main cornice will be 16 feet in height and will project 6 feet.

The floor and roof construction is steel throughout, with reinforced concrete floor slabs laid on top of floor beams. All floor beams are fireproofed with concrete.



SECTION OF GRANITE QUARRIES AT STANDARD, P.O., SHOWING SEAMS FROM WHICH WERE TAKEN THE GRANITE FOR CORNICE.

It is further interesting to note that the stone contract for this structure is being executed by a Canadian firm, and these great monoliths (probably the largest that ever entered into the construction of a building in Canada) were quarried in Canada.

These quarries are located about two and a half miles from Stanstead Junction, P.Q. The granite lays in sheets of from six inches to fourteen feet in thickness and can be quarried very readily, blocks containing thirty thousand cubic feet in one solid piece having been loosened out from the main body of rock. The supply is practically inexhaustible, and the quality of granite is said to be unexcelled. As will be seen from the accompanying photos, the sheets dip at a slight angle. The west wall of quarry No. 1 is a natural seam running almost due north and south, with a vertical inclination towards the east. The presence of this seam has been of great advantage in quarrying, as it gives a natural opening into the sheets and saves a great expense in avoiding the necessity of channelling out an opening.

WHERE THE RESPONSIBILITY LIES....
Failures in Reinforced Concrete Construction Due to Ignorance, Incompetency, or Carelessness.

EVERY little while appeals come to us to do something, in the interests of public safety, toward stopping the construction of reinforced-concrete structures by men who are ignorant, incompetent or worse. These appeals come most largely from those engaged in reinforced-concrete construction who realize the great harm that is done the industry by every building of this type which collapses during construction.

Perhaps it will tend to the desirable end above set forth if we quote from the charge of a judge in Philadelphia before whom on Jan. 30 Albert S. Reavis, President of the Reavis Construction Co., and Chas. B. Miller, superintendent, were tried on the charge of manslaughter because of the death of two workmen in the collapse of a reinforced concrete building which the company was erecting.

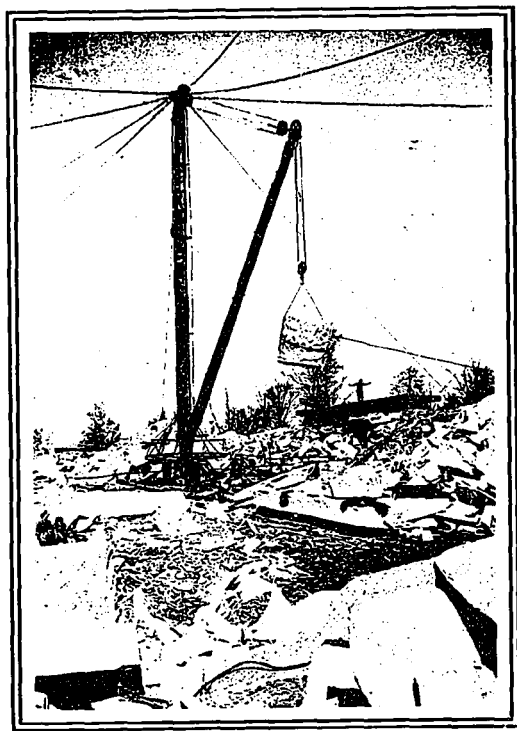
The trial judge is quoted as follows in the Philadelphia Ledger.

The question is whether the death of these men was due to the gross carelessness or the utter incompetency of the defendants. In either case they were culpable. Houses are not built to fall down immediately. Were these men too ignorant to take up their business of reinforced concrete construction? If they were, it is a case of malpractice. Nobody has a right to hold himself out as qualified to do a thing unless he is able to do it.

If these men didn't know enough to be in the concrete business, it was an impudent assumption on their part to risk the lives of men in the erection of this building. Or if it was stinginess which led them to remove the supports of the concrete too soon so that they could use these supports at another place and thereby save some money, they were equally culpable. If the removal of the supports was a mistake of judgment to such a degree as showed that they ought not to be in the business, they are just as guilty. Nobody out of ignorance has the right to risk the lives of other men.

It is worth noting that the attorney for the defence, according to the Ledger, based his plea on the ground "that reinforced-concrete construction was in its infancy, and the defendants exercised as good judgment as possible in the existing state of knowledge of such construction."

If the reinforced concrete business is an infant, it is a pretty lusty one. In our opinion it has not only cut its eye teeth but grown to man's estate. There are plenty of engineers and contractors to-day who know how to build and build safely in reinforced concrete and anyone who fails to build safely through ignorance ought not to escape punishment for the results of his blunders.



LOADING COLUMN DRUMS IN THE ROUGH, WEIGHING 18 TONS, AT THE QUARRIES—DERRICK MAST USED IS 3 FEET IN DIAMETER AT THE TOP. NOTE THE HEAVY WIRE CABLE GUYING.

To better illustrate the vast extent of these great quarries and the massive monoliths used in this great structure, we reproduce herewith several half-tones showing the column drums passing through the several stages of handling, cutting and finishing. The building was designed by Architects Darling & Pearson, and the contract for the stone work was awarded to the Stanstead Quarries Co., of Stanstead, P.Q.

CONCRETE PAVING IN GERMANY.

CONCRETE pavements are being tried in Frankfort, Germany, on quite an extensive scale. They have not been down long enough as yet to furnish definite information concerning their wearing properties.

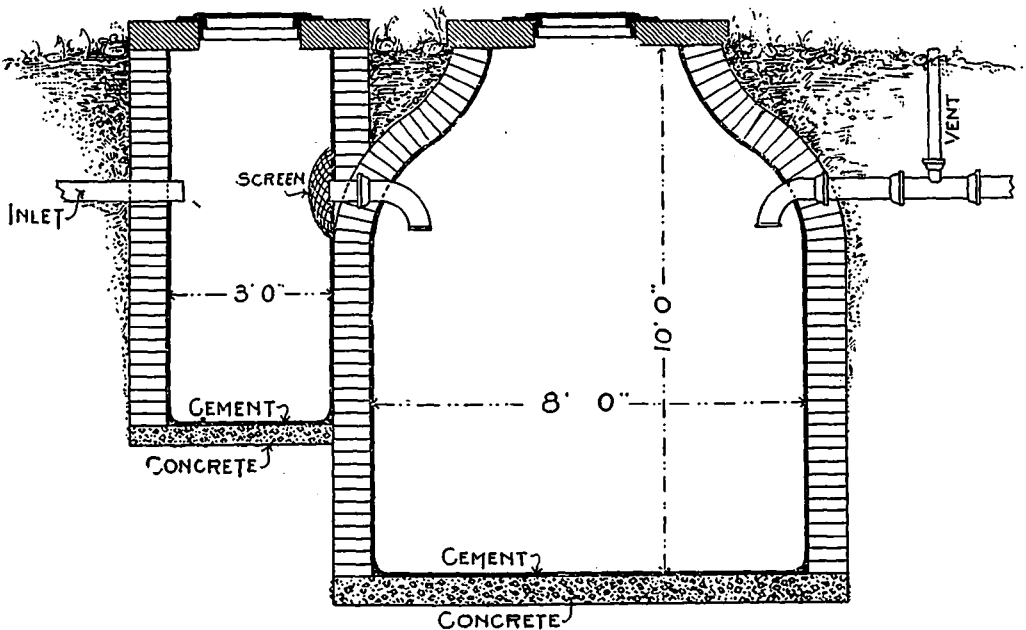
GROUTING OF CONCRETE PAVEMENT.

THE grouting of concrete pavements in Lynn, Mass., by using a grout mixing machine and distributing the mixture to place by swinging spouts, has proven more satisfactory and has resulted in a more uniform pavement than hand mixing in tubs and delivery by pails. The latter method was used on Summer St. two years ago, but in paving Lewis St. a year later, the newer method was tried. It was found difficult with hand mixing to secure constant proportions, while the grout mixer gave uniform results, and the swinging spouts allowed an even distribution. The Lewis St. pavement was built with graded stone, and compacted by steam rollers. The grout was then applied and the rolling continued, forcing the grout in the voids. This type of pavement is known as the Hassam pavement.

CESSPOOL CONSTRUCTION.—A Method of Providing Sanitation in Districts Having No System of Sewerage.

A PROBLEM continually met with by the architects and builders of the small town which has no system of sewerage, and also quite often by architects who have been called upon to design suburban homes, is that of sanitation.

In districts where modern methods of drainage are unknown, the only solution apparently lies in either the adoption of the cesspool or the outhouse. There seems to be considerable speculation as to whether a cesspool can be constructed so as to be perfectly sanitary and satisfactory. This is not only possible, according to the statement of an eminent sanitary engineer, but much to be preferred to the outhouse, both as to comfort and sanitation.



SKETCH OF CESSPOOL DESIGNED TO MEET SANITARY REQUIREMENT WHERE MODERN METHODS OF DRAINAGE HAVE NOT BEEN INTRODUCED.

As regards the construction of the cesspool, of course, it depends a great deal on existing conditions, such as location, soil, etc., and the amount of money one can afford to spend. A cesspool built as per the accompanying sketch, about eight feet in diameter and ten feet deep, with an auxiliary basin built on the side thereof, about 3x3 feet, is regarded as the most sanitary layout, for the amount of money it will cost, which it is possible to construct.

The small chamber is designed to receive and retain the solids, while the larger cesspool will take care of the liquids. The outlet could be connected to a porous drain tile laid about eighteen inches below the soil. A wire screen over the inlet to the liquid basin is desirable as it would prevent a soil accumulation in the larger basin.

The receiving chamber has a capacity sufficiently large, so that it will not have to be emptied more than once a year. This arrangement is eminently more satisfactory than the seeping cesspool proposition.

CHANGING OAK FINISH TO MAHOGANY. Method of Obtaining the Best Effect.—A Number of Stains that can be Used.

IN A CASE where it was desired to change oak that had been filled and varnished in the natural to mahogany, a recent issue of the Painters' Magazine presents the following comments in reply to a correspondent, who says that he realizes that the best way to clean off the old finish and then stain in imitation of mahogany, but that at the same time a good mahogany imitation cannot be had on oak, because of the difference in the grain:

The best effect could be obtained by sandpapering down the old finish, then apply mahogany ground color, and grain in imitation of mahogany, finishing with varnish. Still, if this method is too expensive and if the veining of mahogany is not an essential feature, we should say that the old finish should be well cleaned

down, using various grades of sandpaper or steel wool. A fair imitation of mahogany could be obtained by using a strong stain, which may be made from Bismarck brown, dissolved in denatured alcohol, to which a little shellac varnish must be added for binder, or it may be made up as a water stain, by mixing colors ground in water, thinning same with stale ale or beer. The proportions are about 16 parts by weight of burnt sienna, 3 parts rose pink and 1 part madder lake. Still another quick drying stain may be made by mixing 2 lb. burnt sienna in japan, and ½ lb. rose pink in japan, thinning the mixture with pure spirits of turpentine and a few tablespoonfuls of rubbing varnish. The last named stain would perhaps work best in your case, as it would most effectively hide the oak grain and by working deftly you may be able to come closer to the mahogany effect than by any other means. Try it first at a spot of the surface that will not show the test afterward, and select your colors so as to produce the desired effect.

REPORT ON ARCHITECTURAL REGISTRATION.---Summary of Committee Appointed by American Institute of Architects on Licensing of Architects.---Constitutionality of Law Fully Established in the States Where It Has Been Adopted.

THE EXAMINATION and registration of architects in this country, or as it is sometimes called, the licensing of architects, is already an accepted fact in three states. In one of them, Illinois, the license law has been in force more than ten years, and in New Jersey and California a shorter period. The laws are also being enforced in these states. In Illinois, where there are 700 licensed architects, only one person is known to be openly violating the law, and that person has been convicted on three prosecutions. The Illinois law has been tested in the courts only on the question raised as to the discretionary power of the State Board in rejecting applicants for license. The Board was sustained by the Appellate Court of that state, and the case was not carried by the appellants to the Supreme Court. In California the whole question of the constitutionality of such a law has within the present year been revised by its Supreme Court, and the decision which has recently been published shows that the law is sustained on constitutional grounds on all points in dispute.

It is only necessary here to quote from this lengthy and exhaustive decision a paragraph in two lines which ought to put at rest all vague opinions of laymen, that such laws are necessarily unconstitutional. It is as follows:

"In our opinion the act in question is not open to the claims of petitioner against its unconstitutionality."

Several cases have been tried in New Jersey under the provisions of the existing registration law and decisions rendered, but in no case has the constitutionality of the law been questioned.

Your committee feel that the American Institute of Architects should confine itself in taking up the consideration of the subject of the registration of architects to an investigation of the operation of the laws already enacted in the states where such laws exist. The result of such investigation might be of value to persons in other states who desire the enactment of such legislation.

Your committee is of the opinion that such laws should not necessarily be advocated only by architects. They are of the nature of police enactments similar to those requiring the licensing of physicians, lawyers, pharmacists and dentists. Most of the states have license laws covering all of these professions. The licensing of lawyers is by the Supreme Court or the highest courts of the states, who issue licenses to lawyers after examination, the lawyers thus becoming adjuncts to the courts. In all other cases the parties are licensed under the constitutional limitations for police laws, made for the protection of the community against the acts of incompetent or dishonest persons. Architects come within this category, as is very well understood. Such laws are not enacted by the Congress of the United States under the provisions of the Constitution; they come under the powers delegated to the several states, and each state is the judge of the necessity for them within its own boundaries.

In England it is different, because all laws are passed by the Parliament of the United Kingdom, while Great Britain's colonies have the same powers that are exercised by the states of our Union. Already the Province of Quebec of Canada has a license law, which is enforced by an incorporated association of architects, and the proposition now before the British Parliament is to place the power for licensing architects within the Royal Institute of British Architects for Great Britain and Ireland only.

On the continent of Europe there is something similar to a licensing system in France and Germany; but in these countries only certain architects are given an official status by reason of special appointments. There, however, everything in the nature of licensing has a tendency to create an aristocracy of architecture which would not be possible in this country under any circumstances.

The investigation by the New York Chapters, which was of the nature of a referendum addressed to architects in states where there were no license laws, developed a considerable amount of correspondence, which has been placed at the service of the chairman of this committee, and from which extensive copies have been made in his report submitted to this committee. The opinions expressed are so various that we cannot see that they can be used as a foundation for a report as in favor of or opposed to the enactment of licensing laws for architects. It must be evident to all of our members that when such inquiries are made the small proportion of answers received from those who are addressed are more apt to come from those who dissent from or have some objection to particular features in the license laws, rather than from those who have investigated them and are ready to express their complete approbation.

While nothing is heard from the large class of practitioners who would approve of the ultimate workings of such laws were they enacted, but who are too indifferent because of large practice to encourage such an enactment. On such occasion persons who have felt that provisions of the law have come in conflict with their own opinions or practice in certain particulars naturally have them in mind when furnishing such information and offering such replies. It is too late now when such laws have been in effect for ten years, and whose operations are open for investigation, to seek for individual opinions, as if nothing of the kind had ever been contemplated. The result as a whole could not be a fair expression of opinion.

An architect's license law must necessarily be enacted under the police powers given to the legislatures of the several states by their constitutions, to regulate the acts of incompetent persons or even prevent incompetent persons from performing acts which might result in danger to the community. It is very clear that such laws should be enacted rather on the demand of those who need such protection than of those who are to be regulated by it. And this brings us immediately to a consideration of the general misunderstanding among architects in places where such laws have not been enacted, as to their true meaning and purpose.

No law which regulates the practice of architecture in the interests of architects should be or ever will be enacted. It is the people only who should be interested in their enactment. Architects are only affected by the enforcement of such laws, and the architectural profession will never feel the full force of the benefit conferred upon it by these laws until a number of years after their enactment.

It would perhaps be fair to say twenty years would be the time necessary for the full benefit to be appreciated. If a careful investigation of the results of the Illinois law as far as they bear upon the architects were made now, after it has been ten years in force, there is no doubt but that the resulting benefits to the architects themselves would be greatly in evidence. In ten years from the present time, or more certainly twenty years,

there will be scarcely any practising architects in the state of Illinois who have not passed an examination, and have been approved by the examining board of that state.

At the present time nearly one-third of the architects of Illinois are holders of examination licenses, but there still remain the two-thirds who obtained licenses without examination on the mere affidavit that they were practicing architecture when the law went into effect, among whom necessarily there must be a large number of men having very little qualification or competence to practice their profession; and it is not likely that any great number of these men will have their licenses revoked for incompetence, the power to do which is conferred upon the state board, and they will always be referred to and put in comparison with competent practitioners by those who cast slurs upon the operation of the law in that state, no matter how carefully it may be enforced.

Among these men are naturally a large number with little or no artistic attainments; but yet many of these latter may be skilled in construction, sanitation and the other qualifications required by the law. And this brings us to a consideration of a further misunderstanding on the part of many architects who desire that license laws shall establish the artistic qualifications of architects, such as is contemplated in the registration law now before the British Parliament. This is unconstitutional and impossible in the United States. Therefore such laws can only be advocated in the interests of those who seek protection from the results of want of skill in construction on the part of architects and recklessness in carrying on their works, rather than from those who are desirous that a higher order of artistic merit should prevail in our profession. Hence the indifference of many of the leaders of the profession who are in well established practice, to the whole question.

While the Illinois law had been contemplated and talked about among architects for several years, no attempt ever was made to have such legislation until a very serious building accident, which was due to the incompetence of a young architect in supervising his work, incited a very large and well organized trade union of mechanics to suggest that such a law be passed. They were very insistent in the matter; but not knowing how to go about it, they appealed to the Chapter of the American Institute of Architects in their city, not knowing that this Chapter had ever been seriously considering what kind of a law could be framed. The Chapter acted in the interests of this union in what it did in preparing a draft for the law and advocating its passage, which was subsequently adopted; but the Chapter went further, it anticipated opposition, the same opposition which has arisen in several other states in which such propositions have been defeated by their legislatures. They not only had the powerful political influence of the trade union, but they called in the assistance of other organizations which might have to do with building operations, such as associations of employers of mechanics and real estate dealers. Thus it will be seen that the first architects' license law was the evolution of an effort for self protection on the part of large numbers of persons. It was passed without amendment.

The laws of the two other states are neither of them as perfect or effective, and for that very reason there have been more difficulties in enforcing them; and naturally they have been more subject to criticism.

