CONSTRUCTION

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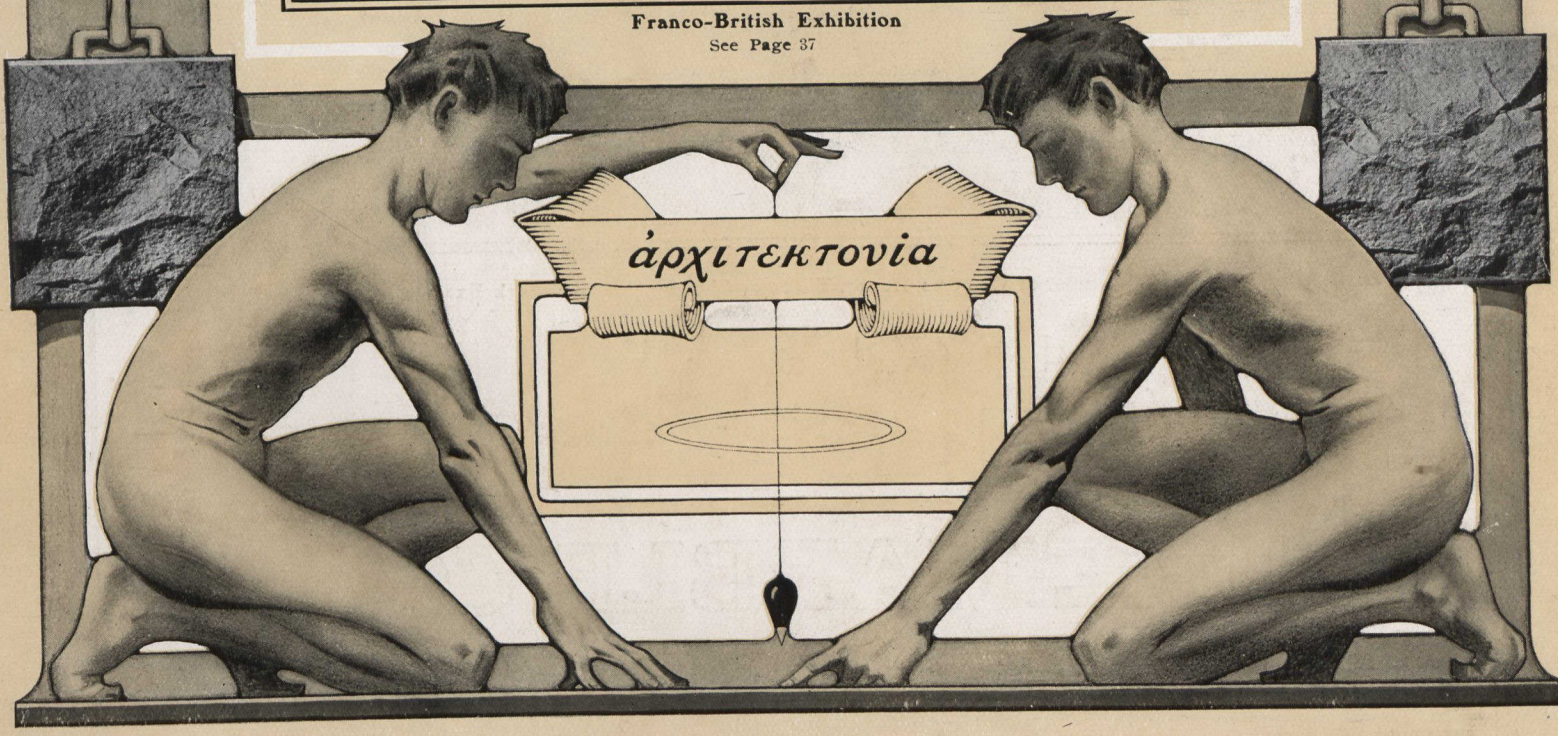
Franco-British Exhibition

See Page 37



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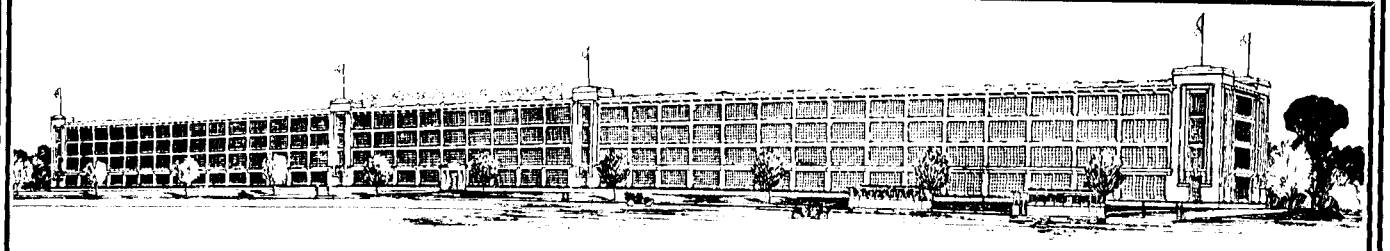

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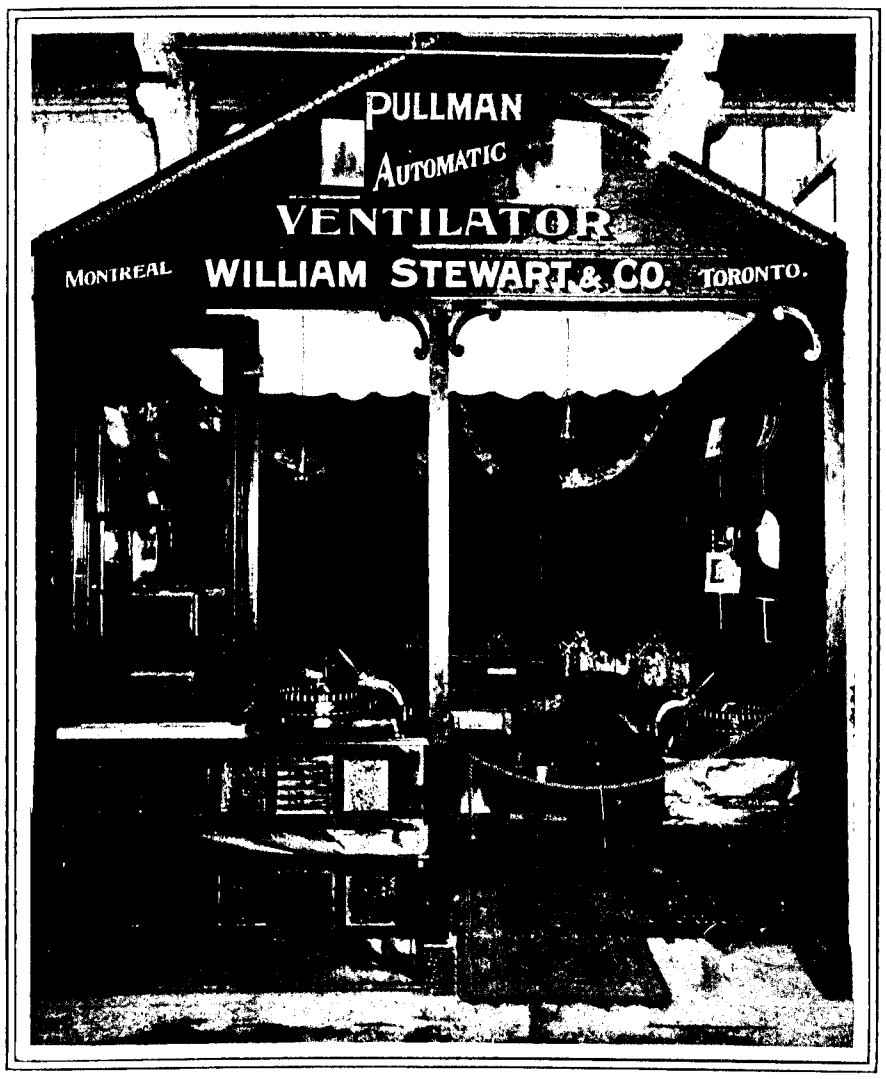

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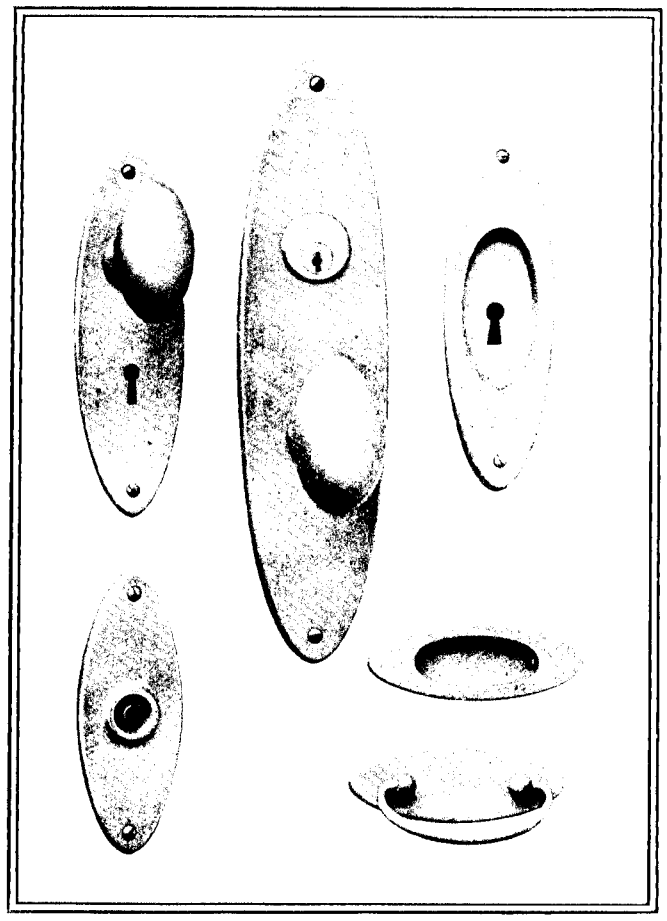