The American Institute of Architects has a greater field for usefulness in the enforcement of professional ethics among architects and between architects and their clients than in seeking legislation, because of the very fact that it seeks it lays it open to the charge of personal interest. It has before it also that other great field of activity in fostering educational movements and developing the artistic abilities of those who are practicing our

profession. In consideration of all of these reasons your committee has come to the conclusion that the licensing of architects is not a subject on which the American Institute of Architects should take any official action; but that the whole matter should be recommended to the Chapters in the several states, and that the Chapters should first carefully consider whether there is a necessity for regulating the profession of architecture in their states, and if they do that they should first enlist the assistance of those who are most immediately interested in having protection from the acts of incompetent, reckless and dishonest architects; that such Chapters should act simply as advisory bodies, and should not appear before their legislatures as supplicants for such laws, but rather for the purpose of furnishing information when the same is desired.

Your committee therefore offer the following resolution.

Resolved, That the question of the advisability of the examination and registration of architects be left to the chapters of the Institute and those persons outside of their number who would be most interested in the safe construction of buildings, and that said chapters furnish such assistance as may be necessary in formulating license laws which will result in regulating the practice of architecture as a profession.

We Further Recommend Inasmuch as legislation of this character is being considered in various states, that a standing committee on state registration of architects be appointed whose duty it shall be to keep informed on all such laws or proposed legislation, to give advice to chapters so requesting and to report from time to time to the Institute.

All of which is respectfully submitted: Wm. B. Ittner, chairman; Peter B. Wight, A. F. Rosenheim, Chas. P. Baldwin.

A minority report was submitted that in text was similar to that of the majority, but concluded with the following substitute resolutions:

Resolved, First, That it is not considered advisable for the American Institute of Architects to discuss the question of the enactment of licensing laws in the several states or to express any opinion as to whether or not such laws are desirable or undesirable.

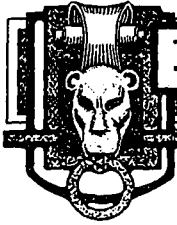
Second, That the several chapters of the Institute be requested to take up the subject of the advisability of such license laws first with these persons outside of their number who would be most interested in the safe construction of buildings, and furnish such assistance as may be necessary in formulating license laws which will result in regulating the actions of incompetent members of the architectural profession, and protecting the public against their recklessness and dishonest practices, wherever they may be found to exist.

MOSIAC WORK IN THESSALONICA.-- Church of St. George Built 400 Years Ago, Most Beautiful Example in Existence. |

SLENDID churches built in the first centuries of the Christian era are now the Turkish mosques, but they are much less disfigured and disguised than are the churches of Constantinople. The round church of St. George, built probably about 400, is the most beautiful example of Byzantine mosaic in existence. The work is exceedingly fine; the cube used is smaller than that used in St. Mark's in Venice, or at Monreale, the smaller size giving a refined and beautiful effect, difficult to describe on paper, says a writer in an exchange. A ruined ambo from this church is now in the Imperial museum in Constantinople, a superb mosaic indeed. The church of Holy Mary, now the Mosque of Eski Djouma, is very large and magnificent, gleaming with marbles and glittering with mosaics.

TRACK PAVING IN GERMANY.

GOOD blocks laid alongside rails are preferred on asphalt-paved streets in Frankfort, Germany. to any other system of connecting the street tracks and the paving. The blocks are laid over the whole space between the rails and for some distance outside the rails.



PROSPECTIVE CONSTRUCTION



The following information is obtained from our correspondents, from architects, and from local papers. These items appear in our Daily Advance Reports and are herein compiled for the use of subscribers to the monthly issue of "CONSTRUCTION." Should any of our readers desire this information oftener than once a month, upon receipt of request, we will be pleased to submit prices for our Daily Service.

Mills and Factories

Toronto, Ont.—The Bigley Manufacturing Company, 36 Queen street east, has been granted a permit for the erection of a one storey brick and steel foundry and machine shop on the west side of Macdonell avenue, near Sorauven avenue, at a cost of \$15,000. John Aldridge has the contract for the work. Plans were prepared by Architect H. Herbert.

Toronto, Ont.—The C. Wilson & Son Scale Works, 67 Esplanade street east, have been damaged by fire to the extent of \$16,000, covered by insurance. The loss on the building is estimated at \$3,000.

Toronto, Ont.—The Expanded Metal Company, Limited, 100 King street west, has been granted a permit for the erection of a one storey expanded metal and concrete factory building on Fraser avenue, near the G. T. R. tracks at cost of \$20,000. Architect P. H. Herbert is the architect. Structure will be built by the owners.

Toronto, Ont.—A. A. Barhelmes, 653 Markham street, has been granted a permit for the erection of a reinforced concrete and brick factory and boiler house at Cayton avenue and Gerrard street, at cost of \$19,000. Architects and builders, Clarke & Monds, 36 Toronto st. Lindsay, Ont.—The Lindsay Planing Mill, owned and operated by James Chalmers, has been damaged by fire to the extent of \$5,000. Covered by insurance.

Ottawa, Ont.—The Arbeter Felling Machine Company, of Canada, Montreal, has been incorporated, with capital of \$150,000.

Kenora, Ont.—Andrew Anderson, Winnipeg and New York, on behalf of the capitalists whom he represents, has submitted a proposal to the town council, Kenora, regarding the establishing of a paper and pulp mill at this place, to cost approximately \$3,800,000. Providing the town will grant the industry certain exemptions, building operations will be commenced in October and \$1,000,000 expended the first year.

Cobalt, Ont.—A big fire, which swept through the country four miles south of here, wiped out the plants of a dozen or more mines. Heavy losses, both to buildings and machinery, were sustained by the following mines: Temiskaming, Columbus, Cobalt, Coleman Development Co., and Shamrock, Lumsden, Duchess, Patterson, Progress, Cochrane and Fish Epplett lost all their buildings and machinery.

Buevale, Ont.—Duffy & Stewart's saw and planing mill has been completely destroyed by fire. Loss \$3,000.

Hallebury, Ont.—Vaugh Bros.' saw mill at Hallebury has been destroyed by fire. Loss estimated at \$7,000.

Markdale, Ont.—The Bell's Lake Portland Cement Co., capitalized at \$450,000 has been formed for the purpose of constructing a cement mill at Walker's Creek near this place. The mill will have a capacity of 3,000 barrels daily, and will be fitted up with the most modern machinery. Allan McPherson, of Longford Mills, Ont., is a director of the company.

Conn, Ont.—A. G. Blshop's new mill at Conn, about seven miles from Mount

Forest, has been completely destroyed by fire. Logs \$4,000.

Lindsay, Ont.—The John Caraw Lumber Co.'s saw mills at this place, have been damaged by fire to the extent of \$14,000. The engine and boilers were saved.

Peterboro, Ont.—The Peterboro Cereal Company's plant which was destroyed by fire, will be rebuilt on a larger scale. The company is in the market for the following machinery and equipment: two 3-phase alternating motors of 15 and 35 K.V. capacity; machinery for the manufacture of flour and feed, including rolls, purifiers, sifters, elevators, packers, scales, trucks, separators, bran and short dusters, bolting and shafting, pulleys and hangers, conveying machinery and freight elevator. The company expects to be ready to receive machinery some time in July. W. H. Meldrum, manager of Peterboro Cereal Co., limited, is in charge.

Galt, Ont.—Mr. McKelvey, of Stratford, Ont., has laid before the Board of Trade, of this city, a proposition regarding the building and equipping of a factory for the manufacture of furniture. The company will locate here, providing the town will grant it a free site and exemption from taxes for a number of years.

Hamilton, Ont.—The Hamilton Tube Company has been incorporated, with capital of \$50,000. The incorporators are: James Louis Sharkey, Adolph Monac-Lesser and Rusty Nystum Harry, all of New York; George Allen Martin, of Pittsburg, and Edward Herbert Ambrose, barrister-at-law, Hamilton. The company has secured a site of five and a half acres, on which it is proposed to erect a plant which will give employment to at least fifty men.

Norman, Ont.—The W. R. Hearst Newspaper Syndicate will erect a large pulp mill in connection with a big power dam at this place, construction starting about August 1.

Brantford, Ont.—A company has been organized, with capital of \$1,000,000 for the manufacture of a new asphalt street pavement. Mr. Van Westrum, of Chicago, is the chief promoter; others interested are W. J. Allen, W. T. Henderson, A. H. Elliott and James Nightingale, all local men. The company will erect a new factory building at this place.

Port Arthur, Ont.—H. S. Dowd, of Ottawa, is contemplating the erection of a flour mill, of capacity of about 1,000 barrels, at this place.

St. Catharines, Ont.—The Lincoln Paper Company's mills on the Welland Canal, have been totally destroyed by fire. Loss estimated at \$50,000, about half of which is covered by insurance.

Belleville, Ont.—W. R. Pennick's grist mill at Milltown, near this place, has been destroyed by fire. Loss on building and contents estimated at \$4,000, partially burned.

Kincardine, Ont.—A by-law will be submitted to the local ratepayers for the purpose of authorizing a loan of \$25,000 to the Hunter Bridge and Boiler Company, for the extension of their works.

St. Marys, Ont.—The Canadian Smallwares, Limited, will erect a factory building at this place. The company has the market for the following machinery: to be delivered in 45 days' time, viz.: 30 h.p. gas producer, machinery for the manufacture of hooks and eyes, hair pins, etc., and all wire and stamp metal goods, freight elevator, belting and shafting. W. G. Cannon, 19 Hexamer street, Toronto, is the representative of the company.

Montreal, Que.—Architect Robert Findlay, 10 Phillips Place, will receive tenders up to July 15 on a factory building to be erected on McCord street for the General Fire Extinguisher Co. It will be two storeys in height, of mill construction, with stone foundation, tar and gravel roof, and electric lighting.

Montreal, Que.—The Mount Royal Box & Lumber Manufacturing Com-

pany's plant at the corner of Ontario street east and Beaufort street, has been badly damaged by fire. Loss estimated at \$35,000, with insurance of \$32,000. J. P. Dupuis is manager of the company.

Sherbrooke, Que.—The Improved Machinery Company, of Nashua, N. H., will establish a branch plant here under the name of The Sherbrooke Machinery Co. for the manufacture of pulp and paper machinery. A factory to be heated by steam and run by electric motors will be erected. The company is ready to receive prices on all machinery, motors, etc.

Ste. Anne's, Que.—The powder mill of the Standard Explosives Company, at Ile Perrot, opposite Ste. Anne's, has been completely destroyed by an explosion.

St. John's, Que.—A portion of J. Donaghy's coal and wood premises, at the east end of Richfield street, has been damaged by fire. Extent of loss about \$5,000.

Winnipeg, Man.—Architect W. W. Blair, Winnipeg, is preparing plans for two large factory buildings to be erected in Winnipeg by American firm; one of the buildings will be two storeys in height, 200x40 ft., and the other three storeys, 100x65 ft.

Winnipeg, Man.—J. Y. Griffin's pork packing plant has been damaged by fire to the extent of \$50,000. The plant will probably be rebuilt.

Vancouver, B. C.—The Empress Manufacturing Company's building on Homer street, has been damaged by fire to the extent of \$70,000.

Vancouver, B. C.—J. T. Snadforth, the English ironmaster, is in Vancouver organizing a company to be known as the Northern Iron and Steel Corporation. The company will erect a large iron and steel plant, to cost approximately \$2,500,000.

Vancouver, B. C.—It is reported that R. H. Fulton, of Montreal, will establish a turpentine factory on Vancouver Island.

Victoria, B. C.—Messrs. Weller Bros., furniture factory and dry kiln on Humbolt street, has been badly damaged by fire. Loss not given.

Victoria, B. C.—T. N. Hibben & Company's paper and box making factory, on Government street, has been destroyed by fire. Loss estimated at \$75,000, mostly covered by insurance.

New Westminster, B. C.—Edward J. Young, of Madison, Wis., and Fred N. Norton, of Medford, Wis., have purchased through J. J. Jones, of this place, a tract of 5,000 acres on Indian River at the upper end of the North Arm of Burrard Inlet, on which they propose to erect a large saw mill. They have also secured an option on a much larger tract in the same locality.

New Westminster, B. C.—H. Stead is negotiating for a site of six-hy feet water frontage, on which he proposes to erect a plant for the manufacture of launches.

Elko, B. C.—The Adolphe Lumber mill at Daynes' Lake, south of here, has been completely destroyed by fire. Loss not stated.

Chilliwack, B. C.—Street Bros.' sash and door factory has been badly damaged by fire to the extent of \$3,000. The company will rebuild at once.

Medicine Hat, Alta.—The Red Cliff Brick Company's plant at this place has been destroyed by fire. The loss is estimated at \$50,000 with insurance of \$25,000.

Battleford, Sask.—Prince Bros.' flour and saw mill at this place, has been destroyed by fire. Loss estimated at \$12,000.

Gas Plants, Elevators and Warehouses

Saskatoon, Sask.—Wilson Urchs, who have been handling the business at this place for the McLaughlin Company, manufacturers of carriages, automobiles

etc., will erect a large warehouse on First avenue, in the near future.

Saskatoon, Sask.—The Imperial Oil Company, of this place, has received a tender for the erection of their warehouse at a contract price \$25,000. In all probability, building operations will be commenced in the near future.

Calgary, Alta.—Architects Dowler & Michie, have prepared plans for a \$23,600 warehouse to be erected on 8th avenue, west, for W. H. Blow, 7th avenue. The building will be three storeys in height, of brick construction, stone foundation, composition roof, hot air heating, electric lighting. Cement work, cut stone, structural iron, ornamental iron, vaults, freight elevator, sidewalk lift, fireproof windows, plate glass and prismatic glass. The stone and concrete work has been awarded. **Ketchikan, Alaska.**—Work on the proposed \$150,000 cold storage plant to be erected by the New England Fish Company at Ketchikan, Alaska, will be started next month. The building will be 65x100 ft., three storeys in height, and will contain four freezers capable of handling 100 tons of fish each. The refrigerator storage capacity will be 2,000,000 lbs. The ammonia system of refrigeration will be utilized. The machinery and equipment will include two 240 horse-power electrical generators directly connected with a Pelton water wheel. **Clayton, L. Clayton, of Seattle, is the architect.**

Saskatoon, Sask.—The A. Macdonald Co., Limited, of Winnipeg, has purchased the property at the N. W. corner of First avenue and Twenty-third street, on which they will at once erect a stone and brick warehouse to cover the entire lot.

Electrical Construction

Ottawa, Ont.—The shareholders of the Ottawa Electric Company have endorsed the recommendation of the directors to issue \$750,000 worth of refunding and first mortgage 5 per cent. bonds; \$500,000 of this money will be required to retire outstanding bonds and the remaining \$250,000 will be drawn upon for hydraulic improvements. The company proposes improving its water power at Claudiere, in which connection all the hydraulic lease holders have joined for the purpose of constructing a new dam above the cataract. Engineers J. B. McCrue and William Kennedy, are completing plans for this project.

Hamilton, Ont.—Tenders will be received until August 3 for the installation of an electric lighting plant for the city of Hamilton, 1st, for a plant of 650 lights; 2nd for a plant of 900 lights.

Winnipeg, Man.—Contracts have been awarded as follows for supplies required in the construction of long distance telephone lines in the Province of Manitoba, viz.: Battery and magnetic telephone sets. Northern Electric and Manufacturing Co., Montreal, and the Canadian Independent Co., Toronto; lead cable. Wire and Cable Co., Montreal, contract for about \$40,000; 150 tons B. B. No. 12 galvanized iron wire, The Whitecross Co., Limited, and the British Insulated and Helsby Co., Limited, at three cents per lb. f.o.b., Winnipeg.

Moose Jaw, Sask.—The Canadian General Electric Co., Toronto, has been awarded the contract for the installation of a Curtis Turbine engine for this city.

Bridges, Wharves and Subways

Toronto, Ont.—The Board of Works has decided to construct a retaining wall on the west side of the Don river at Riverdale Park, between the C. E. R. abutment near Winchester street and the Gerrard street bridge. The City Engineer reports that a solid concrete wall would cost approximately \$35,000.

Toronto, Ont.—The Board of Control has adopted the report of a Commissioner Wilson, recommending that the sea wall west of Indian Road, be proceeded with, and the sum of \$50,000 expended on it this year.

Kincardine, Ont.—The Bruce Township Council has awarded the contract for the construction of a cement flat arch bridge over the Black creek, on the Goderich road, to C. S. Wood, of Bruce.

Wallaceburg, Ont.—The County Council has been asked to take immediate action regarding the construction of a bridge across the Thames at or near Frairie Sliding. It is estimated that the bridge will cost about \$10,000.

Cornwall, Ont.—The New York and Ottawa Railway Company is having

plans prepared for a new bridge to replace the structure wrecked by the recent break in the Cornwall canal. In the meantime the company will put up a temporary bridge, by utilizing an old bridge from another part of its system.

Courland, Ont.—Tenders will be received by the undersigned up to 3 p. m., July 15th, for the construction of six concrete culverts. Plans and specifications may be seen at the office of undersigned, P. V. White, Townships clerk, Courland, Ont.

Simcoe, Ont.—Tenders were received up to July 11, for the construction of a cement concrete bridge and dam at the Victoria Mills, on the county line between Townsend and Tuscarora townships. E. Boughner, County Clerk, Simcoe, Ont., can be addressed.

Hamilton, Ont.—At a meeting of the North End Improvement Society it was recommended that a by-law be submitted to the ratepayers for the purpose of raising the sum of \$25,000 toward the completion of the work of filling in behind the retaining wall and for carrying the Catherine street sewer through the wall.

Brantford, Ont.—At a meeting of the Board of Works, the City Engineer was instructed to prepare plans and specifications for the erection of a steel bridge, with concrete abutments, to replace the Alfred street bridge, at this place.

New Westminster, B. C.—The ratepayers of this place have passed a by-law authorizing the expenditure of \$61,000 for the construction of a bridge across the north arm of the Fraser river.

New Westminster, B. C.—A reinforced concrete dam, 15 feet high, is to be built, as an additional protection, around the end of Coquitlam Lake, for the Vancouver Power Company, a concern affiliated with the British Columbia Electric Railway Company, of which Mr. F. B. Glover is acting general manager. The dam will cost about \$140,000.

Prince Albert, Sask.—The contract for the new bridge over the North Saskatchewan river, for the Prince Albert to Edmonton extension of the Canadian Northern Railway, has been awarded to the Hamilton Bridge Works Company, Limited, Hamilton, Ont.

Waterworks, Sewers and Canals

New Toronto, Ont.—The engineer has presented his report for the proposed sewerage scheme for New Toronto. The report recommends the laying of pipes from the centre line of New Toronto street, 1,700 feet to the westerly tower of the G. T. R. terminals, along Seventh street, extending on Fifth street to the Lake Shore road, thence to the centre of Morrison and Fourth streets, and from there to the lake front. Estimated cost \$12,600.

Toronto, Ont.—By-laws have been voted on and passed authorizing the expenditure of \$2,450,000 for a trunk sewer and \$750,000 for the installation of a filtration plant.