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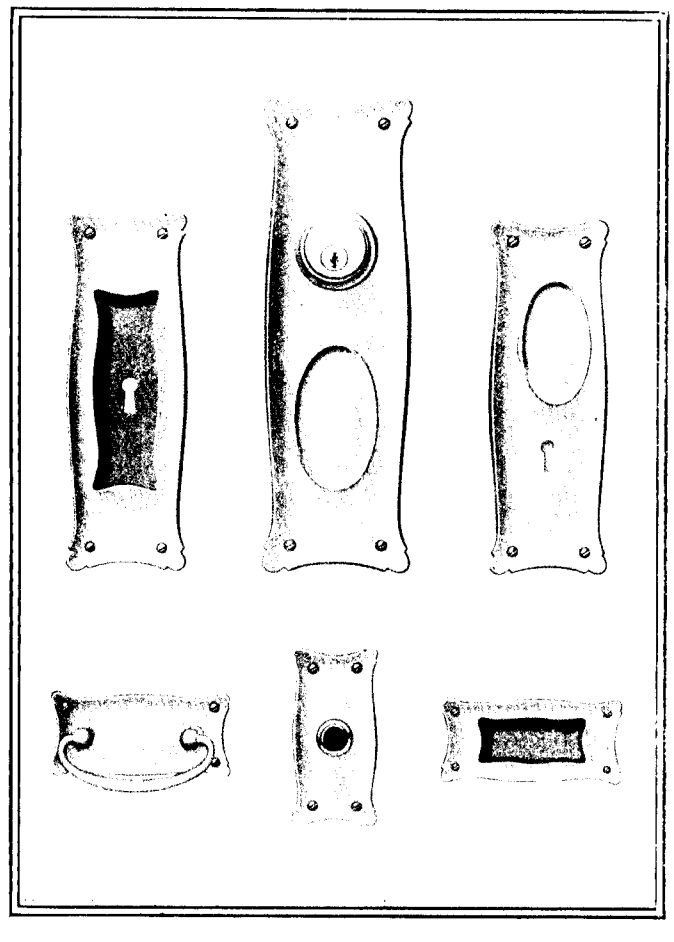

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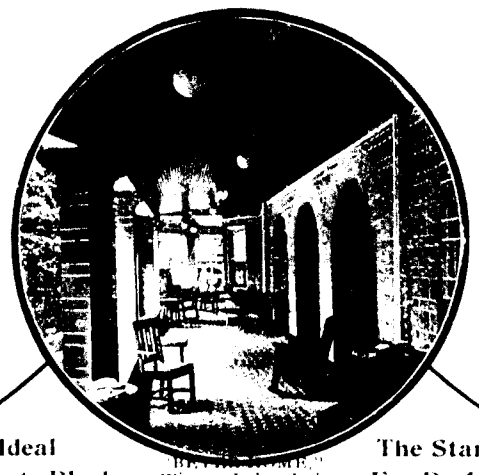

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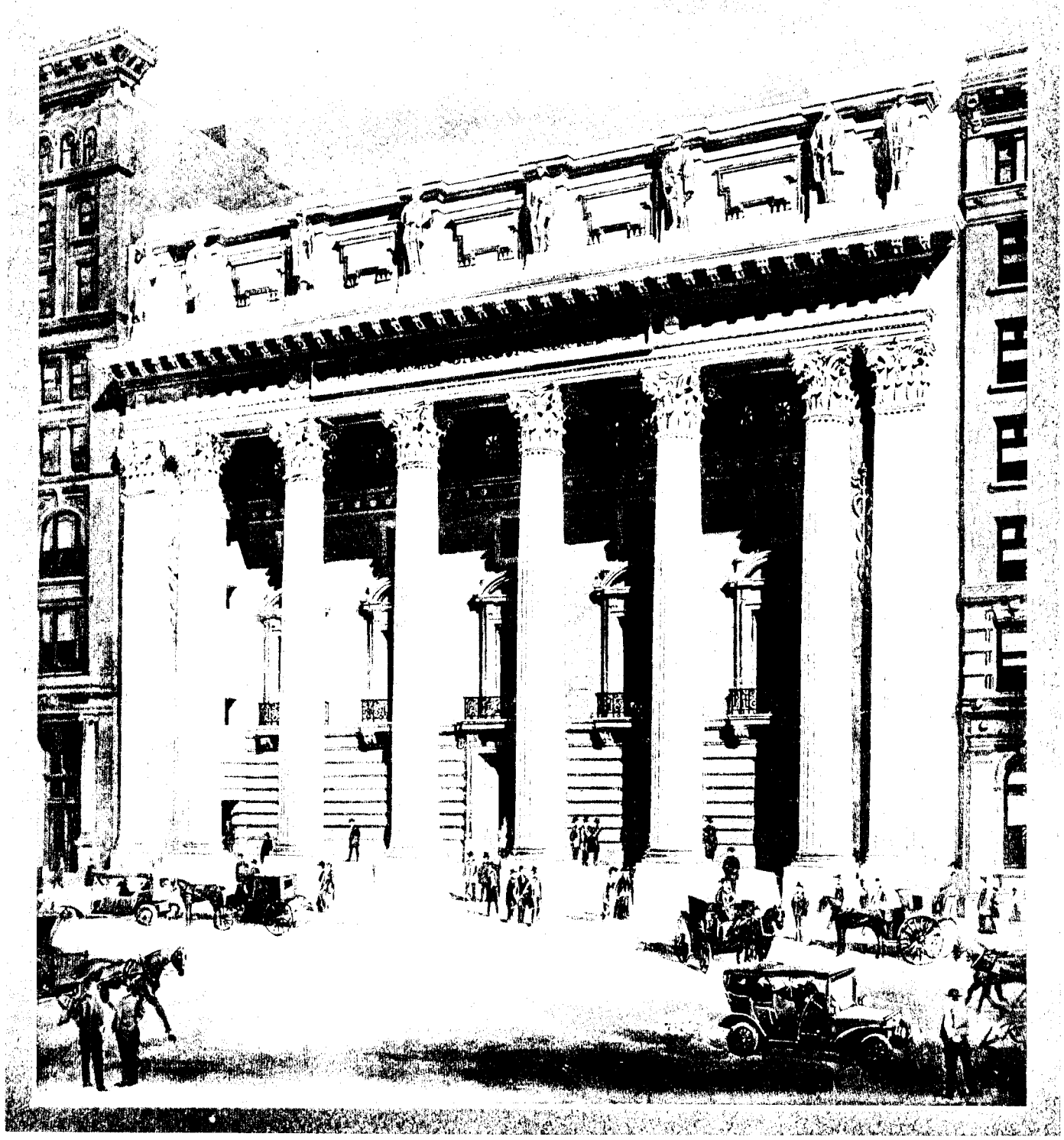
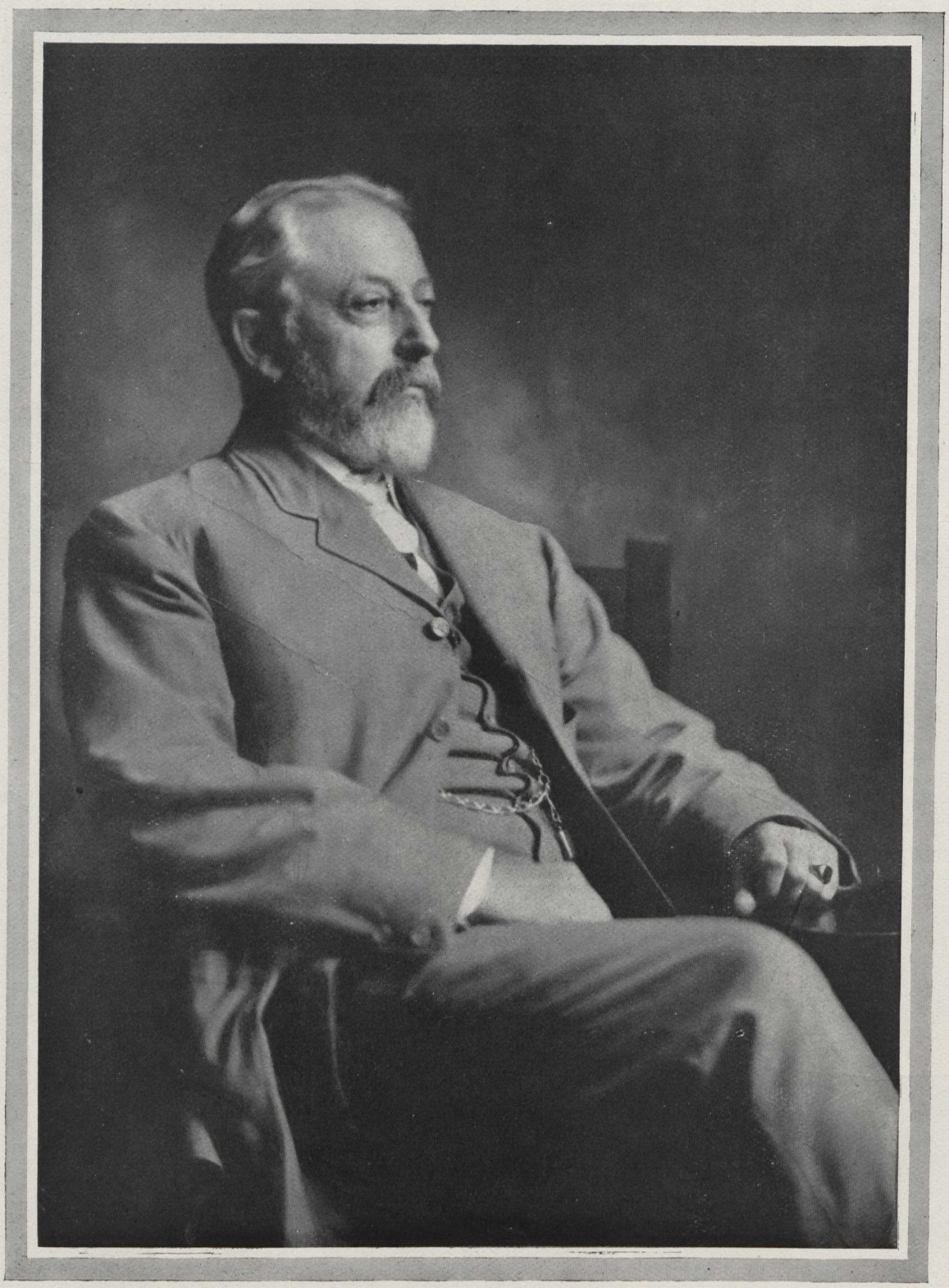




A. F. Dunlop, R.C.A., P.Q.A.A., Montreal, Que.,
President Architectural Institute of Canada.

BUILDING OPERATIONS IN CANADA ON THE "UPTURN"—STATISTICS FROM ELEVEN REPRESENTATIVE CENTRES SHOW INCREASING ACTIVITY—HEALTHY INDICATION OF RETURN OF EXPANSION MOVEMENT—OUTLOOK FOR REMAINDER OF YEAR HIGHLY ENCOURAGING.