Ottawa, Ont.—According to a statement made by the Hon. Mr. Graham, it is the intention of the government to procure estimates for the cost of deepening the Welland Canal to a draught of 25 feet, and also of the cost of constructing an entirely new canal. In the opinion of the engineers who have been consulted regarding these improvements, it is contended that it would be cheaper to build a new canal. The latter project, if adopted, would reduce the number of locks about 75 per cent., and would cost between \$25,000,000 and \$30,000,000.

Ottawa, Ont.—The government survey for the Georgian Bay canal scheme has been completed and presented to Parliament. It is proposed to construct a 22 foot channel from Georgian Bay to Montreal, at estimated cost of \$100,000,000.

Listowel, Ont.—A by-law has been passed by the local ratepayers authorizing expenditure of \$6,000 for a waterworks system.

Galt, Ont.—The ratepayers of this place have passed a by-law providing for the installation of a septic tank sewerage system.

Brampton, Ont.—Tenders will be received by the undersigned up to noon, July 20, for the construction of sewage liquefying tanks at this place. Plans and specifications may be seen at the office of Willis Chipman, engineer, Toronto, or on application to Banks, Rushford town engineer, Brampton, Ont. T. J. Blain, Clerk of Municipality of Brampton.

Hamilton, Ont.—Contracts have been awarded as follows for the construction of sewers in this city, as follows: Sewer on McNab street, between Robinson st.

and Charlton avenues, city engineer; Pictou street, between McNab and Bay streets, J. J. Armstrong; Sydney street, between King and Main streets, S. Cheesman; Madison avenue, 100 feet westerly, J. J. Armstrong.

North, Ont.—G. T. Martin, of Smith's Falls, and J. E. Tubb, of this place, have been awarded the contract for sewer excavation in Perth, Ont. The contract amounts to approximately \$20,000.

Niagara Falls, Ont.—The Canadian Westinghouse Co., of Hamilton, has been awarded the contract for supplying the new pump for the city waterworks plant at this place. Contract price, \$5,250.

Montreal, Que.—The city proposes to construct sewers on the following streets viz.: Balmoral street, from the height of land northward to Ontario street; Sixth avenue, from north line of Masson street, to a point 170 feet northwards. Further information may be obtained on application to the undersigned, John T. Jarlow, city surveyor, Montreal, Que.

Montreal, Que.—At a meeting of the Roads Committee contracts for sewers were awarded as follows: L. Giguere, sewer, from Delorimier avenue to St. Denis street; B. Chaboyer, sewer, on St. Denis street, \$1,332; Meredith & Hefferman, Montreal, sewer on Dufferin street, \$16,506.50; J. Giguere, sewer in Demontigny street, \$53,407.50; Rexford Bishop Co., fourth section of relieving sewer to Back river, \$4,573.

Montreal, Que.—Contracts have been awarded as follows for the construction of sewers in this city: Michael Dineen, first section of the Sherbrooke street sewer, from Delorimier avenue to St. Denis street, \$55,000. A. Bellehumeur, Valois street sewer, \$5,180.

Victoria, B. C.—Tenders will be received by the undersigned up to 3 p.m. July 20, for supplying and erecting: (a) 1 horizontal cross-compound pumping engine; (b) 1 steel tank and tower; (c) 1 concrete and steel water tower. W. H. Northcott, purchasing agent, City Hall, Victoria, B. C.

Vancouver, B. C.—Preparations are being made for the installation of the salt water high pressure system in the City of Vancouver. City Electrician, Matthew Hutchison, is preparing specification for the pumps, and, as soon as completed, tenders for the machinery will be called for.

Regina, Sask.—A by-law will be submitted to the ratepayers on July 14 for the purpose of authorizing the expenditure of \$50,000 for extensions to the waterworks system.

Lethbridge, Alta.—A by-law has been passed by the ratepayers authorizing the expenditure of \$1,000 on an extension to the waterworks system.

Edmonton, Alta.—The contract for the construction of a trunk sewer on Jasper avenue, to extend from Namayo street to the ravine, has been awarded to Messrs. Westaway and Manders, at contract price \$2,351.

Arcola, Sask.—A by-law has been passed by the ratepayers of this place authorizing the expenditure of \$6,000 for a waterworks system.

Public Buildings

West Toronto, Ont.—A site at the corner of Annette and Medland streets has been purchased for the new Carnegie library building to be erected at this place. The property has a frontage of 90 feet on Annette street with a depth of 85 feet.

Toronto, Ont.—Tenders were received up to 5 p.m. July 14th, for all trades required in the erection of a library building in Queen's Park. Plans for the structure were prepared by Architects Darling and Pearson.

Peterboro, Ont.—Tenders will be received by the undersigned up to 4.30 p. m., July 22, for the installation of a hot water heating system in the Peterboro drill hall. Plans and specifications may be seen, and forms of tender obtained on application to Mr. A. J. Grant, Trent Canal Office, post office, Peterboro, Ont. and the secretary, Department of Public Works, Ottawa, Ont.

Victoria, B. C.—The Dominion Government has voted the sum of \$40,000 for the erection of an immigration building at this place. It is estimated that the building when complete, will cost \$91,180.

Cranbrook, B. C.—The Dominion Government has voted the sum of \$7,000 for the erection of a new post office at this place.

Perth, B. C.—The Dominion Government has voted the sum of \$30,000 for the erection of a new post office at this place. It is estimated that the building and site will cost \$66,000.

Brandon, Man.—A new court house will be erected at this place. Plans and

C O N S T R U C T I O N

specifications may be seen at the office of W. A. Elliott, architect, Brandon, and at the office of the Provincial Architect Parliament Buildings, Winnipeg.

Selkirk, Man.—Plans have been prepared for the erection of a new Carnegie library at Selkirk, to cost \$20,000.

Winnipeg, Man.—Plans have been completed by Architects Hooper and Walker, Winnipeg, for an addition to the Carnegie library on William avenue, for which an additional grant of \$33,000 was made.

Winnipeg, Man.—The Winnipeg Parks Board has been granted a permit for the erection of a pavilion in Assiniboine Park, at cost of \$17,340.

Victoria, B. C.—The contract for the construction of an addition to the post office has been awarded to Messrs. Dinsdale & Malcolm of this city, at a contract price of \$15,000.

Calgary, Alta.—Separate tenders will be received up to noon, July 15, for supplying of all plant, material, labor, and performing all work necessary in erection of a Land Titles Building at Calgary, to complete the following: plumbing, sheet metal work, heating, electric and telephone wiring, plastering. Tenders for following work will be received up to noon, August 1: hardware, glazed and rubber tiling, marble work, ornamental iron work, vacuum cleaning system. Plans and specifications may be had on application to the engineering branch, Department of Public Works, Edmonton, and at office of Department Public Works, Armstrong Block, Calgary. John Stocks, Deputy Minister Public Works, Edmonton.

Calgary, Alta.—The Dominion Government proposes to erect a \$75,000 armory at this place. The local finance committee is negotiating for a suitable site.

Jordan Harbor, Ont.—Contract has been awarded to Newman Bros., St. Catharines, for the new administration building and superintendent's house to be erected at Jordan Harbor Experimental Farm, at cost of \$16,000.

St. John, N. B.—The Militia Department proposes to erect a drill shed here in the near future.

Digby, N. S.—Bonds are being issued to the extent of \$15,000 for the purpose of constructing a new court house and jail at this place. For further information address J. A. Grierson, chairman of committee on Tenders and Public Property, Weymouth, N. S.

Business Buildings

Windsor, Ont.—Architects Watt & Crane, have awarded contracts as follows for a building of three stores and six flats, to be erected on the corner of Sandwich and Windsor avenues, this place, at cost of \$12,000; Masonry, lathing and plastering, Thompson & Christie; carpenter work, McGraw & Mills; painting and glazing, T. Brooke & Son; plumbing, metal work and roofing, T. Blackburn; wiring and bell work, Jas. Clark, all local firms.

Ottawa, Ont.—D. O'Connor, K. C., Ottawa, has been granted a permit for the erection of brick stores and dwellings, on Bank street, at cost of \$12,000.

North Bay, Ont.—H. Marceau has been awarded the contract for the new block to be erected for J. E. Gilmour. The building will be two storeys in height, 33x100 ft., with front of pressed brick and Longford stone trimmings.

Burk's Falls, Ont.—W. Sharpe Company's general store. Dr. Partridge's drug store, The Arrow printing office, J. P. Fowler's store, the post office, and J. C. P. R. ticket office, have been badly damaged by a fire which originated in the drying kilns of Knight Bros.' factory. Loss estimated at \$150,000, with insurance of \$70,000.

Fort William, Ont.—Architect J. Roberts has prepared plans for a business block to be erected on Simpson street for R. D. Hawke.

Montreal, Que.—Architect G. A. Monette, 37 St. James street, has prepared plans for a three storey apartment dwelling to be erected on Ontario street for L. Z. Phunant.

Montreal, Que.—The Reliance Cigar Company's building at 61 St. Sulpice street, Montreal, has been badly damaged by fire.

Quebec, Que.—The Bell Telephone Company will extend its present building, which is 30x90 feet to double its width, and erect an additional storey to the superstructure. The company will install entirely new equipment. Expanded metal locks and a clothes drying apparatus will be located on the first floor, half of which is to be used

for the accommodation of the operators. The entire improvements, it is estimated, will cost \$200,000.

Quebec, Que.—L. Larose, has the contract for a business building to be erected on D'Aut street, for W. McWilliam. It will be 50x55 ft. (three storeys in height, and will cost \$15,000.

Hartland, N. B.—Keith & Plummer, will erect a new building, at this place in the near future. The structure will be 50x50 feet of solid brick construction, with concrete basement, and will be two storeys in height.

Hartland, N. B.—Franklin Clark will shortly erect a new business building. It will be two storeys in height, 30x60 ft., of solid brick construction, with concrete basement.

Winnipeg, Man.—Tenders have recently been received for a four storey business building to be erected for The Argyle Buildings, Limited. It will be of brick and stone construction, with stone foundation, felt and gravel roof, interior finishing, heating, and electric lighting, metallic lath, structural iron, ornamental iron, fire escapes, metal ceiling, plate glass, and prismatic glass. Estimated cost \$60,000. Paul M. Clemens, 224 Notre Dame avenue, is the architect. Portage la Prairie, Man.—Archie McLeary, contractor, has purchased thirty feet on Saskatchewan avenue, near Main street, on which he will erect a brick business block this summer.

Portage la Prairie, Man.—Burt & Andrich, will erect a \$10,000 office and apartment block on Saskatchewan avenue in the near future.

Vancouver, B. C.—H. Bell-Irving, has been granted a permit for the erection of a frame dwelling house and store on Harwood street, at cost of \$10,000.

Vancouver, B. C.—A party consisting of W. S. Eames, architect, Jas. W. Black, president of a big construction company, and Isaac T. Cook, all of St. Louis, Mo., has visited Vancouver with a view to erecting a one million dollar office building in this city.

Vancouver, B. C.—H. Duckchew, has been granted a permit for the erection of a brick store on Pender street east, at cost of \$12,000.

Vancouver, B. C.—H. Bell-Irving, has been granted a permit for the erection of a frame dwelling house and store on Harwood street, at cost of \$10,000.

Victoria, B. C.—A store and apartment building, to be located on the corner of Belleville and Government streets, Victoria, will be erected in the near future by William Spencer, of the firm of David Spencer, Limited, and J. S. M. Watson. It will be four or five storeys in height, 88x108 ft., and of fireproof construction.

Ladysmith, B. C.—The Dominion Government has voted the sum of \$10,000 for the erection of a new post office building at this place.

Regina, Sask.—The plans prepared by Architects Darling & Pearson, Winnipeg, have been accepted for the Brown and Mackenzie block, to be erected on Seath street, at estimated cost of \$10,000.

Banks

Toronto, Ont.—The Metropolitan Bank has purchased a site on the S. W. corner of Danforth and Broadview avenue, on which it will erect a new bank building, to cost, approximately, \$20,000.

Wetland, Ont.—Plans and specifications have been prepared by Architects Darling & Pearson, of Toronto, for a new building to be erected here for the Imperial Bank. The building will be of Milton pressed brick, with stone trimmings, flat roof, galvanized iron trimmings, wood and butter interior finish, cut glass windows, and hot water heating. Dimensions of ground 55x32 ft. The second floor will be used exclusively for the accommodation of the clerks.

Tillsburg, Ont.—Tenders were received to July for the erection of a bank and office building at Tillsburg, for the Traders Bank. F. S. Baker, Traders Bank Building, Toronto, is the architect.

Montreal, Que.—The Bank of Montreal will erect a new building on Peel street. The structure will be fireproof, with stone front and cornice, stone and concrete foundation, tar and gravel roof, and floors of reinforced concrete. It will cost \$36,000. E. & S. Maxwell, 6 Beaver Hall Square, are the architects.

Winnipeg, Man.—The Bank of Nova Scotia, has been granted a permit for the erection of a new bank building on the corner of Garry and Portage avenue at cost of \$220,000.

Railway Construction

Sarnia, Ont.—It is reported that the C. P. R. will build a line from Komokuk to Sarnia next spring.

Ottawa, Ont.—It is expected that the new Transcontinental Railway, which will cost \$63,437 per mile, will be completed by Dec. 1, 1911. The Moncton and Quebec terminals it is estimated will cost \$37,000 and \$2,000,000 respectively.

Ottawa, Ont.—The Dominion Government has placed an estimate of \$16,000 towards the construction of a tramway round Death Rapids, making available for transportation the whole length of the Columbin river, north of Revelstoke as far as Wood River.

Ottawa, Ont.—It is expected action will be taken shortly regarding the construction of the Hudson Bay railway. The Canadian Northern railway, it is understood, will be entrusted with the construction of this railway, which will form a 480 mile link between the point the Canadian Northern has reached, and the Saskatchewan river and Churchill on Hudson Bay.

Ottawa, Ont.—A committee, consisting of Aldermen Wilson, McGrath, Desjardins, Brown and Slinn, has been appointed to interview the Ottawa Electric Company, regarding the construction of an extension of the street railway to the city cemeteries.

Walkerton, Ont.—The Grand Trunk station at this place has been completely destroyed by fire.

Stratford, Ont.—The G. T. R. will erect a large power house at its shops here. The structure will be of steel with concrete foundation and brick walls, and sufficient power will be generated to operate all the machinery at the works.

Berlin, Ont.—The Grand Trunk depot at Berlin has been damaged by fire to the extent of \$15,000.

Wingham, Ont.—S. Bennett, of this place, has been awarded the contract for the interior fittings for the new C. P. R. stations at Winkerton, Hanover and Paisley.

Brantford, Ont.—The Brantford Street Railway Company has decided to extend its tracks to the village of Chalmersville, and has made application to the Brantford Township Council for right of way along the Hamilton road from Mohawk Park.

Montreal, Que.—The Southern Counties Railway has signed a contract whereby they agree to construct a line from St. Lambert, Longueuil and the south into the city, work to be commenced at once. The city track will be laid through a part of Common street, Grey Nun and Youville streets, the company agreeing to pave the above mentioned street.

Quebec, Que.—Dussault & Powers, contractors, Levis, Que., have been awarded the contract for the fifteen mile extension of the Quebec Central Railway from St. George, Deauce to St. Justice, at cost of \$300,000.

Calgary, Alta.—It is reported that the Canadian Northern Railway will commence work at once on the construction of a line from Saskatchewan to Calgary, providing the governments of Saskatchewan and Alberta will guarantee the bonds.

Calgary, Alta.—At a meeting of the Special Railway Committee of the City Council, it was agreed to lay the rails for the proposed new street railway at the same time the work of paving the streets is underway. It is estimated that the cost of equipment, including rolling stock, will be about \$30,000 per mile. The matter of providing cars and equipment will be taken up at some future date, when more funds are available.

Moose Jaw, Sask.—The Canadian Pacific Railway has decided to proceed at once with the rather costly construction of over a hundred miles of the Moose Jaw-Lacombe branch.

Clubs and Societies

Toronto, Ont.—The Parkdale Lawn Bowling Club, N. E. corner of King street and Cowan avenue, will erect a two storey brick club house to cost \$3,000 at that location. George Swedden has the contract.

Ottawa, Ont.—Architects Weeks and Keefe, Citizen Building, have prepared plans for a new club building to be erected for the Ottawa Hunt Club. The structure will be of the Old English style of country residence, and will be constructed of concrete, rubble stone, and stucco. Cost approximately \$25,000. E. G. W. Peape, of Montreal, has the general contract.

Hamilton, Ont.—At the meeting of the North End Improvement Society, a committee was appointed to select a site for a new hall to be erected short-

ly, and also to secure estimates of the cost of construction.

Camrose, Alta.—The Canadian Club will erect a two storey 26x32 ft. structure, at a cost of approximately \$4,000.

Halifax, N. S.—Architects Jackson & Roscombs, New York, are preparing plans for a new Y. M. C. A. building to be erected here, at a cost of approximately \$100,000. The building, which will be located on the corner of Barrington and Salter streets, will be three storey and basement in height and will be provided with all modern conveniences, including plunge and needle baths, lockers, etc. It will contain one of the best appointed gymnasiums in Canada. Dr. Woodbury is president of the association.

Asylums and Hospitals

Toronto, Ont.—The Board of Control has voted the sum of \$15,000 for the erection of an addition to the Boys' Home on George street, which is to become the property of the Board of Education.

Toronto, Ont.—Architects G. M. Miller & Co., have prepared plans for a new Methodist Deaconesses' Home, to be erected on the corner of St. Clair avenue and Avenue road, at estimated cost of \$100,000.

Dundas, Ont.—Architect Jas. W. Kenney, has prepared plans for the Aged Women's Home to be erected at this place.

Ottawa, Ont.—Preliminary plans have been prepared by Architects Weeks & Keefe, for the proposed Consumptives' Home to be erected on the Pugsley site. The plans provide for a solid brick structure, two storeys and attic in height, to cost approximately \$25,000.

Ottawa, Ont.—A new wing, three storeys in height, will be erected in connection with the Maternity Hospital at an estimated cost of \$9,000 to \$10,000.

Vancouver, B. C.—Tenders were received up to July 13 for the erection of a sanatorium at Tranquille for the British Columbia Anti-Tuberculosis Society. Plans and specifications were prepared by Architects Dalton & Evesleigh, Davis Chambers, this city.

Saskatoon, Sask.—Tenders were recently received for the construction, including plumbing, heating and electrical work, of a hospital building at this place. Plans and specifications were prepared by Architect W. W. Chance.