ACTIVITY in the building industries is on the ascendency. Reports from the various representative centres of Canada show, that despite the falling off during the earlier part of the year, conditions are rapidly improving and the indications are that the remainder of 1908 will probably break all records in fall building.

The financial slump, that came down upon us so suddenly last October had a tendency to bring to an abrupt stop the remarkable wave of expansion that had swept over the country, and although no real causes for anxiety were evident, general confidence seemed to be shaken and the financial institutions of the country became cautious and began a paring down process on Industrial loans. The result was, that one of the first branches of business to be affected was the building industry, and when the spring of 1908 opened up it was found that because of financial difficulties a large number of building projects had to be postponed.

The "bug-bear," "tight money," however, has turned out like the dog that barks loud but never bites and confidence has been rapidly restored, and we find that building in August of 1908 in almost every city of Canada has shown a remarkable increase over that of the same period of 1907, which, in most cases, was considered a record breaking year.

This is a most healthy indication, in so far as there is no truer barometer of the actual condition of industrial prosperity than building. A man cannot build without he has a surplus of cash, or is enabled to finance. At all events, whenever a building is constructed it is evidence that an available surplus of cash exists somewhere.

To determine with a fair degree of accuracy the exact conditions that exist throughout the country generally, "CONSTRUCTION" has secured statistics from eleven representative cities of the Dominion, showing the aggregate cost of buildings for which permits were issued for August, 1908, as compared with August, 1907, and the aggregate cost of buildings for which permits were issued for the first eight months of 1908, as compared with 1907.

In eleven cities reported in the table below, the cost of buildings for the first eight months of 1908 was $24,124,915, as compared with $32,950,589 for the same period of 1907, thus showing a decrease of 26.84 per cent.

In nine cities for which figures were secured for the month of August, the aggregate cost of buildings for August, 1908, was $3,854,984, as compared with $3,194,535 for the corresponding month of 1907, thus showing an increase of 20.67 per cent.

From this it can be seen that Canada's principal centres have turned a decrease of 26.84 per cent. for the first eight months of 1908 into an increase of 20.67 per cent. for the month of August, 1908, as compared with the same periods of 1907.

It will be noted that Regina shows the largest increase (329.13 per cent.), Toronto the smallest increase (6.05 per cent.), Vancouver the largest decrease (23.96 per cent.), and St. John, N.B., the smallest de-

	No. of Permits for August, 1908.	No. of Permits for August, 1907.	Total Cost of Bldgs. for August, 1908.	Total Cost of Bldgs. for August, 1907.	Increase Per Cent.	Decrease Per Cent.	Permits for first 8 months of 1908.	Permits for first 8 months of 1907.	Total Cost of Bldgs. for First 8 Months of 1908.	Total Cost of Bldgs. for First 8 Months of 1907.	Increase Per Cent.	Decrease Per Cent.
Montreal	182	162	$ 738,820	$ 507,555	45.56		1268	1169	$3,197,303	$ 6,444,584		50.32
Toronto	442	497	1,274,185	1,201,410	6.05		2603	2785	7,408,430	11,440,740		35.24
Winnipeg	192	164	583,400	394,550	47.78		1075	2043	4,182,150	5,753,300		27.3
Vancouver	168	173	535,930	708,815		23.96	1221	1225	4,529,050	3,917,275	15.61	
Regina	20	29	193,112	45,000	329.13		180	390	407,470	950,000		57.1
Calgary	49	53	83,810	108,200		22.54	277	467	556,450	1,017,420		45.3
Edmonton	70	62	103,352	88,695	16.52		471	704	2,201,927	2,029,395	8.5	
Fort William ...	27	38	176,725	108,760	62.5		231	323	1,280,710	673,515	90.15	
St. John	12	12	25,250	31,550		19.96	67	71	150,850	336,785		55.06
*Hamilton	48		137,400									
*Brantford							213	265	210,575	390,575		46.12

*We were unable to secure complete figures from these cities.

crease (19.96 per cent.) for the month of August.

Fort William has the largest increase (90.15 per cent.), Edmonton the smallest increase (8.5 per cent.), Montreal the largest decrease (50.32 per cent.), Winnipeg the smallest decrease (27.3 per cent.), for the first eight months of the year.

In view of the general opinion that Winnipeg suffered most from the money stringency, it is worthy of note that the decrease in her building was much lower than that of our large cities.

Only three of the cities reported, show a decrease for August, viz.: Vancouver, Calgary and St. John, N.B., while only three show an increase for the first eight months of the year, viz.: Vancouver, Edmonton and Fort William.

Reports as to prospects for the remainder of the year were generally bright and it seems to be the concensus of opinion that the year will finish well. There seems to be a large amount of building that was contemplated early in the year and for financial reasons had to be postponed that is being proceeded with this fall.