Calgary, Alta.—Contracts for the new general hospital to be erected here were awarded as follows: General contract Woodward Bros., contract price \$103,370; electric wiring, The Northwest Electric Co., contract price \$1,500.

Churches

Toronto, Ont.—The congregation of the Parkdale Methodist church has been granted a permit for a new \$40,000 church building to be erected at the corner of Sorauren and Gully avenues, Parkdale. Architects G. Miller & Company prepared the plans.

Toronto, Ont.—The Bloor Street Presbyterian congregation has been granted a permit for the erection of a two storey brick Sunday school building on the corner of Bloor and Huron streets, at cost of \$25,000. Plans for the structure were prepared by architects Wickson & Gregg.

Chesterville, Ont.—Tenders will be received by the Rev. J. H. Runnes, Chesterville, Ont. up to 5 p. m., July 15 for lathing and plastering the new Methodist church in Chesterville; also for the construction of cement steps, platforms and approaches to the church and cement floors in basement; water to be pumped by the building committee. Plans may be seen at the office of the architect, B. Dillon, Brockville, or at the Parsonage, Chesterville. M. Brown, secretary Building Committee.

Fonthill, Ont.—The Baptist congregation has decided to erect a new church building. A committee composed of G. C. Brown, John H. Borg, Isiah Hensler and F. Kinsman, has been appointed to procure architect's plans and specifications.

Fort William, Ont.—M. H. Bradon has been awarded the contract for the new church to be erected here for the Presbyterian church. The building will be of solid brick construction with white stone trimmings, and will cost approximately \$70,000.

Cheweken, Ont.—Riddolls & Wright, Brantford, Ont., have been awarded the

contract for the new Anglican church to be built here at cost of \$7,000.

Ottawa, Ont.—Plans are being prepared for a new church building to be erected for the congregation of McKay Presbyterian church, Rev. P. W. Anderson is pastor of the church.

Fort William, Ont.—Plans and specifications for the new church building to be erected here for the St. Andrew's congregation have been revised, and new tenders asked.

Eglington, Ont.—The trustees of Eglington Methodist congregation have had plans prepared for improvements to be made to their church building, at estimated cost of \$5,000. Plans include a new organ, new heating and lighting system, removal of gallery, etc.

St. Anselme, Que.—Architects Ouellet & Levesque, 115 St. John street, Quebec, have completed plans for a chapel to be erected in St. Anselme, Que., for the Roman Catholic congregation. The building will be brick construction with stone and concrete foundation, and galvanized iron roof.

Blue Sea Lake, Que.—The Roman Catholic congregation will erect a new chapel at Blue Sea Lake, this summer.

North Sydney, N. S.—The Building Committee of St. Joseph's parish has selected a site at the corner of Price street and Archibald avenue, on which a new church building will be erected. The work of construction will be commenced in the near future.

Terrebonne, B. C.—The Episcopal congregation of this place, has decided to erect a new church building, at cost of approximately \$20,000.

Lacombe, Alta.—Geo. P. Vickers, has been awarded the contract for the new Presbyterian church to be erected at the corner of Broadway and Hamilton avenue. The building will be 40x60 ft. of pressed brick construction. Architect D. S. McElroy, of Calgary, prepared the plans.

Residences and Flats

Toronto, Ont.—Davidge & Lunn have the contract for the erection of a two storey and attic brick dwelling on the N. W. corner of Brantwell and Huron streets, for James Harris, 33 Spencer avenue, at cost of \$9,000. Architect Jas. L. Haull prepared the plans.

Toronto, Ont.—Architect K. M. Chadwick has been granted a permit for the erection of a three storey brick apartment house on the S. E. corner of Yonge and Rowanwood avenue, at cost of \$15,000.

Toronto, Ont.—Architects Bond & Smith have prepared plans for a \$14,000 two storey and attic brick dwelling to be built on Grenville street, near Yonge street, for I. A. Lash, 15 Grenville street. Elgie & Page, have the contract.

Toronto, Ont.—James Curry, 93 St. George street, has been granted a permit for the erection of five pairs of two storey semi-detached brick dwellings on the S. E. corner of Dundas street and Parkway avenue, at cost of \$20,000. Architect H. A. Marshall, Builders H. A. Marshall and D. A. Peacock, have the contract.

Toronto, Ont.—J. Coleman, 552 Huron street will erect a two storey brick dwelling at 47 Wilcox street, near Spadina avenue, at cost of \$7,000, according to plans prepared by Architects Denison & Stephanson. Davidge & Lunn have the contract.

Toronto, Ont.—A. D. Williams, 99 Grace street, has been granted a permit for the erection of five pairs of two storey, semi-detached brick dwellings on College street, near Boncevalles avenue, at cost of \$10,000.

Toronto, Ont.—Walter Nash, 79 Verdala avenue, has been granted a permit for the erection of five pairs of two storey semi-detached brick dwellings on Macdonnell avenue, near Fern avenue, at cost of \$22,500.

Toronto, Ont.—Architect Chas. J. Gilson, has prepared plans for a two storey brick and stucco dwelling to be erected at the corner of Highland avenue and Binscarth road for W. H. Chandler, Lake Shore Road, Toronto Island. The building will cost \$9,000.

Toronto, Ont.—St. Thomas church will erect a two storey brick parish house on Huron street near Sussex street, at cost of \$13,000, according to plans prepared by architects Eden, Smith & Son.

London, Ont.—G. S. Wright and O. Jones have been awarded the contract for six pairs of dwellings to be erected on Mulbart street and Egerton street for L. Garrad. The buildings will be one and a half storeys in height of brick construction, with half timbered fronts and shingle roofs.

London, Ont.—Architect E. Wright, 438 Wellington street, has prepared plans for a two storey brick veneer residence to be erected on Cathgart street, for Mr. Mills.

London, Ont.—G. S. Wright and O. Jones have been awarded the contract for two two-storey brick veneer residences to be erected on Talbot street, for W. I. Teeple. The buildings will be equipped with hot air furnaces and electric and gas lighting.

Halleybury, Ont.—Contracts have been awarded as follows for a farm residence to be erected here for Wm. Lewis: Mason work, J. F. Pearson; carpenter work, Louis Jones; heating, C. A. McLean, all local contractors. The building will be one storey in height, with stone foundation, ash interior finish, hot water heating, electric lighting, and will cost \$3,000. Architect A. D. Pillar prepared the plans.

Halleybury, Ont.—Bishop & Williams, have been awarded the contract for a solid brick residence to be erected for C. C. Fair, at a cost of \$10,000. The building will be two and a half storeys in height, with stone foundation, galvanized shingle roof, quarter cut oak interior finish, hot water heating, electric lighting, mantels, ornamental columns, plate glass and art glass and hot air pump. A. D. Pillar is the architect.

Hamilton, Ont.—William Baxter has been granted a permit for the erection of five brick dwellings on the corner of Cannon and Caroline streets, at a cost of \$10,000.

Ottawa, Ont.—W. D. Hooper, 364 Ocession street will erect a double brick veneer dwelling on Carling avenue, at a cost of \$6,000.

Ottawa, Ont.—J. G. Easter, Ottawa South, will erect a double brick veneer dwelling on Carling avenue, for J. G. Davidson, at estimated cost of \$6,000.

Stratford, Ont.—Architect W. J. Ireland has prepared plans for a two storey residence to be erected for J. D. McCrimmon. The building will be of brick construction, with stone foundation, shingle roof, hardwood interior finish, steam heating and electric lighting, mantels, ornamental columns and caps, and art glass. Estimated cost \$4,000.

Montreal, Que.—J. Fair, 138 Mansfield street, will erect several stone and brick dwellings at a cost of \$13,000. Shearer, Brown & Willis have the contract for the work.

Montreal, Que.—J. Lessard, 163 St. Hubert street, Montreal, has been granted a permit for the erection of seven pairs of semi-detached dwellings, at estimated cost of \$13,000.

Montreal, Que.—J. B. Brouillette, 600 St. Denis street, has been granted a permit for the erection of brick houses, of three dwellings each, to cost \$8,000. Buildings will be equipped with hot water heating. Architect Eugene Payette, 15 St. Jacques street, contractor and owner.

Sherbrooke, Que.—Architect C. E. White will receive tenders to July 15, for a two-storey residence to be erected on Melbourne street for B. C. Howard. The building, to cost \$3,000, will have wood frame cement wall, concrete foundation, galvanized shingle roof, ash and spruce interior finish, hot air heating, electric lighting, metallic lath and art glass.

Winnipeg, Man.—Brynjolfsson & Co. have the contract for the erection of a five-story apartment block on the southeast corner of Carlton and Quebec, at cost of \$150,000. Architect W. W. Blair prepared the plans.

Winnipeg, Man.—Alderman Eggerston, Winnipeg, has taken out a permit for the building of ten new houses, five to be erected on Curlew street and five on Victor street. Estimated cost, \$36,000.

Winnipeg, Man.—F. Thorpe will erect three houses on Alloway street, at cost of \$12,000.

St. James, Man.—Architects Oldfield, Winfield & Co., Kennedy building, have prepared plans for a \$3,000 residence to be erected at St. James for F. W. B. Loughhead.

Vancouver, B. C.—Architect E. S. Milton, 619 Hastings street, has prepared plans for a bungalow, to be erected on Ninth avenue for S. F. Mason.

Vancouver, B. C.—W. J. Harrington has been granted a permit for the erection of a frame dwelling on Nelson street, at cost of \$9,000.

Calgary, Alta.—Architects Dowler & Michie have prepared plans for a residence to be erected for Mr. H. Strain on Twelfth avenue, at a cost of \$3,000. The building will be two stories in height of frame construction, with concrete foundation, shingle roof, fir inter-

for finish, hot air heating, electric lighting and enamelled plumbing.

Calgary, Alta.—Swanson & Smith, 1514 Eleventh street west, have been awarded the general contract for the erection of a \$4,500 two-and-a-half-story frame residence on Seventeenth avenue west, for E. E. Taylor. The contracts for the iron work and heating has been sub-let to C. Comer, Calgary, while the plastering work has been awarded to T. Bruce. Architects Dowler & Michie prepared the plans.

Belcarres, Sask.—Tenders will be received at the office of the undersigned, at File Hills Indian Agency, Belcarres P. O., up to July 18, for the erection of two frame dwelling houses on Posque Reserve, west of Fort Qu'Appelle, and north of Qu'Appelle station. Plans and specifications may be seen at the Dominion Lands Office, Regina; the office of the sub-agent of Dominion Lands, Indian Head, or at the office of the undersigned, File Hills Indian Agency, W. M. C. Graham, Inspector of Indian Agencies.

Regina, Sask.—The contract for the construction of the new officers' residences which are to be erected at the Royal Northwest Mounted Police Barracks, has been awarded to McGregor & Black, Regina, Sask.

Hotels

Blenheim, Ont.—The Buzzard House has been badly damaged by fire. Loss not given. Structure will be rebuilt at once.

Canfield Junction, Ont.—The Junction House at this place has been totally destroyed by fire. The building was owned by Jos. Stratford, of Brantford, and is being conducted by W. H. Meyers. It will likely be rebuilt.

London, Ont.—The City Hotel of this place has been damaged by fire to the extent of about \$15,000.

St. Martins, N. B.—The New Brunswick Tourist and Hotel Company has purchased the old Baptist Seminary at St. Martins, to which it will make extensive alterations and improvements. The building will be opened for hotel purposes next summer. J. Harry King is at the head of the company.

Michel, B. C.—Tenders have recently been received for the erection of the Kootenay Hotel, at Michel townsite. Plans and specifications on file at J. S. Laursen, Michel, or A. Watson, Fernie, B. C.

Fire Stations and Jails

Toronto.—The Provincial Government is negotiating for a site of 400 acres, for the establishment of the new Central Prison farm, towards which \$100,000 was voted at the last session of the Legislature. The work, in all probability, will be proceeded with as soon as a site is selected.

North Bay.—A by-law will be submitted to the ratepayers of North Toronto on July 25 for the purpose of authorizing the issuing of debentures to the extent of \$5,500, for the erection of a fire hall and installation of fire alarm system. (Previously mentioned.)

London, Ont.—Contracts have been awarded as follows for the erection of the South End Fire Hall: Brick and masonry work, John Nurkins & Son, \$2,898; carpenter work, John Purdom, \$2,250; painting and glazing, R. Mulhern, \$174; plastering, Geo. S. Gould, \$220; plumbing, Noble & Rich, \$300; heating, Noble & Rich, \$390.

London, Ont.—Contracts have been awarded as follows for the erection of the North End Fire Hall: Brick and masonry work, John Nurkins & Sons, \$2,898; carpenter work, John Purdom, \$2,250; painting and glazing, R. Mulhern, \$174; plastering, Geo. S. Gould, \$220; plumbing, Noble & Rich, \$300; heating, Noble & Rich, \$390.

Montreal, Que.—The contract for the erection of the new police station, No. 13, has been awarded to F. X. Aube, at a contract price of \$22,142.

Montreal, Que.—Tenders were received July 9 for the construction of No. 20 fire station, corner of Craig and Chenaille streets. Plans and specifications were prepared by Architect L. R. Montbrinard, 230 St. Andre street.

Victoria, B. C.—The Fire Wardens are having plans prepared at once for the erection of the proposed two new fire stations, one to be located near the corner of Burnside avenue and Douglas street and the other in the James Bay district.

Saskatoon, Sask.—The City Council has contract for the erection of the new fire hall to F. A. and G. A. Marr, at contract price of \$14,100.

Lethbridge, Alta.—A by-law has been passed by the ratepayers of Lethbridge,

Alta., authorizing the expenditure of \$45,000 for the construction of a new fire hall and market.

Schools and Colleges

Toronto.—Tenders were recently received for the erection of the Faculty of Education and Pedagogy buildings on the southeast corner of Bloor and Spadina avenue. Plans and specifications were prepared by Architects Darling & Ferguson, Toronto.

Toronto.—The Board of Education has awarded the contract for heating and ventilating the Lansdowne school, Toronto, to the Fred. Armstrong Co., 277 Queen street, at contract price of \$12,300.

Toronto.—The Board of Education has awarded the following contracts for the erection of an addition to the Wellesley street school: Masonry, J. McLeod, Manning Chambers, \$3,320; carpentering, Frank Armstrong, 89 Oak street, \$3,664; roofing, W. E. Dillon Co., 76 Richmond street east, \$805; plastering, Blackburn & Son, 208 Broadview avenue, \$371; painting, J. Phinimore, 10 Gerrard street east, \$275; plumbing, Fred. Armstrong Co., 277 Queen street west, \$1,160; structural steel work, McGregor & McIntyre, 75 Pearl street, \$295; heating and ventilating, \$10,300.

Toronto.—The Board of Education has awarded contracts as follows for the erection of an addition to the Perth avenue school: Masonry, H. Lucas, 141 Havoclock street, \$8,279; carpentering, Crocker & LeDrew, 185 Ossington avenue, \$9,000; roofing, C. M. Erygan, 521 Yonge street, \$2,515; plastering, Blackburn & Son, 208 Broadview avenue, \$1,058; painting, J. Phinimore, 10 Gerrard street east, \$515; plumbing, Keith & Fitzsimmons, 111 King street west, \$65; heating and ventilating, Tuttle and Warming and Ventilating Co., 36 Toronto street, \$1,890.

Toronto.—The Board of Education has awarded contracts as follows for the erection of an addition to the Leslie street school: Masonry, J. McLeod, Manning Chambers, carpentering, Frank Armstrong, 89 Oak street, \$3,993; roofing, Forbes Roofing Co., 91 Spadina avenue, \$1,068; plastering, Blackburn & Son, 208 Broadview avenue, \$1,192; painting, J. Phinimore, 10 Gerrard street east, \$825; plumbing, Fred. Armstrong, 277 Queen street west, \$1,000; structural steel work, Dominion Grillage Co., Canada Life Building, \$606; heating and ventilating, Heating and Ventilating Co., \$2,955.

West Toronto, Ont.—The School Board has decided to erect a new two-room school building in the Scarlett Plains district.

Welland, Ont.—The Public School Board has had plans prepared for a four-room brick school building, to be erected in the near future. J. McCaw, Secretary Public School Board, Welland, Ont.

Windsor, Ont.—The contract for the new boiler house and fruit house at the Agricultural College has been awarded by the Minister of Public Works to the Clemens Company of this place.

Hamilton, Ont.—The Separate School Board has decided to erect a four-room cement school building at the corner of Sherman avenue and Barton street, St. Anne's parish. Estimated cost of structure between \$10,000 to \$12,000.

Millbank, Ont.—Tenders were received up to July 11 for the erection of a two-room brick school building at this place. John Ritter, Secretary of School Board, Millbank, Ont.

Frankford, Ont.—Tenders were received recently for the erection of an addition to the school building in Section 22, No. 11, of the township of Sidney (Frankford). W. W. Pettit, Secretary, Board of Trustees of No. 11 School Section, Frankford, Ont., can be addressed.

Orillia, Ont.—Tenders have been received for the erection of an addition to the Collegiate Institute at this place. Architect J. S. Siddall, Toronto, prepared the plans.

Hamilton, Ont.—Architects Stewart & Witton have taken out a permit for a brick addition to the Picton street school, which will be built at a cost of \$25,000.

West Toronto, Ont.—Architects Ellis & Connerly, Manning Chambers, Toronto, have prepared plans for a two-story eight-room school building to be erected here. The building will be of brick construction, with stone trimmings, composition roof, hardwood floors, open plumbing, and steam heating and ventilating system.

St. Catharines, Ont.—The directors of Ridley College are contemplating the erection of a third building on the college grounds, across the old Welland canal.

Smith's Falls, Ont.—The Board of Education has decided to ask the Town Council for the sum of \$6,000 to remodel the present high school building. B. E. Spark is Chairman of the Board.

Amherstburg, Ont.—Architects Watt & Crane, of Windsor, Ont., have been commissioned to prepare plans for a new eight-room school building, to be erected here at cost of approximately \$25,000.

Mimico, Ont.—At a meeting of the Executive Committee of the Victoria School it was recommended that a new Trades Instructional building be erected at an outlay of \$20,000. The committee also recommended the remodelling of the entire system of sewage disposal, at cost of \$7,000, and the entire overhauling of No. 3 cottage. The report was adopted.

Montreal, Que.—T. J. Drummond has purchased the Misses Symmers and Smith school at 512 Sherbrooke street west, and will make extensive alterations to the building.

Blue Bonnets, Que.—William Tremblay, Montreal, has bought a site for a new school building to be erected at Blue Bonnets, three miles from Montreal.

St. John, N. B.—The Board of School Trustees has decided to install a hot water heating system in the Manual Training School. All the city schools will be equipped with fire escapes, at a cost of about \$14,000.

Woodstock, N. B.—The Board of Education has decided to ask for the sum of 40,000, to be raised by the issuing of debentures, for school buildings, improvements, and to include a new city street school building, enlarging ground, etc., \$25,000; four-room addition to Beale street school and new heating system, \$9,000; improvements to the Collegiate, \$2,400, most of which will be expended for an iron working section for the manual training department.

Halifax, N. S.—Tenders have been received for the erection of two new school buildings, including heating and electric lighting, in the northwest suburb, according to plans and specifications, Architect W. J. Busch, 50 Bedford Row. R. J. Wilson, Secretary, School Commissioners' office, Halifax, N. S.

Wolfville, N. S.—Rhodes, Curry & Co., Amherst, N. S., have been awarded the contract for the new Carnegie Science building, to be erected in connection with Acadia College at this place.

Winnipeg, Man.—Victor L. Bouch has been granted a permit for alterations to the old Medical College on the N.E. corner of Kite and McDermott streets, at cost of \$10,000. The building will be converted into an apartment block.

Winnipeg, Man.—The Winnipeg School Board has awarded to Davidson Bros. the contract for the erection of the new Cecil Rhodes school in Weston, at contract price of \$64,781.00. The contract does not include heating and ventilation.

Winnipeg, Man.—The Winnipeg School Board will call for tenders shortly for the furnishing of spiral fire escapes for fourteen of the local schools. Estimated cost, \$36,500.

Vancouver, B. C.—Tenders will be received up to noon, July 15, for the erection and completion of a normal school at Vancouver. B. C. Plans, specifications, are on file at the office of the Public Works Engineer, the Lands and Works Department, Victoria, and at the offices of Messrs. Pearce & Hopc, Architects, Vancouver. B. C. F. C. Gamble, Public Works Engineer, Lands and Works Department, Victoria, B. C.

North Vancouver, B. C.—The School Board has just received tenders for alterations to be made to the local school house at North Vancouver. Specifications on file at the office of the architect, Alexander Law, 119 Lansdale avenue.

Victoria, B. C.—The Board of School Trustees has purchased two sites, one located on Princess street, where a ten-room school building will be erected, at a cost of \$54,300, and the other in the southeastern part of the city.

Nelson, B. C.—Contracts have been awarded as follows for the erection of the new school building at this place: General contract, John Burns; painting, Percy & Herb; plumbing, Strachan & Hebdan, all local firms.

Nelson, B. C.—At a meeting of the ratepayers it was decided to use marble facings for the new school to be erected here, at cost of \$75,000. The cost of the additional work will be \$4,500.

Prince Albert, Sask.—Tenders were received up to July 3 for the erection of a high school building at this place in accordance to plans and specifications prepared by Architect Roland W. Lines, Edmonton, Alta.

Prince Albert, Sask.—The Dominion Government has purchased from the English church the Emmanuel College grounds as part of the penitentiary site. The purchase price was \$15,000. This sum will be used by the church for the erection of a Divinity School.

Moose Jaw, Sask.—Tenders will be received by the undersigned up to and including July 15, for the erection of the new Collegiate building in Moose Jaw. Separate tenders are received for the building plumbing and heating. Plans and specifications on file at John D. Atcheson, Bank of Toronto Building, Winnipeg, or R. G. Bunyard, Moose Jaw Chambers, Moose Jaw. H. Jagger, Secretary-Treasurer Moose Jaw High School Board.

Saskatoon, Sask.—The contract for the erection of a four-room brick addition to the Alexandra school is being awarded to Contractor F. H. Webb.

Regina, Sask.—At a special meeting of the Public School Board it was decided to erect a six-room brick building on block 552, north of Victoria avenue, between Ottawa and Toronto streets. Competitive plans will be called for in the near future. A by-law authorizing the raising of \$56,000 will be submitted to the ratepayers to meet the necessary expenditure.

Estevan, Sask.—The Public School Trustees have purchased a block in the eastern end of the town, on which they will erect a three or four-room school building. The structure will be so erected that additions may be added if required.

Whitewood, Sask.—Plans prepared by Architect W. Elliott, Brandon, Man., have been accepted for a six-room brick and stone school building to be erected here. The building will cost approximately \$15,000.

Edmonton, Alta.—The School Board of Edmonton will issue debentures to the extent of \$50,000, to cover the expense of the new Norwood school building.

Morris, Man.—Architect W. W. Blair, Winnipeg, has completed plans for a four-room brick school building to be erected at this place at cost of \$10,000. Tenders will be called for about July 15.

Civic Improvements

Toronto.—The Board of Control has awarded the following contracts for asphalt paving: Gosdon Paving Co., College street, Sorauron avenue to Roncesvalles, \$6,489; Gerrard street, west side, Logan avenue, to 700 feet east, \$6,468; The Construction and Paving Co., Wallace avenue, Lansdowne to first track west, \$2,439; the Putray street, Brock avenue to Sheridan avenue, \$1,650; Parkway avenue, Dundas street to College street, \$3,611; Broadview avenue, Queen street to Eastern avenue, \$4,261; Major street, Bloor street to Lowther, \$3,436.

Toronto.—The City Engineer has recommended the following brick pavements: Millicent street, from Dufferin to Emerson, \$10,317; Berkeley street, from Queen street to Wilton avenue, \$11,188; Edwin avenue, from Ruskin avenue to the north end, \$13,238.

Toronto.—The City Engineer has recommended the following new pavements: Asphalt, Euclid avenue, from Arthur to College, \$9,391; asphalt, Melbourne avenue, from Dufferin to Cowan, \$6,590; asphalt, Emerson avenue, from Wallace to Lappin, \$5,737; asphalt block, Colborne street, from Church to West Market street, \$1,162; asphalt, Temperance street, from Bay to Yonge, \$11,985; bitulithic, Lynnwood avenue, from Avenue road to Poplar Plains road, \$4,334; bitulithic, Avenue road, from a point 350 feet north of Balmoral avenue, west to St. Clair street, \$3,963; brick, Fraser avenue, from 133 feet south of Liberty street to the tracks, \$6,736.

Toronto.—The construction of the following macadam roadways has been recommended by City Engineer Rust: Queen street, from Wadmore avenue to the east city limit, \$27,242; Carlaw avenue, from Eastern avenue, 1,034 feet south, \$5,539; Lane, first east of Spadina avenue, from Cecil, 196 feet south, \$1,069.

Toronto.—The following new pavements have been recommended by the City Engineer: Asphalt, Campbell avenue, from Wallace to Antler, \$6,274; St. Thomas street, from Bloor to Charles street west, \$2,773; Brock avenue, Middleton to C.T.R. tracks, \$25,000; Withrow avenue, from west 446 feet east of Logan avenue to Pape avenue, \$5,198; O'Hara avenue, from Queen street to north end, \$10,195; Clinton street, from Yarmouth road to Dupont street, \$2,593; Sackville street, from King to Queen, \$4,196; brick, Brighton avenue, from Pape avenue to east end, \$2,446; brick, Withrow avenue, from Logan avenue to

a point 446 feet east, \$3,677; vitrified block, Gerrard street, from 700 feet east of the west side of Logan avenue to Pape avenue, \$3,208.

Ottawa, Ont.—It is proposed to construct a bitulithic pavement on Nelson street in the near future.

Ottawa, Ont.—The Board of Control has awarded the following contracts for street paving: College avenue, from Laurier avenue to Somerset street, Ottawa Construction Company, \$12,259; Sweetland avenue, from Laurier avenue to Osgoode, Barber Asphalt Co., \$5,684; Nelson street, from Laurier avenue to Osgoode, Barber Asphalt Co., \$6,758.

Moose Jaw, Sask.—A by-law authorizing the expenditure of \$20,000 for the construction of sidewalks has been introduced by Alderman Rutherford.

Lethbridge, Alta.—The Town Council has awarded the contract for street grading to Messrs. Jantz Bros. & MacDonell, and for cement sidewalks to Messrs. Marshall, Bitcheller & Skairin, of Calgary. Both contracts amount to about \$75,000.

Miscellaneous

Toronto.—Wm. McBean, 236 Gladstone avenue, has been granted a permit for the erection of a three-story brick and stone apartment house on the corner of Dundas street and Gladstone avenue, at cost of \$50,000. Architect W. H. Mallory, 236 Gladstone avenue; builder, owner.

London, Ont.—Architect Wm. G. Murray will receive tenders up to July 16 for the erection of an addition to the school building at Pottersburg, at cost of \$5,000. The addition will have stone foundation, hot air heating, felt and gravel roof, and will be one story in height.

Fort William, Ont.—The following contracts have been awarded for the erection of the new hospital building at this place: General contract, Finger & Holdsworth, \$83,000; heating and ventilating, Northern Engineering Co., \$5,250; plumbing, Anderson & Sims, \$4,350; all local firms.

Cobourg, Ont.—J. H. Moorhouse, of the Dominion Observatory, Ottawa, has leased a site from Dr. T. C. Lapp, of Cobourg, on which the Dominion Government will erect an astronomical observatory, near Wellington, for 100 ft. square at the base and 9 ft. at the apex. Work on the structure will be commenced at once.

Kenora, Ont.—A by-law has been passed granting certain exemptions to the pulp and paper mill which it is proposed to establish at this place. Mr. Anderson, the promoter, states that work will be commenced immediately.

London, Ont.—Architect Wm. G. Murray will receive tenders up to July 16 for a residence to be erected on Oxford street, near Wellington, for Jos. Hamilton Brewer. The building will be two storeys and a half in height and will have brick foundation, slate roof, pine interior finish, hot air heating, gas and electric lighting. Estimated cost, \$5,000.

Montreal, Que.—The Canadian Pacific Railway will receive tenders up to noon July 31st for grading eleven miles of the E. & N. extension. The section is from mile 89, near Nanoose Bay, to French Creek. Tenders require prices on both grading and bridging along the eleven miles of road.

Sherbrooke, Que.—Architect C. E. White has prepared plans for a curling rink to be erected for the Sherbrooke Curling Club. The building which will be two storeys in height, will be of brick construction, with concrete foundation, composition roof, hot air heating, electric lighting, and will cost \$7,000.

Winnipeg, Man.—Tenders will be received by the undersigned up to noon, July 15, for the various trades, except plumbing, heating and electric wiring, necessary in the erection and completion of a five story and basement brick building for the Young Women's Christian Association on Ellice avenue, near Yarmouth street. Plans and specifications may be seen at the architect's office and Builder's Exchange, Herbert B. Rugh, 927 Union Bank Building, architect.

Morris, Man.—Tenders, addressed to the chairman of the Morris School Board Mr. Donald Hay, at Morris, and at the office of the undersigned, up to July 22, for the erection of a four room brick school building in the town of Morris, Man. Plans and specifications on file at the office of D. M. U're, chairman of the Board, Morris, and at office of the undersigned, Engineer, Electrician, Architect, Northern Bank Building, Winnipeg, Man.

Vancouver, B. C.—N. Thompson, an engineer of Vancouver has just returned from London, where he has promoted a company which will construct a floating dock at this place.

Vancouver, B. C.—Mr. N. Thompson, an engineer of this city, has organized a company for exploiting the magnesia deposits of Adlin, where it is said there is one million tons in sight.

Vancouver, B. C.—A by-law will be submitted to the ratepayers for the purpose of authorizing the expenditure of \$8,000, by issuing of debentures, for the erection of a fire hall in Grandview.

Vancouver, B. C.—A by-law will be submitted to the ratepayers for the purpose of authorizing the issuing of debentures to the extent of \$10,000 for the purchase of a site and the erection of a fire hall south of False Creek.

Vancouver, B. C.—A by-law will be submitted to the ratepayers for the purpose of authorizing the expenditure of the sum of \$400,000 for waterworks improvements.

Toronto, Ont.—Tenders, addressed to the undersigned, will be received up to noon, July 21, for certain repairs required at the Western Cattle Market, as per plans and specifications on file at the office of the Property Department, City Hall.

Toronto, Ont.—The supplementary estimates placed on the table of the House, at Ottawa, by Finance Minister Fielding, include the following Toronto work: Addition to Meteorological Observatory, \$40,000; Post Office, additions to building, on rear portion, and on lane at east end, alterations, etc., \$25,900; Post Office, annex for customs parcels purpose, \$12,000; Customs Examining Warehouse, improvements and repairs, \$4,000; Customs House, repairs, \$4,000; Drill Hall, additional accommodation for new corps and armories, additional rent, \$5,000.

Toronto, Ont.—The Canadian Order of Foresters have purchased a site, 70 x 100 ft., on the north side of College St., for the purpose of erecting a four-story hall, with assembly rooms, lodge rooms, etc., at cost of \$60,000.

Toronto, Ont.—Tenders will be received up to noon, July 21, by registered post only, for the construction of asphalt pavements, concrete pavements, brick pavements, bitulithic pavements, concrete curbs, concrete walks and sewers in different sections of the city, as per plans and specifications on file at the office of the City Engineer.

Toronto, Ont.—Plans have been prepared by Architects Burke, Horwood & White for a college building to be erected for the Royal College of Dental Surgeons. Specifications include reinforced concrete, steel, ornamental iron, carpentry, plastering, painting and glazing, marble and tiling. Tenders close July 16.

Toronto, Ont.—The Board of Governors of the University of Toronto, has approved the expenditure of \$100,000 for the erection and equipment of a building for thermo-dynamics; also an expenditure not to exceed \$21,000 for the enlargement and equipment of the Worthington House for the department of botany and forestry.

North Toronto, Ont.—The congregation of the Methodist church, has purchased a lot at the corner of Summerhill avenue and Yonge street, on which they propose to erect a new church building.

Leamington, Ont.—Tenders will be received up to 1 p.m., July 28, for "Pelee Island Big Marsh Drainage System Improvements." The work comprises principally dredge work, rock blasting, supplying new pumps of 40,000 gallons capacity per minute, new steam boiler, replacing present pumping plants, building concrete pump pit, spillway, bridges, etc. Plans and specifications may be seen on application to Alex. Baird, Engineer in Charge, Leamington, Ont.

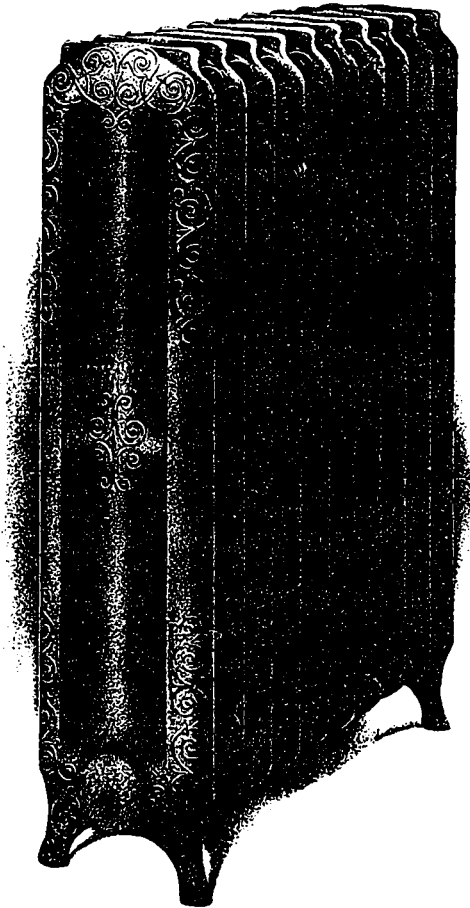
Toronto, Ont.—The work of erecting the new Shea's Theatre on the site purchased nearly two years ago, on the S.E. corner of Richmond and Victoria Sts., will in all probability be commenced early next month. Estimated cost of building, \$150,000.

Ottawa, Ont.—The Ottawa Electric Railway is arranging for the construction of an extra car barn, immediately adjoining the present car barns on Albert street.

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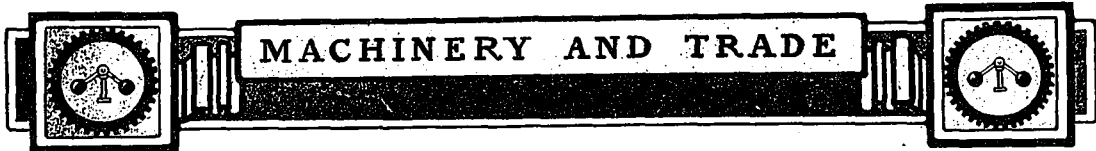
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SELLING AGENTS



BUILDING MATERIALS AND SUPPLIES.

ONE of the dealers in building supplies whose materials were specified for the Canadian Bank of Commerce Building, which is now in process of construction at Montreal, is E. F. Dartnell, 157 St. James street, of that city. The facing brick for the rear wall of the structure is the product of the Kittanning Brick and Fire Clay Company. It is a light grey, almost white, vitrified brick of a very hard and impervious nature and is similar to the brick supplied for the Villa Marie Convent on Sherbrooke street.

The terra cotta fireproofing used throughout the building is from the St. Mary yards of the New York Pressed Brick Company. It is made of fire clay and of a very high grade. The products of both of these concerns are handled by Mr. Dartnell, as is Toch Bros. products, which include the R. I. W. Damp Resisting Paint with which the inside of the outer walls of the building is to be painted, the plaster being applied directly to the paint.

The cement floor in the press room of the La Patrie Building, another imposing edifice which has of recent date come to grace the business center of Montreal, was dressed with Toch Bros. cement filler and cement floor paint.

The extensive line of materials which Mr. Dartnell carries is most complete, and aside from terra cotta, which can be supplied for fireproofing and ornamental effect, and brick, which can be furnished in any color common to burned clay and for any purpose, the stock includes fine building stones, glass tile, concrete mixers and concrete block machines, etc., etc.

Most of these materials can be furnished in either domestic or foreign makes, and brick work in moulded shapes for arches, columns, loggias, circular arches, etc., will be made to special order.

Estimates, price lists, descriptive matter will be furnished upon request by addressing E. F. Dartnell, 157 St. James street, Montreal.

INTERIOR DECORATORS.

WHAT combined effort can accomplish when properly directed in the way of business enterprise is shown in the remarkable progress made by the Deecker-Carlyle Company, interior decorators, Toronto. While this firm has only been in business for the past two years, during which time the prospects were not always the brightest, they have nevertheless forged rapidly ahead and now occupy a prominent position among the foremost concerns in their line.

The broad recognition which has come to them in this short period, is due to the aggressive policy and sound business principles which they have adhered to since the partnership was formed.

Mr. Frank Deecker, the senior member of the firm, has a wide knowledge of this particular class of work, his experience extending over a large number of years. His partner, Mr. William Carlyle, is also thoroughly acquainted with decorative work, being conversant with each and every branch of the business.