Reports from various places as to the future outlook, were as follows: Montreal, "Good"; Toronto, "Good"; Vancouver, "The indications are for a busy time for the next four months"; Winnipeg, "Fair"; Fort William, "Good"; Hamilton, "Fair"; Edmonton, "Looks bright, should close at end of year near the $3,000,000 mark"; Regina, "Fairly bright"; Calgary, "Very Good"; St. John, N.B., "No change for better this season, prospects look bright for next year."

"NO MEMBER SHALL ATTEMPT TO SUPPLANT ANOTHER ARCHITECT AFTER DEFINITE STEPS HAVE BEEN TAKEN TOWARD HIS EMPLOYMENT."

THE ABOVE is one of the rules in the Code of Ethics to be considered at the coming convention of the Architectural Institute of Canada, and its adoption, as it will be presented is not at all improbable. The professional reasons for the prohibition by associations formed for the promotion of the interests of the profession and the raising of the standard of architecture, of the unethical appropriation of plans are obvious. There is no infraction of the canons of architectural practice that is so ignominious and there is none that so militates against the dignity, repute and welfare of the profession.

But the lay public has also a vital interest in the professional conduct of the architect, that may not be so apparent. It is the public that employs the architect; it is the public that is forced to rely upon the unbiased professional advice of the architect, upon matters that involve large sums of money. It is the public that is affected most by the lack of professional integrity on the part of the architect, and it is in the interests of the community that the architect should be obliged to adhere to professional ethics, to enable him to maintain a professional reputation that carries him out of the realm of sharp business practice.

After an architect has been employed to design and plan a certain building and has spent much time and effort in studying out the problems involved; after he has completed a plan that provides for a building eminently suited to the purpose for which it is to be used; after he has thus not only done the work he was commissioned to do, but has executed a design which he has reason to be proud of and looks with fond hopes toward the time, when he will be enabled to point to the completed structure, a creation of his own brain, as a monument to his accomplishment, we ask what more despicable act on the part of a supposedly reputable architect could be conceived of, than that of supplanting the original designer, stealing his plans, appropriating his ideas, and declaring himself architect of the product of the brain of another.

While the owner, who is a party to such a procedure, may be censured for a breach of faith, his obligations with his architect may be met by the payment of fees, commensurate with the services that have been rendered. These obligations are purely legal and he is not governed in his actions, in the transaction, by other than business reasons.

It is different with the architect, he has professional interest to consider, even before business interest. He must not only be governed in his actions by common business integrity but must first consider his professional obligations, for it is only the ethics approved and observed by architects that make architecture a profession rather than a business. Whether the architect who appropriates another's design does so with or without the knowledge or approval of the owner, or in accordance with instructions from the owner, does not affect his position one whit. Though the owner has satisfied the original designer with ample compensation for his work, the evil of appropriating another's plans is not lessened.

Every architect must be influenced in his work to a great extent by the fact that his building, when completed, stands as an exemplification of his ability or his inability as a designer.

His compensation for his labors is not confined to his fee, but a high professional reputation is a much sought for reward for creditable work, so when an architect appropriates another's design, he takes to himself credit for the execution of the product of another man's brain and holds it up to the world as such. He has secured prestige and reputation with the ideas he stole from another.

The layman and sometimes the contractor often argues that there is little reason for architects being such sticklers on professional ethics and that straight business integrity is sufficient to control the actions of the architect. This is a great mistake. The rules that control legitimacy in ordinary business transactions would fall far short in applying to the conduct of an architect in serving his client. The owner has to rely to such a great extent upon the unbiased, professional advice of the architect that it would be quite impossible to conserve his interests by demanding no more from the architect than simply business integrity.

It is important to the owner and contractor alike that the architect shall guard jealously his professional reputation, to do which he must adhere closely to the canons of his profession.

An architect who steals another's plans has broken one of the basic principles of the ethics of the profession, he has shown that he is inclined to apply sharp business practice to professional work, he demonstrates that he holds lightly his professional reputation, and is, therefore, not a safe man in whose hands could be entrusted the interests of either the owner, or contractor, and his continued application of such principles to the practice of architecture is a menace to the better interests of the profession.

ENGINEERS APPOINTED TO RECONSTRUCT QUEBEC BRIDGE—THREE PROMINENT DESIGNERS FROM TWO CONTINENTS HAVE ALREADY ASSUMED NEW DUTIES. - - - - - -

THE Board of Engineers appointed by the Government to prepare plans for the rebuilding of the Quebec bridge, has already begun its duties, and it said that an effort will be made to have the new structure completed and in use by the time the Grand Trunk Pacific is ready for operation in 1911.

The chairman of the board, Mr. H. E. Vautelet, is recognized as one of the leading civil engineers in Canada, having been connected with the Canadian Pacific Railway from 1885 to 1902, his special work during that

period being the designing, inspection and supervision of the construction of bridges. Among the bridges he designed for the C.P.R. are the Stoney Creek bridge in the Selkirk district, an imposing structure crossing a gulch 400 feet in depth, and the bridge over Salmon River, whose arch spans 270 feet. Since severing his connection with the C.P.R., Mr. Vautelet and Mr. Percival St. George have been associated at Montreal as consulting engineers. Mr. Vautelet has also been in charge of several important Government projects, among them being the St. Andrew's Rapids dam for raising the level of the Red River, and the highway bridge across the Saskatchewan at Edmonton.