The firm while specializing in church and hotel decorations, are fully prepared to execute interior decorative work of any kind. A complete display of first class wall papers can be seen at any time at either of their stores, 12 Yonge street Arcade and 79 Charles street, east, the

firm specializing in the use of Lincusta, Walton, Anaglipita, Japanese wall paper, etc. Designs and estimates will be furnished upon request.

AUTOMATIC SPRINKLERS AS A SAFEGUARD IN SCHOOL BUILDINGS.

Editor CONSTRUCTION, Toronto:

DEAR SIR,—Some public information appears in order relative to the protection of school children against fire, about which there is such a decided movement among school committees both in Canada and the United States.

In building a school the first thing to be considered should be safety, hence make it fireproof if possible. As this is often impossible owing to cost, the very best means of preventing fires should be the next consideration. Fires are bound to occur, consequently we must provide a means of extinguishing the flames and getting the pupils out of the building as quickly as possible.

For extinguishing fires the many devices now on the market are all good in their own way, but the automatic sprinkler is the only device that works independently and is always ready for service. Various cities are now procuring tenders for equipping hazardous portions of school buildings with these sprinklers with a view to being prepared for next season.

Automatic sprinklers should be located so that they protect all basements, closets, dressing rooms, attics and concealed spaces.

In connection with the automatic sprinkler is an alarm device so arranged that should a fire occur in the area protected by the sprinkler, an alarm would be sounded simultaneously with the releasing of the sprinkler.

Only 165 Fahrenheit is necessary to release the sprinklers when a heavy shower of water is thrown in every direction, each sprinkler head covering an area of approximately 10 feet square. The releasing of each sprinkler is, however, entirely independent of the other, so that no water is thrown or damage done except at the point where it is needed. On the other hand, any one of the sprinklers will cause the alarm to be given automatically.

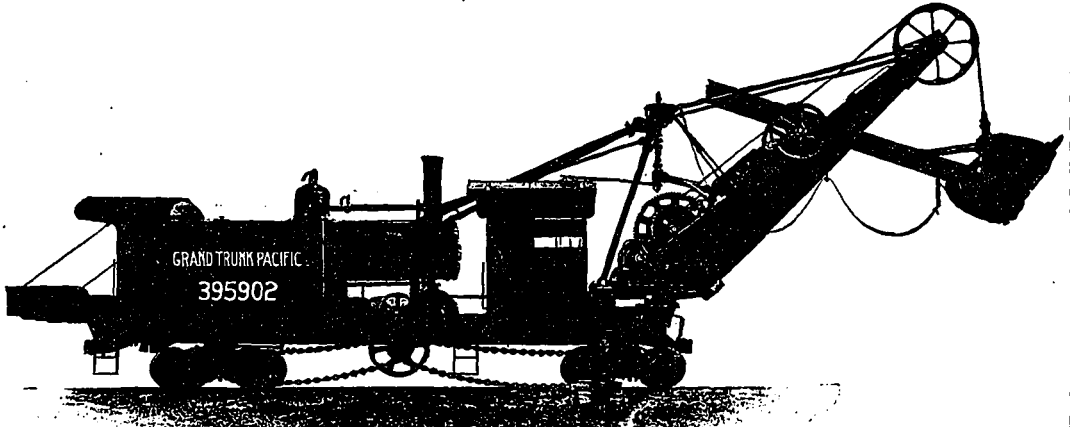
As the alarm can also be given without releasing a sprinkler it should always be used as the signal for fire drill so the pupils would be accustomed to it and not become panic stricken in time of danger.

It seems that the chances of a panic are greatly overcome by the automatic sprinkler and alarm, and unless rubbish and other materials which create dense smoke are allowed to accumulate, the prompt action of the sprinkler puts out the fire before there is sufficient smoke to cause a panic.

Sprinklers are not by any means new as applied to extinguishing fires, having been used in various forms for nearly a century, originating so far as we now know in England in the form of perforated pipes into which water was turned automatically through a valve released by burning cords strung along the pipes. The present type of automatic sprinklers came prominently into use in 1872 and was so unanimously endorsed by insurance companies, merchants and manufacturers that hundreds of millions of dollars are now under their protection all over the earth.

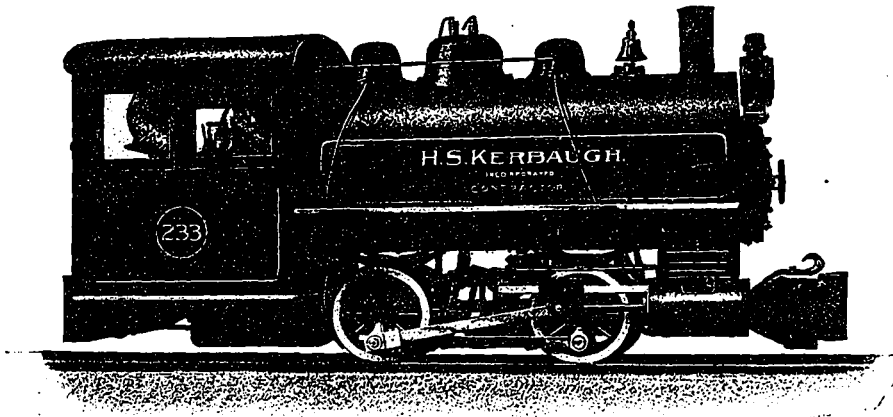
The insurance companies have established departments to regulate their manufacture and installation and have

Contractors' Supplies



ATLANTIC STEAM SHOVELS

Combine simplicity of design, with few parts to break or get out of order.



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LIGHT LOCOMOTIVES

Suitable for Contractors, Mines, Lumber Companies, etc., and for a wide range of service where light rails, uneven roadbeds and sharp curves require a short, rigid wheel base and all weight to be carried on driving wheels.

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carried the science of automatic fire protection so far that there is now scarcely a possibility of a serious fire where they are installed, as their inspectors are constantly making tests in their own laboratories and the factories where the sprinklers are made.

As stated in the Monetary Times, issue of May 23, 1908, sprinklers working automatically require no assistance in turning in an alarm, arranging matters so that all persons can devote their entire attention to getting the pupils to a place of safety.

Yours truly,
E. W. STORER.

WHAT OTHERS SAY ABOUT THEM.

UNDER the caption of "What Others Say About Us," the Ideal Concrete Machinery Company, of London, Ont., has just issued an attractive booklet that should be of no little interest to prospective buyers of concrete block machines.

It contains a large number of letters from customers of the company, in various parts of Canada, attesting to the highly satisfactory results obtained by the use of the Ideal Block Machine.

The object of these testimonials is to give those who are contemplating engaging in the concrete block business, or who are considering the purchase of a new outfit, an opportunity to get in touch, in many instances in their own vicinity, with block makers and contractors, who are users of the company's machine, and to learn for themselves, direct from these customers, about the meritorious character of the "Ideal" and the many advantageous features it possesses.

A marginal note on the fly-leaf of the booklet con-

tains this bit of philosophy: "Investigation by the buyer means an act of wisdom on his part." It is an invitation on the part of the company, for intending purchasers to investigate the various makes of block machines, as well as their own, feeling that a comparison will readily demonstrate the superiority of the "Ideal."

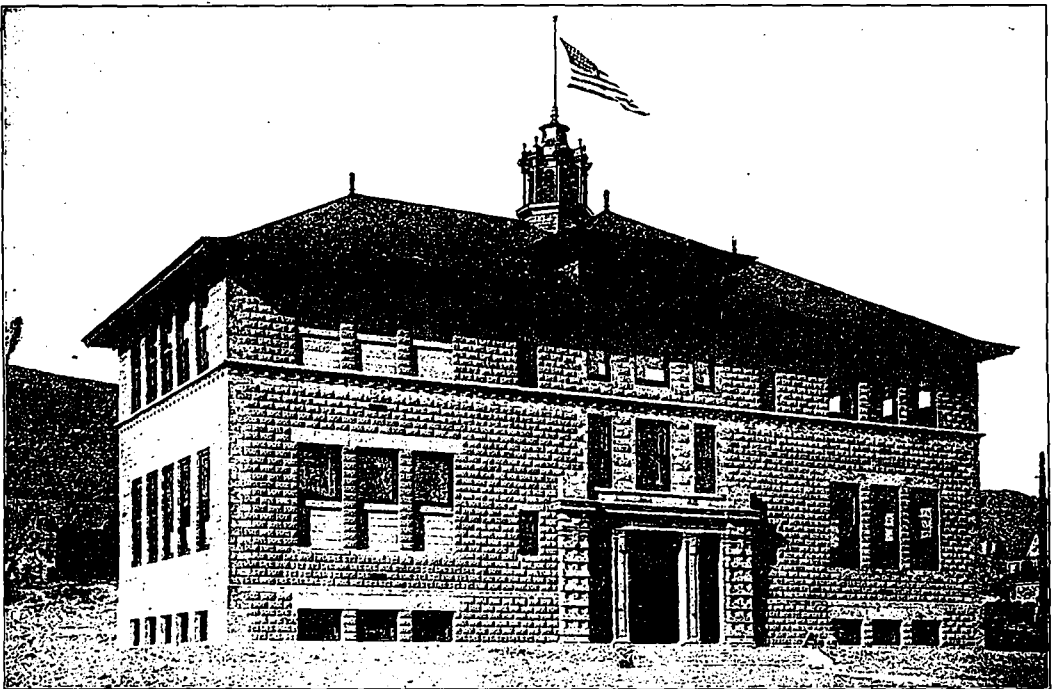
Nor is the popularity of the Ideal machine by any means confined to the border of Canada alone. Its meritorious character has received so broad a recognition that it can be found in almost every country of the world.

Owing to its adjustable mould and the series of face plate with which it is equipped, the Ideal machine is capable of turning out blocks that meet the requirements of the designer in every respect, and that adapt themselves to door and window openings in a most ready manner. It is, according to the manufacturers, the only machine of the down-face horizontal-core type that can be legally made or sold in Canada.

The Ideal Hollow Block Machine has evidently every right to the name by which it is known, as, by its system, solid, hollow and veneered blocks, continuous, horizontal, vertical or stagger air space blocks, dry, medium or wet can be manufactured.

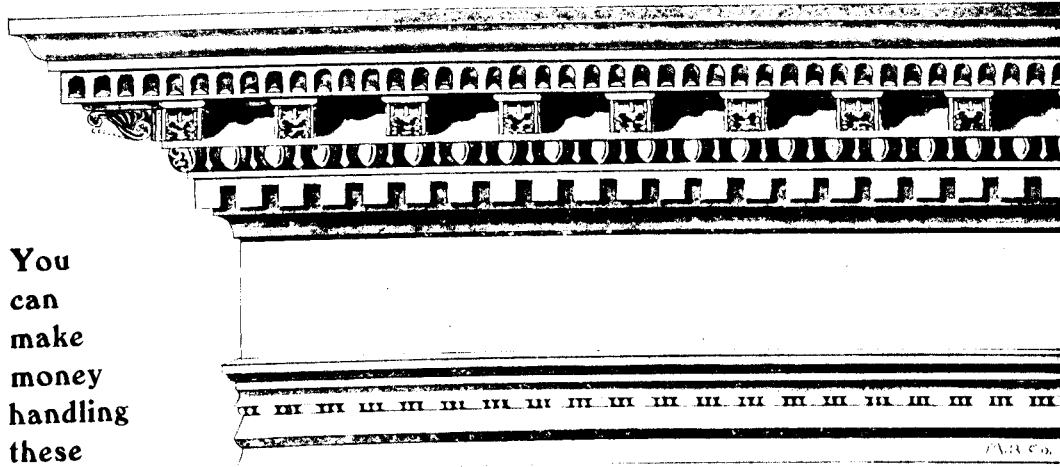
Those who are anticipating engaging in the concrete block business, or who are casting about for a new machine, will find it profitable to read the letters from the company's customers, contained in the above mentioned booklet.

This book of testimonials, together with "Idealite," a publication dealing with the progress of concrete block construction, issued periodically, will be sent upon request addressed to the Ideal Concrete Machinery Company, Limited, London, Ont.



IN SCHOOL BUILDING CONSTRUCTION WHERE A GOOD, SUBSTANTIAL AND ATTRACTIVE STRUCTURE IS SOUGHT AT A MODERATE COST, CONCRETE BUILDING BLOCKS HAVE COME TO PLAY AN IMPORTANT PART. MANY BUILDINGS OF THIS MATERIAL HAVE BEEN ERECTED IN CANADA AND THE UNITED STATES WITHIN RECENT YEARS. THE ABOVE ILLUSTRATION SHOWS THE NEW PUBLIC SCHOOL RECENTLY COMPLETED AT LIVINGSTON, MONTANA. IT WAS BUILT BY THE LIVINGSTON CONCRETE BUILDING AND MANUFACTURING COMPANY, AND CONSTRUCTED OF IDEAL CONCRETE BUILDING BLOCKS, WHICH WERE MADE BY THE CONCRETE BLOCK MACHINE MANUFACTURED BY THE IDEAL CONCRETE MACHINERY COMPANY, LIMITED, OF LONDON, ONT.

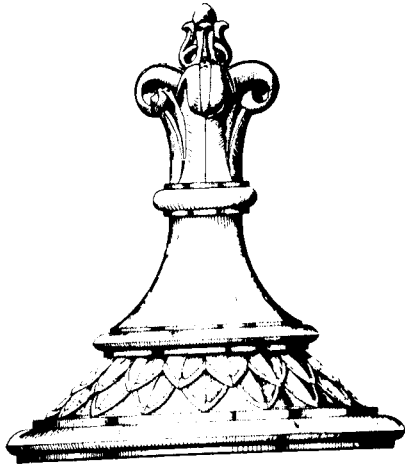
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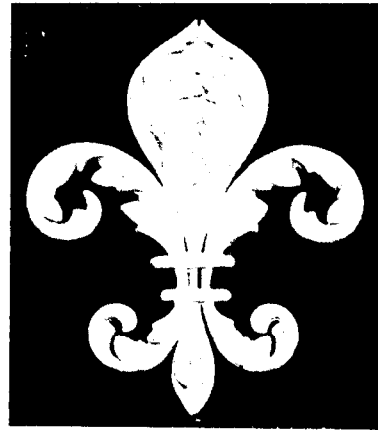
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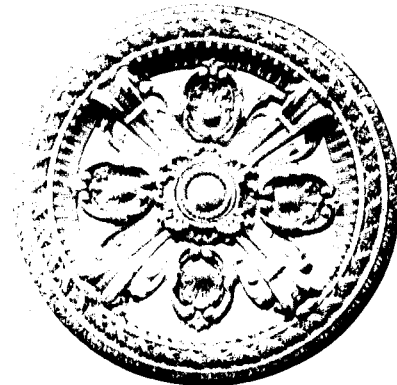
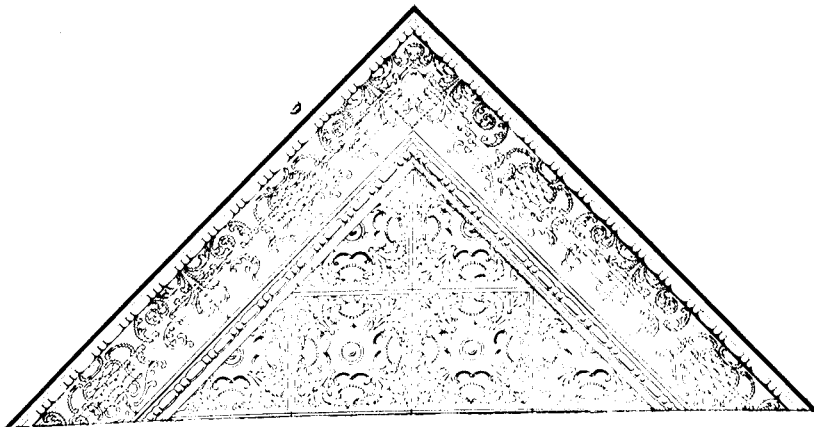
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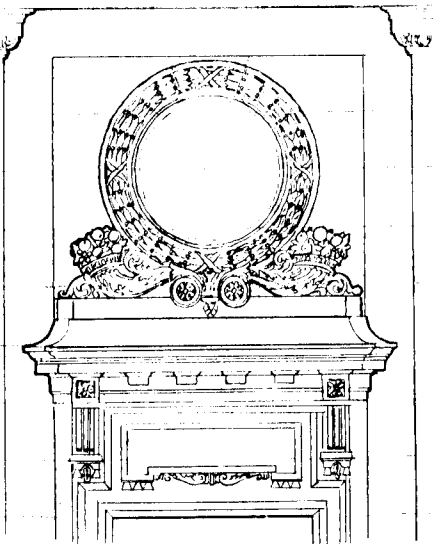
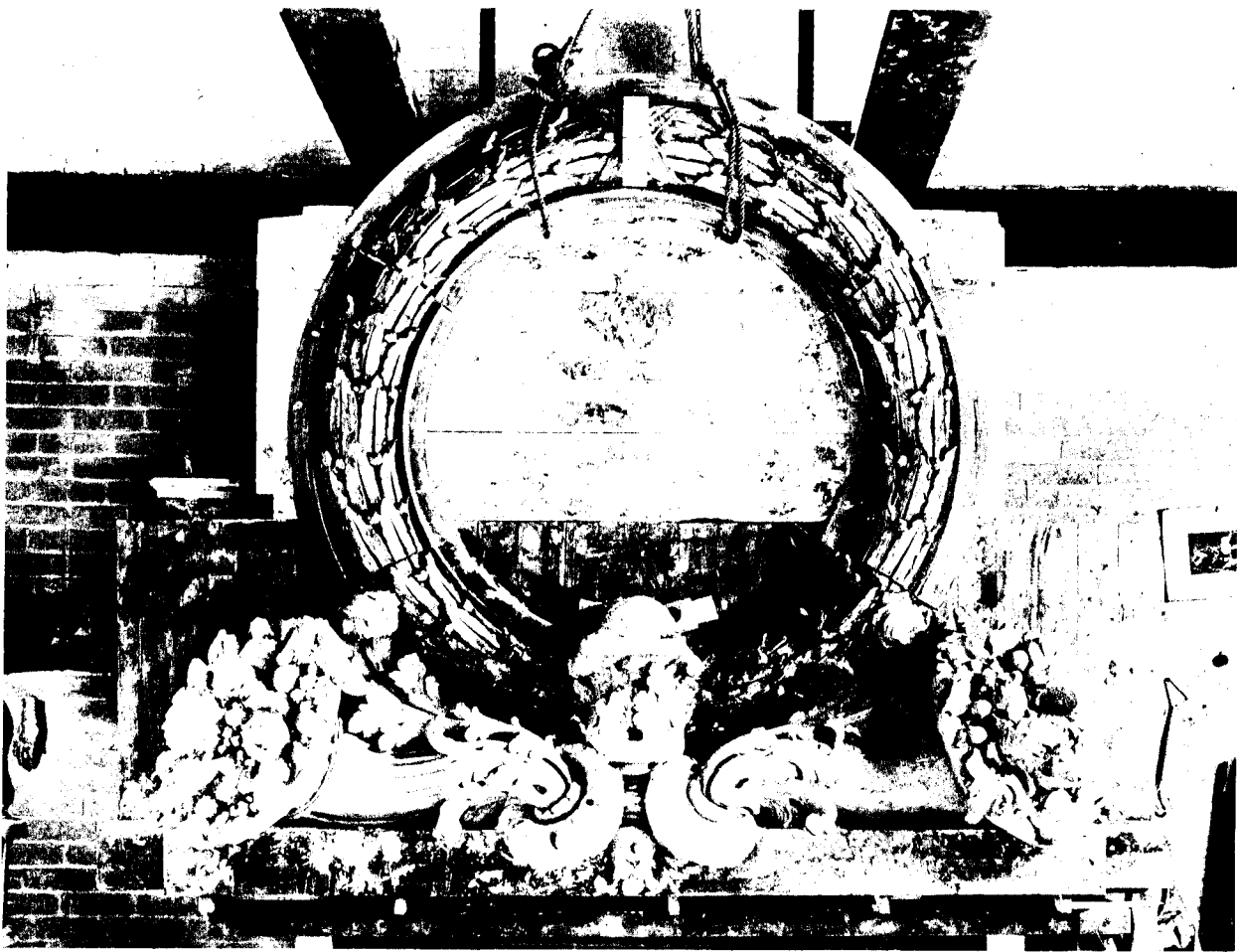
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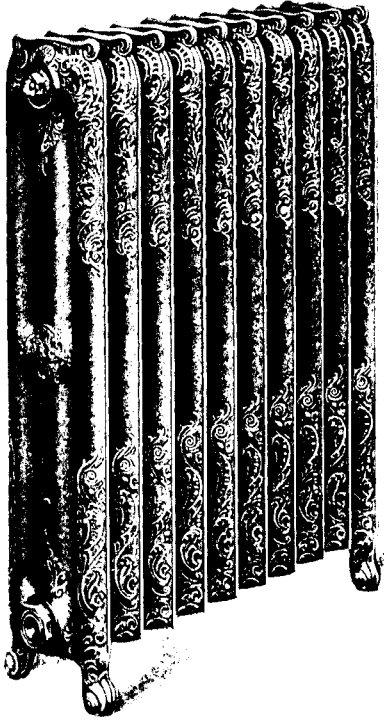
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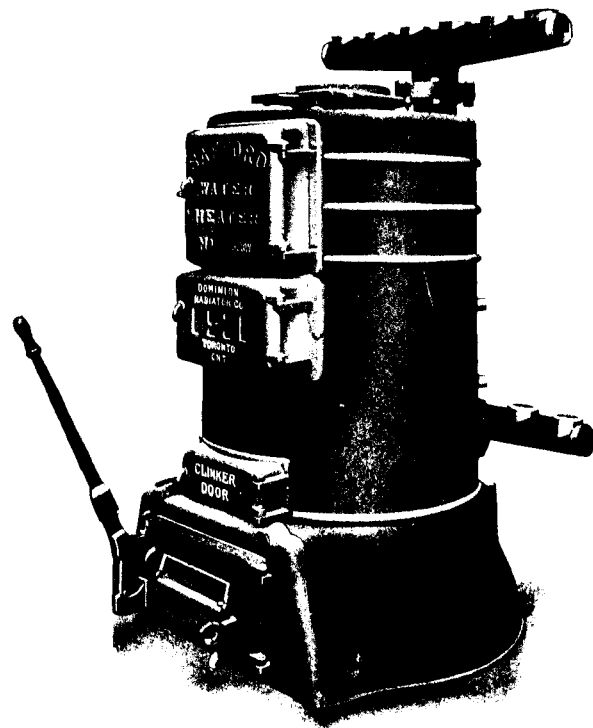
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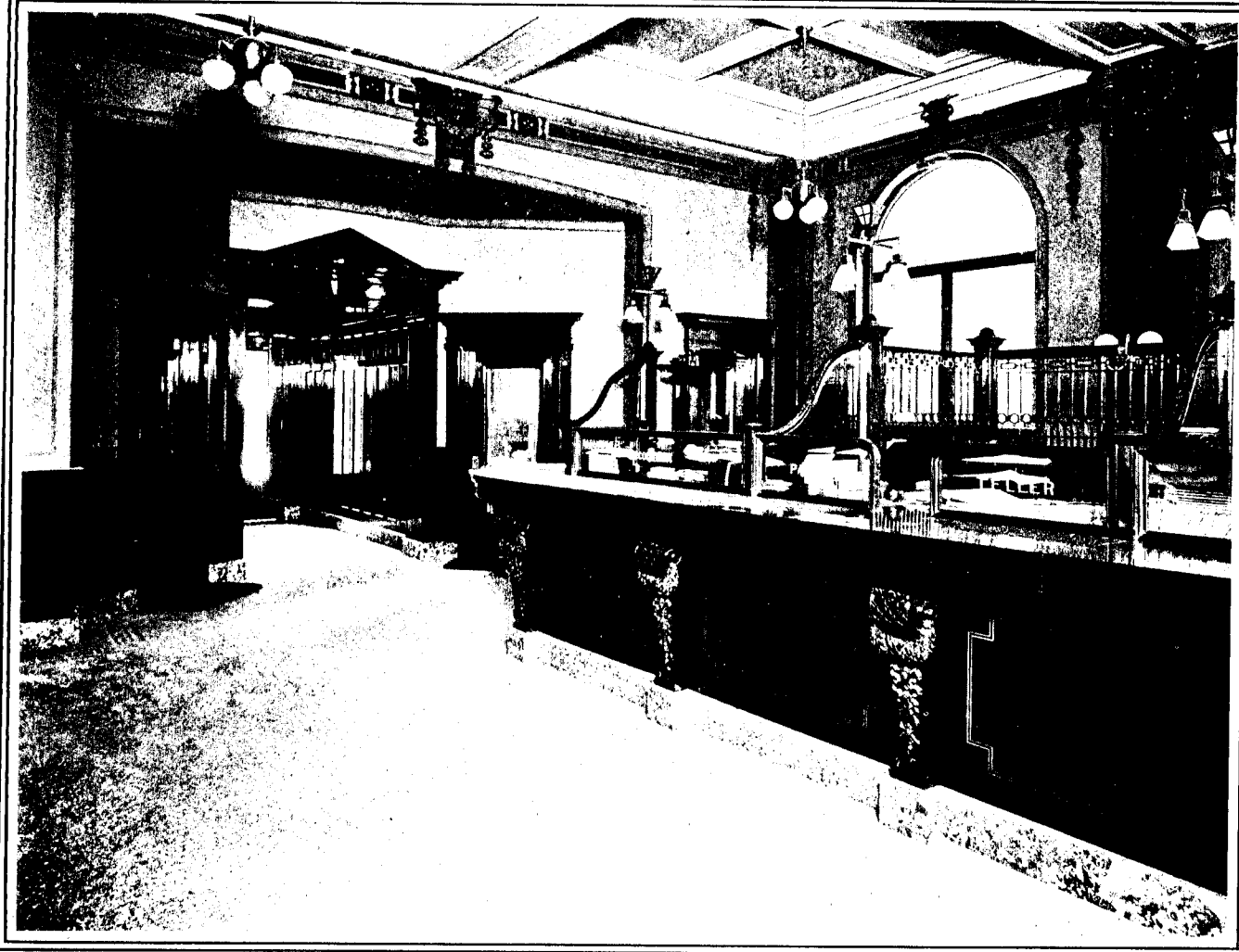
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WE ARE PREPARED TO EXECUTE WORK IN ANY PART OF THE DOMINION OF CANADA ON REASONABLY SHORT NOTICE

Among the contracts which we are now completing is the interior woodwork and bank fixtures for the *Bank of Commerce at Vancouver*; interior woodwork and office fixtures for the *Canadian Express building at Montreal*; interior woodwork for the *Armories at Hamilton*; *Bank of Commerce, King and Jarvis Streets, Toronto*; *Post Office, St. Mary's, Ontario*; *Office of the Canadian Northern, Toronto*; and the *City Ticket Offices of the Grand Trunk Railway, Toronto*.

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TORONTO-WATERLOO OFFICE FIXTURE CO.

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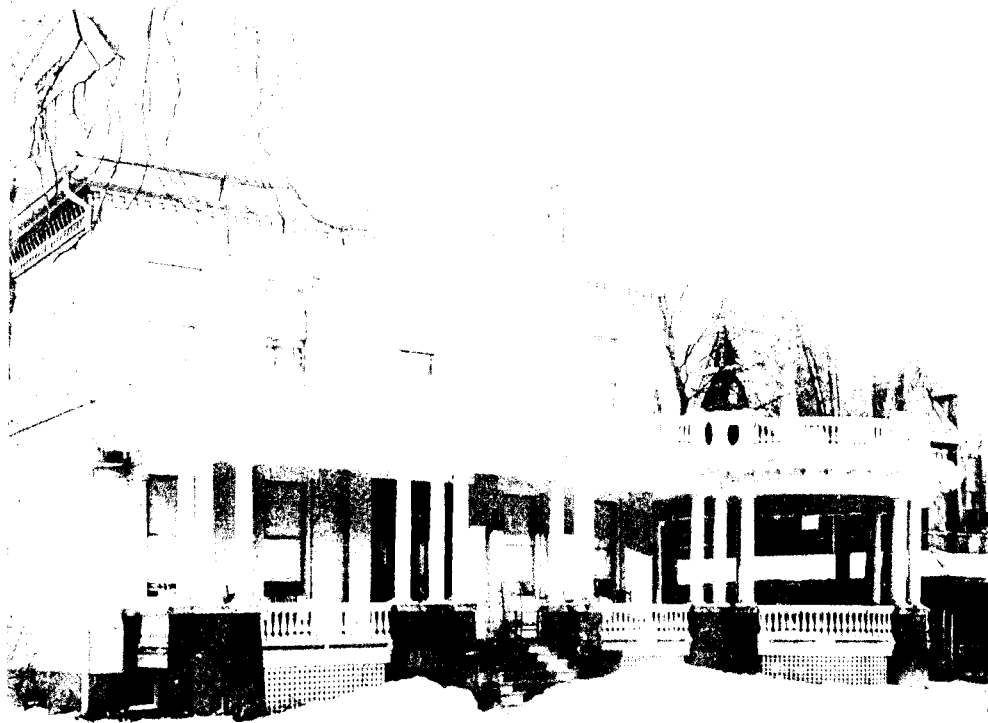
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—†—

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columns were manu-
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are in perfect condi-
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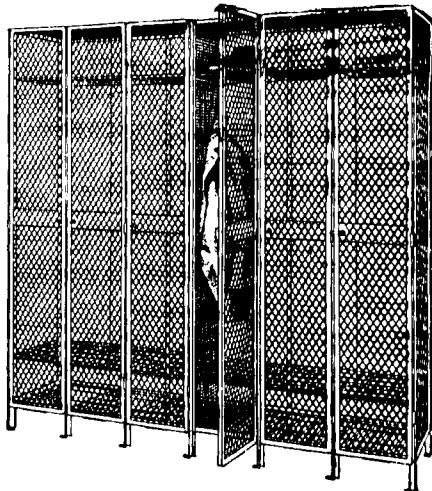
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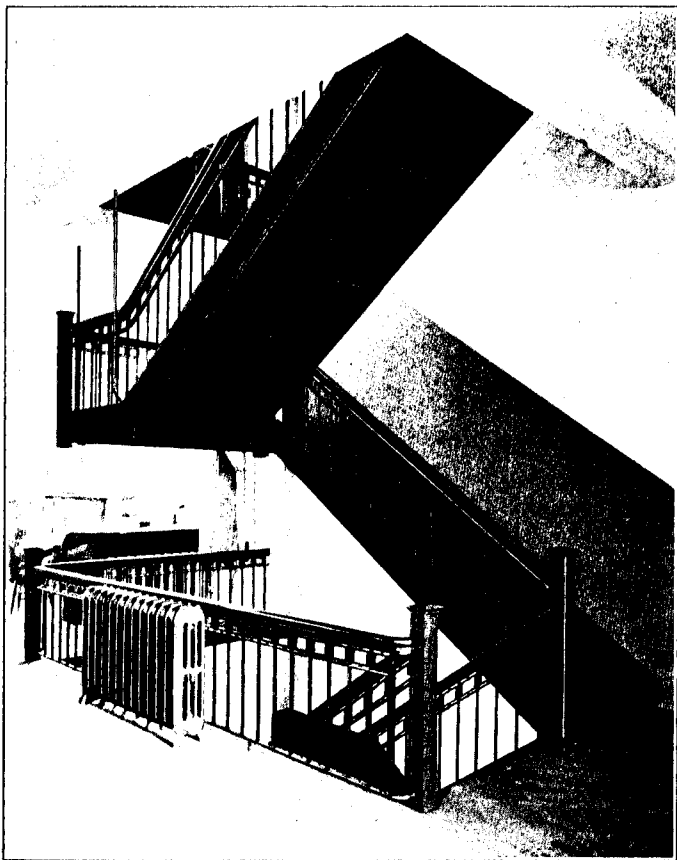
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These Stairs are the Neatest, the Lightest,
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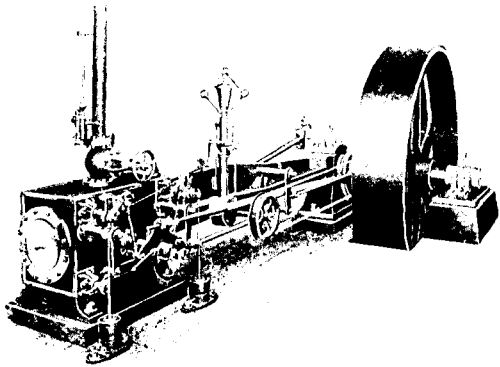
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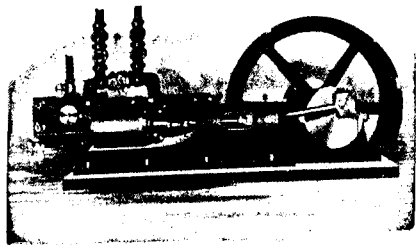
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FERRIC OXIDE.....	7.28	" "
Lime.....	3.92	" "
Magnesia	3.32	" "
Soda.....	.40	" "
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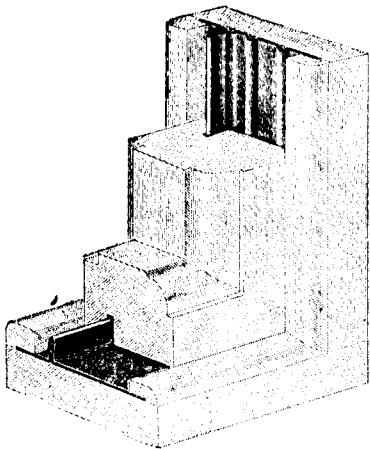
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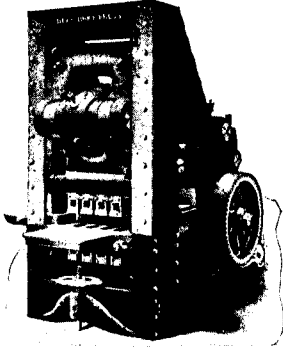
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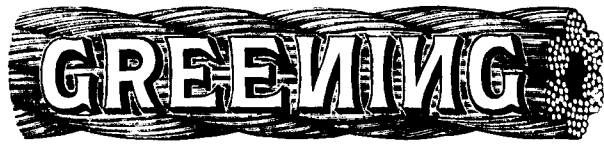
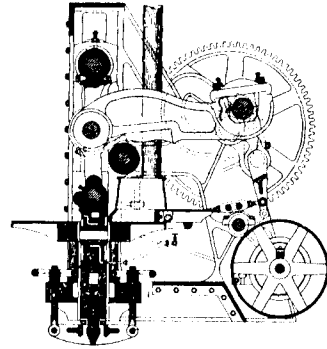
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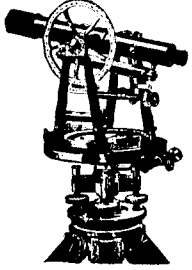
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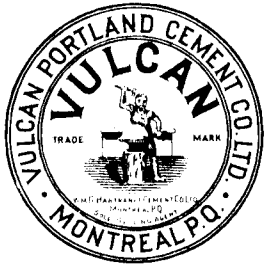
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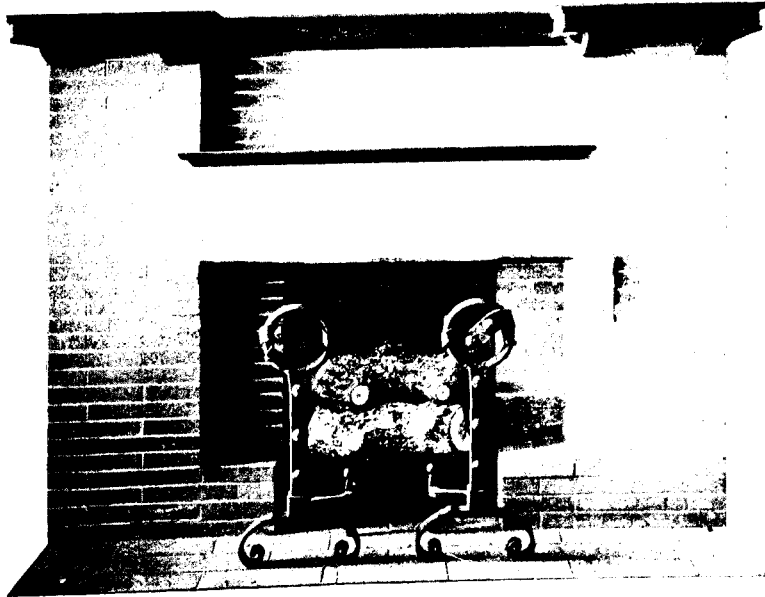
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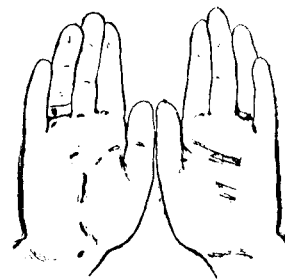
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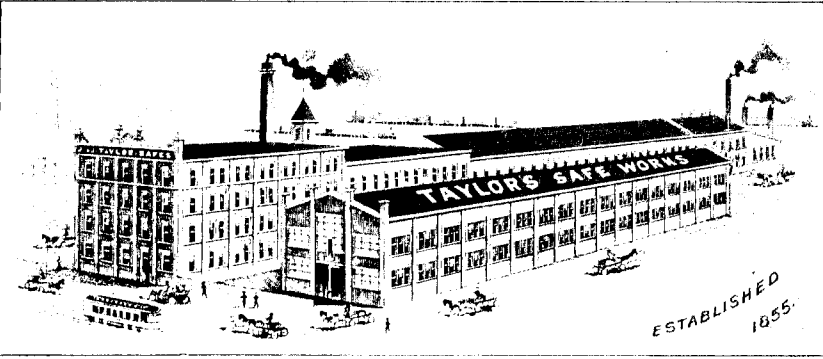
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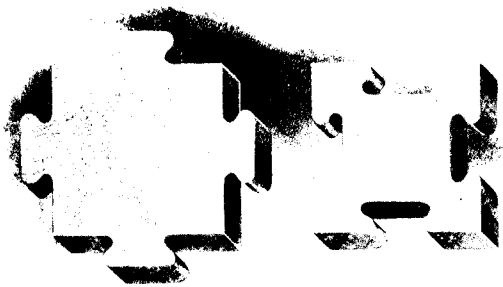
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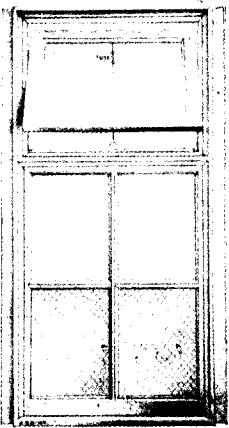
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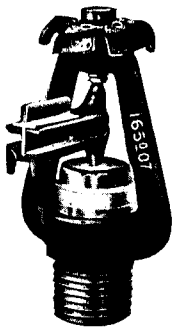
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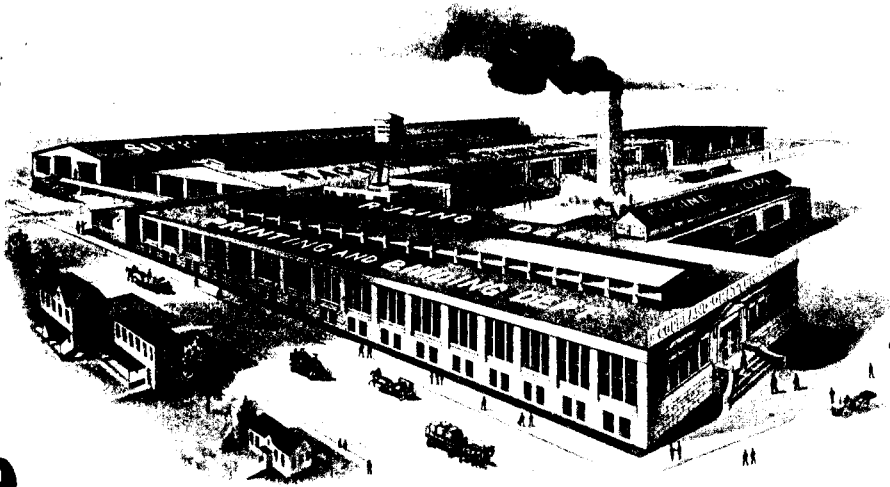
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A. Berg & Sons, Manning Chambers, Toronto.
Scientific Process Brick Co., 79 Adelaide St. E., Toronto.
Wettlaufer Bros., Stratford and Mitchell, Ont.