Mr. Maurice Fitzmaurice of London, and Mr. Ralph Modjeski of Chicago, who are identified with Mr. Vautelet on the Commission, are also two engineering experts who have attained a broad reputation as bridge builders.

Mr. Fitzmaurice is at present chief engineer for the London County Council. He was associated with Sir Benjamin Baker in the erection of the great Forth bridge, and was also one of the engineers entrusted with the carrying out of the Assouan dam across the Nile.

Mr. Modjeski has the benefit of an extended experience in the building of railway bridges in the Western section of the United States and Canada. He received his academic training at the Polytechnic School of Paris, the same school of which Mr. Vautelet is a graduate.

WILL ENGINEERS SELECTED HAVE ABSOLUTE AUTHORITY IN RECONSTRUCTING QUEBEC BRIDGE?—APPOINTMENTS TO BE COMMENDED. - - - - -

WHILE THE GOVERNMENT has decided to go back to the country, to ask for another four years' lease of office, without having cleared up the Quebec Bridge bungle, they have found it expedient to at least attempt to provide themselves with a surficial defence against the campaign criticism that has been so liberally supplied their opponents in this horribly fatal combination of blunders and political intrigue, by the appointment of three eminent engineers who have ostensibly been given complete control of the designing and erection of the second Quebec bridge.

Mr. Henry E. Vautelet, Mr. Ralph Modjeski and Mr. Maurice Fitz Maurice represent possibly the greatest bridge engineering brains of two continents, and their appointment to this great task, that has cost the country so much money, and the government no little worry and embarrassment, will meet with the approval of almost every Canadian. It is true that in the minds of some, the government might have seen fit to have appointed an Ontario engineer on the staff, but it seems to us that this is not a matter worth quibbling over. In the face of what has been said and also in view of the fact that the government did not see fit to clear up the details connected with the responsibility for the failure of the bridge before elections, they were exceedingly anxious to avoid going back to the electors entirely empty-handed, and in order that their selections should not have the least semblance of political favoritism they hit upon the happy plan of appointing upon the staff that was to reconstruct the bridge, men whose reputations carried them absolutly beyond all possible attack by the government's enemies.

In this, the government has been wise and they are to be complimented upon even this slight indication of their regard for public opinion, if not national welfare. But let it be remembered that the appointment of the engineering staff is not all. There is the providing of funds, the awarding of the general contracts, the letting of subcontracts, etc.—the methods employed in all of which will have a strong influence upon the cost and character of the reconstructed bridge.

It is reported that these engineers will have complete and absolute control of the design and erection of the new structure. But will they? If the government is returned to power is it not possible that some election promises will have to be fulfilled, or some obligations in the way of earlier agreements or contracts to be satisfied? Is it possible that these three great engineers will be given the power and authority their reputations entitles them to, to be free to produce the best structure at a reasonable cost, unhampered by political obligations of the government?

We are not borrowing trouble, but it appears to us that the revelations as to the government's method of procedure on this work before, and the manner in which it has since side stepped and avoided placing the responsibility for the failure of the bridge, it so faithfully promised to determine, leads us to be rather dubious about its sincerity in the carrying out of such a high-minded policy as has been declared on the eve of an election.

The three engineers appointed, we repeat, are highly capable of carrying out this great work to a successful conclusion, they have the mistakes of their predecessors to profit by, and if, unhampered by the "powers that be," we shall have, without doubt, the greatest bridge in the world as part of our great transcontinental railroad.

It must, however, be remembered that Mr. Cooper was one of the greatest bridge experts in the world, and we are told he had absolute control over the construction of the bridge that fell. The attendant conditions created by the government's method of combining political patronage and public work brought about a situation that forced Mr. Cooper to accede to a procedure against his better engineering judgment.

Had Mr. Cooper been unhampered by an inadequate fee, a faulty original design, limitation of finances and the government's unfortunate connection with the company organized to build the bridge, and had he been free to construct the best bridge at a reasonable cost, it is quite within good reason to believe that the Quebec bridge would have been opened at the scheduled time.

A. I. C. TO ASSEMBLE AT OTTAWA—FIRST MEETING UNDER NEW CHARTER—ORGANIZERS DESERVE CREDIT FOR THEIR GOOD WORK. - - - -

MUCH CREDIT is due the organizers of the Architectural Institute of Canada for the untiring, patient manner in which they have persistently worked for the formation of a national organization of the architects of the Dominion.

At the first assembly held in Montreal in August, 1907, the preliminaries of organization were discussed, and it was decided to ask the government for a charter making the association a closed corporation. A storm of protest was soon raised from many architects in every portion of the Dominion who, while they were in favor of an association comprising members from every province in the Dominion, did not favor the "closed corporation" idea.