BUILDERS.

R. G. Argall, 67 Notre Dame St., Maisonneuve, Montreal.
Berlin Construction Co., Berlin, Conn., U.S.A. Stair Bldg., Toronto.
Concrete Engineering and Construction Co., 123 Bay St., Toronto.
Metcalf Engineering, Ltd., 80 St. Francis Xavier St., Montreal.
Pitt & Robinson, Manning Chambers, Toronto.

BUILDING PAPER.

Canadian Fairbanks Co., Montreal, Toronto, St. John, Winnipeg, Calgary, Vancouver.
Lockerby & McComb, 65 Shannon St., Montreal.
The Paterson Manufacturing Co., Ltd., Toronto, Montreal and Winnipeg.
Stinson-Reeb Builders Supply Co., Limited, 188 William St., Montreal.

BUILDING SUPPLIES.

E. F. Dartnell, 157 St. James St., Montreal.
Eadie-Douglas Co., 22 St. John St., Montreal.
Francis Hyde & Co., 31 Wellington St., Montreal.
Lockerby & McComb, 65 Shannon St., Montreal.
David McGill, Merchants Bank Chambers, Montreal.
The Paterson Manufacturing Co., Ltd., Toronto, Montreal and Winnipeg.
Stinson-Reeb Builders Supply Co., Limited, 188 William St., Montreal.

CABLE.

Drummond McCall & Co., Montreal and Toronto.

CAST IRON COLUMNS.

Gaudry & Co., L. H., Coristine Building, Montreal; 76 Peter Street, Quebec; Roy Building, Halifax.

CAPS FOR COLUMNS AND PILASTERS.

W. J. Hynes, 16 Gould St., Toronto.

CELLAR DOORS.

Drummond McCall, Montreal and Toronto.

CEMENT.

Canadian Portland Cement Co., Ltd., 502 Temple Bldg., Toronto; 203 Board of Trade Bldg., Montreal.
E. F. Dartnell, 157 St. James St., Montreal.
Francis Hyde & Co., 31 Wellington St., Montreal.
The Lakefield Portland Cement Co., Ltd., Bank of Ottawa Bldg., Montreal.
David McGill, Merchants Bank Chambers, Montreal.
Stinson-Reeb Builders Supply Co., Limited, 188 William St., Montreal.

CEMENT BLOCK MACHINERY.

Canadian Concrete Machinery Co., Ltd., 510 Board of Trade Building, Toronto.
Canadian Fairbanks Co., Montreal, Toronto, Winnipeg and Vancouver.
Ideal Concrete Machinery Co., Ltd., 221 King St., London, Ont.
Wettlaufer Bros., Stratford and Mitchell, Ont.

CEMENT BRICK MACHINERY.

Wettlaufer Bros., Stratford and Mitchell, Ont.

CEMENT FILLER.

E. F. Dartnell, 157 St. James St., Montreal.

CEMENT FLOOR PAINTS.

E. F. Dartnell, 157 St. James St., Montreal.

CEMENT TILE MACHINERY.

Wettlaufer Bros., Stratford and Mitchell, Ont.

CEMENT WORKERS' TOOLS.

Stinson-Reeb Builders Supply Co., Limited, 188 William St., Montreal.

COLUMNS.

Batts, Limited, 50 Pacific Ave., Toronto Junction.

COLL. PO.

W. J. Hynes, 16 Gould St., Toronto.
CONCRETE CONSTRUCTION (Reinforced).
Concrete Engineering and Construction Co., 123 Bay St., Toronto.
Expanded Metal & Fire Proofing Co., 100 King St. W., Toronto.
Metcalf Engineering, Ltd., 80 St. Francis Xavier St., Montreal.
Pitt & Robinson, Manning Chambers, Toronto.
Trussed Concrete Steel Co., 23 Jordan St., Toronto.

CONCRETE MIXERS.

Canadian Fairbanks Co., Ltd., Montreal, Toronto, Winnipeg and Vancouver.
E. F. Dartnell, 157 St. James St., Montreal.
F. H. Hopkins & Co., Montreal.
Wettlaufer Bros., Stratford and Mitchell, Ont.

CONCRETE STEEL.

Concrete Engineering and Construction Co., 123 Bay St., Toronto.
B Greening Wire Co., Ltd., Hamilton and Montreal.
Expanded Metal & Fireproofing Co., 100 King St. West, Toronto.
Pitt & Robinson, Manning Chambers, Toronto.
Trussed Concrete Steel Co., 23 Jordan St., Toronto.

CONCRETE WORKERS' TOOLS.

Stinson-Reeb Builders Supply Co., Limited, 188 William St., Montreal.

CONDUITS.

Conduits Co., Ltd., Toronto and Montreal.
Drummond McCall & Co., Montreal and Toronto.

CONTRACTORS (Electrical).

Gas, Electric & Power Co., Stair Bldg., Toronto.

CONTRACTORS (General).

R. G. Argall, 67 Notre Dame St., Maisonneuve, Montreal.
Berlin Construction Co., Berlin, Conn., U.S.A. Stair Bldg., Toronto.
Metcalf Engineering, Ltd., 80 St. Francis Xavier St., Montreal.
Pitt & Robinson, Manning Chambers, Toronto.

CONTRACTORS' MACHINERY.

Canadian Concrete Machinery Co., Ltd., 510 Board of Trade Bldg., Toronto.
Canadian Fairbanks Co., Ltd., Montreal, Toronto, Winnipeg and Vancouver.
Drummond McCall & Co., Montreal.
F. H. Hopkins & Co., Montreal.

CONTRACTORS' SUPPLIES.

Canadian Fairbanks Co., Ltd., Montreal, Toronto, Winnipeg and Vancouver.
Eadie-Douglas Co., 22 St. John St., Montreal.
Drummond McCall & Co., Montreal, and Toronto.
E. F. Dartnell, 157 St. James St., Montreal.
F. H. Hopkins & Co., Montreal.
Francis Hyde & Co., 31 Wellington St., Montreal.
David McGill, Merchants Bank Chambers, Montreal.

CORK BOARD.

Armstrong Cork Co., 521 Coristine Bldg., Montreal.

CUT STONE CONTRACTORS.

Canadian Art Stone Co., Limited, Price St., Toronto.
Roman Stone Company, Limited, 100 Marlborough Ave., Toronto.

DECORATORS.

Deecker & Carlyle, 26 Yonge St. Arcade Toronto.
John Kay Company, Ltd., 36 38 King St. West, Toronto.
The Thornton-Smith Co., 11 King St. West, Toronto.

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Drummond McCall & Co., Montreal.

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Gas, Electric & Power Co., Stair Bldg., Toronto.

ELECTRICAL MACHINERY.

Gas, Electric & Power Co., Stair Bldg., Toronto.

ELECTRIC WIRE AND CABLES.

Gas, Electric & Power Co., Stair Bldg., Toronto.

ELECTRO PLATING.

Somerville, Limited, 59 Richmond St. E., Toronto.

ELEVATORS, (PASSENGER and FREIGHT)

Otis-Fenson Elevator Co., Ltd., Traders Bank Bldg., Toronto.

ENGINEERS' SUPPLIES.

Canadian Fairbanks Co., Montreal, Toronto, St. John, Winnipeg, Calgary, Vancouver.
Eugene Dietzgen Co., Limited, 10 Shuter St., Toronto.
F. H. Hopkins & Co., Montreal.
Somerville, Limited, 59 Richmond St. E., Toronto.

EXPANDED METAL.

Expanded Metal and Fireproofing Co., 100 King St. W., Toronto.
Galt Art Metal Co., Galt, Ont.
Gaudry & Co., L. H., Coristine Building, Montreal; 76 Peter Street, Quebec; Roy Building, Halifax.
Metal Shingle & Siding Co., Preston, Ont.
Stinson-Reeb Builders Supply Co., Limited, 188 William St., Montreal.
Trussed Concrete Steel Co., 23 Jordan St., Toronto.

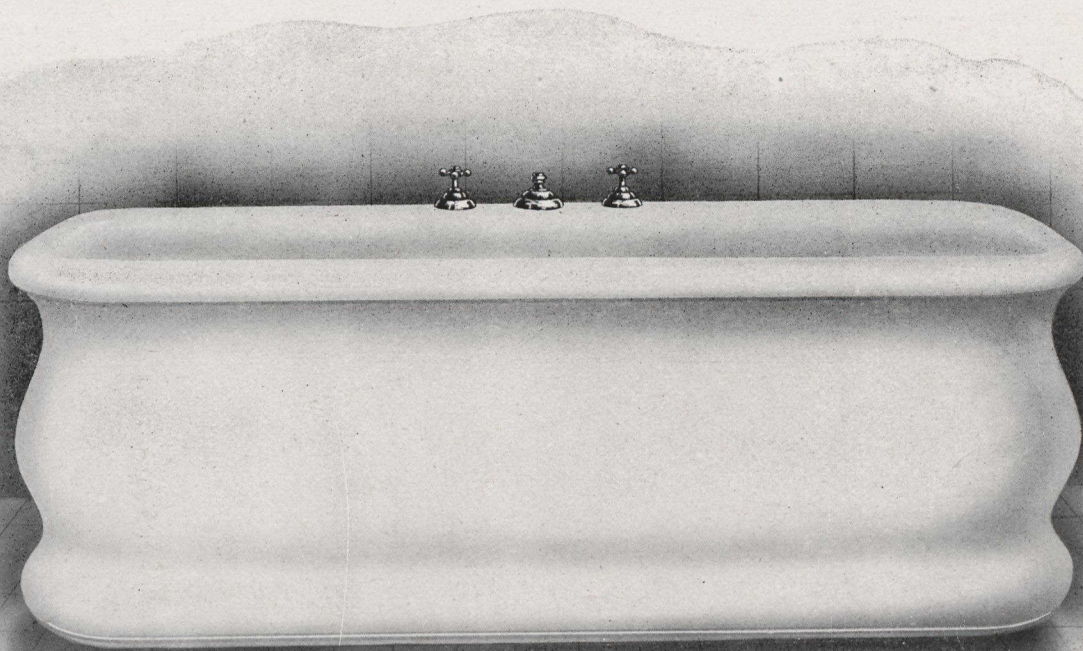
FIRE BRICK.

E. F. Dartnell, 157 St. James St., Montreal.
Francis Hyde & Co., 31 Wellington St., Montreal.
David McGill, Merchants Bank Chambers, Montreal.
Stinson-Reeb Builders Supply Co., Limited, 188 William St., Montreal.

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Don Valley Brick Works, 36 Toronto St., Toronto.
E. F. Dartnell, 157 St. James St., Montreal.
Eadie-Douglas Co., 22 St. John St., Montreal.
Expanded Metal & Fireproofing Co., 100 King St. W., Toronto.
Francis Hyde & Co., 31 Wellington St., Montreal.
David McGill, Merchants Bank Chambers, Montreal.
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Pitt & Robinson, Manning Chambers, Toronto.
Port Credit Brick Co., 8 West King St. Stinson-Reeb Builders Supply Co., Limited, 188 William St., Montreal.
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Jones & Glasco, Sovereign Bank Bldg., Montreal.
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Gas, Electric & Power Co., Stair Bldg., Toronto.
Jones & Glasco, Sovereign Bank Bldg., Montreal.
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Warden King, Ltd., Montreal.
Dominion Radiator Co., Ltd., Toronto, Montreal, Winnipeg.
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- INTERIOR WOODWORK.**
Batts, Limited, 50 Pacific Ave., Toronto Junction.
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Geo. B. Meadows Co., Ltd., 479 Wellington St. West, Toronto.
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Galt Art Metal Co., Galt, Ont.
Gaudry & Co., L. H., Coristine Building, Montreal; 76 Peter Street, Quebec; Roy Building, Halifax.
B. Greening Wire Co., Ltd., Hamilton and Montreal.
Metal Shingle & Siding Co., Preston, Ont.
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Trussed Concrete Steel Co., 23 Jordan St., Toronto.
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Drummond McCall & Co., Montreal, Toronto.
Francis Hyde & Co., 31 Wellington St., Montreal.
Gaudry & Co., L. H., Coristine Building, Montreal; 76 Peter Street, Quebec; Roy Building, Halifax.
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Gas, Electric & Power Co., Stair Bldg., Toronto.
Jones & Glasco, Sovereign Bank Bldg., Montreal.
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King Radiator Co., St. Helens Avenue, Toronto.
Dominion Radiator Co., Ltd., Toronto, Montreal, Winnipeg.
Warden King, Limited, Montreal.
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Drummond McCall & Co., Montreal.
F. H. Hopkins & Co., Montreal.
- REINFORCED CONCRETE.**
Concrete Engineering and Construction Co., 123 Bay St., Toronto
David McGill, Merchants Bank Chambers, Montreal.
Expanded Metal & Fireproofing Co., 100 King St. W., Toronto.
Pitt & Robinson, Manning Chambers, Toronto.
Trussed Concrete Steel Co., Limited, 23 Jordan St., Toronto.
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Lockerby & McComb, 65 Shannon St., Montreal.
The Paterson Manufacturing Co., Ltd., Toronto, Montreal and Winnipeg.
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- STEAM AND HOT WATER HEATING.**
Cluff Bros., 21-27 Lombard St., Toronto.
Warden King, Limited, Montreal.
- STEEL CONCRETE CONSTRUCTION.**
Concrete Engineering and Construction Co., 123 Bay St., Toronto
Expanded Metal & Fireproofing Co., 100 King St. W., Toronto.
Metcalf Engineering, Ltd., 80 St. Francis Xavier St., Montreal.
Pitt & Robinson, Manning Chambers, Toronto.
Trussed Concrete Steel Co., 23 Jordan St., Toronto.
- STEEL CASEMENTS.**
David McGill, Merchants Bank Chambers, Montreal.
- STRUCTURAL IRON CONTRACTORS.**
Reid & Brown, 63 Esplanade E., Toronto.
- STRUCTURAL STEEL.**
Gaudry & Co., L. H., Coristine Building, Montreal; 76 Peter Street, Quebec; Roy Building, Halifax.
- SWITCH GEAR (Electrical).**
Gas, Electric & Power Co., Stair Bldg., Toronto.
- TERRA COTTA FIREPROOFING.**
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Don Valley Brick Works, 36 Toronto St., Toronto.
E. F. Dartnell, 157 St. James St., Montreal.
Francis Hyde & Co., 31 Wellington St., Montreal.
The Milton Pressed Brick Co., Milton, Ont. 75 Yonge St., Toronto. 204 St. James St., Montreal.
David McGill, Merchants Bank Chambers, Montreal.
- TILE (FLOOR AND WALL).**
Canada Plate & Window Glass Co., Limited, 49 Richmond St. East, Toronto.
David McGill, Merchants Bank Chambers, Montreal.
- WALL HANGINGS.**
Deecker & Carls, 26 Yonge St. Arcade, Toronto.
The Thornton-Smith Co., 11 King St. West, Toronto.
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Canadian Fairbanks Co., Montreal, Toronto, St. John, Winnipeg, Calgary, Vancouver.
Somerville, Limited, 59 Richmond St. E., Toronto.
Drummond McCall & Co., Montreal, Toronto.
- WATER WORKS SUPPLIES.**
Somerville, Limited, 59 Richmond St. E., Toronto.
Canadian Fairbanks Co., Montreal, Toronto, Winnipeg and Vancouver.

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