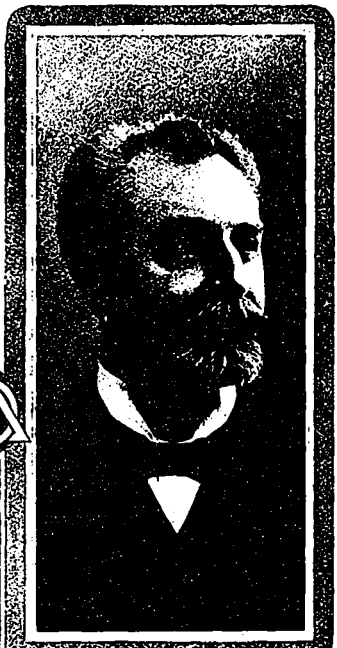
The result was that it was decided by the council to strike from the application for charter every clause that in any way tended to make the Institute a closed corporation. A charter was granted and provisional officers named. A quarterly bulletin has been issued giving interesting data and information to the members of the Institute as well as prospective members, and it has done much toward keeping life and interest in the movement.

The first general assembly is to be held in Ottawa on September 26 to October 1, inclusive, and the programme promises some highly interesting discussion during the several sessions.

The Institute has a great work before it in Canada. Though our country is broad we are working to a common end, and the existing of provincial associations without affiliation, in the far corners of the country does not permit of the interchange of knowledge, and ideas required in work of building up this vast land of ours.

EDMUND BURKE, O.A.A.,
VICE-PRESIDENT, TORONTO.

S. FRANK PETERS, M.A.A.
VICE-PRESIDENT, WINNIPEG.



MAURICE PERRAULT, P.Q.A.A.
VICE-PRESIDENT, MONTREAL.

ALCIDE CHAUSSE, A.I.A., M.S.A., P.Q.A.A.,
SECRETARY, MONTREAL.

J. W. H. WATTS. R.C.A., O.A.A.,
TREASURER, OTTAWA.

Officers of Architectural Institute of Canada

NATIONAL ASSEMBLY OF ARCHITECTS.---First General Meeting of A.I.C. as a Chartered Body to be Held in Ottawa.---By-Laws, Code of Ethics and Schedule of Charges Among the Important Items to be Discussed.

WITHOUT question one of the most auspicious events in the history of the architectural profession of Canada will take place in Ottawa, September 28 to October 1 inclusively, when the Architectural Institute of Canada will hold its first general assembly under the charter recently granted it by the Dominion Government.

Official invitations, announcing the dates and purpose of the meeting have been mailed by the secretary to all the practicing architects in the Dominion, and every indication points to a large attendance of members of the profession, who will lend their personal support and co-operation in promoting the interests of the Institute and making the assembly in every way an unqualified success.

The headquarters of the assembly will be in the Ottawa Public Library, and the business meetings will be held in the lecture hall in connection thereof. Special arrangements have been made with the railway companies to provide reduced rates for members of the assembly and their families, entitling them to transportation both ways, at one and one and one-third fares. Tickets, with certificates for special rate privileges, can be procured from Sept. 24 to 30, and will be honored for return transportation up to and including Oct. 5.

The general programme, as prepared by the local committee of arrangements, is in part as follows:

Monday, September 28.

A.M.—Arrival of Delegates, Registration, Meeting of the Council.

P.M.—Inaugural Meeting. Addresses by the Mayor and other Ottawa prominent citizens, response by the President of the Architectural Institute of Canada.

Evening.—Business Session.

Tuesday, September 29,

A.M.—Business Session.

P.M.—Complimentary Drive offered by the City of Ottawa, Visits to the Experimental Farm, the New Museum, etc.

Evening.—Members' Dinner.

Wednesday, September 30.

A.M.—Business Session.

P.M.—Visits to the Eddy Co., Wilson's Bell Buoy Manufactory, International Cement Works, etc., at Hull.

Evening.—An evening at Bennett's Theatre.

Thursday, October 1.

A.M.—Meeting of the Council.

P.M.—Individual Visits to points of interest in Ottawa.

Other features, such as addresses and papers will be included as the programme is more definitel shaped.

A backward glance over the two years covering the formation and advancement of the Institute, reveals one of the most important periods in the history of the architectural profession of Canada. Hardly had a national association been suggested, than the idea took root and immediate steps were taken to bring the project to a state of permanent organization. Circulars addressed to all known practitioners in Canada inviting them to join in the movement, brought responses of so encouraging a nature that definite arrangements were made for what was to be the first congress of Canadian architects, and August 19 to 24, 1907, found for the first time, architects from all over the Dominion, gathered together, in Montreal, for the purpose of promoting a common interest.

At this congress, the question of incorporation was fully discussed, and it was decided to submit to Parliament an act providing that the Institute of Architects be granted a charter as a close corporation. The bill, however, in this form, met with considerable opposition on the part of both a number of prominent architects, and the daily press, and several amendments, including the changing of the name of the association from "Institute of Architects of Canada" to the "Architectural Institute of Canada" and the elimination of the "close corporation clause," were made before the act was finally passed.

At the approaching general assembly, when the Institute will meet for the first time as a legally chartered body, measures equally as important as was that of incorporation, if not more so, and which will bring to bear strong influences in elevating the standard of the profession in Canada, will come up for consideration and discussion.

These will consist of drafts of proposed By-Laws, Code of Ethics, Schedule of Charges, Code of Architectural Competitions, and Relations of the Institute and Provincial Societies of Architects and Architectural Clubs, Election of Officers and Members of Council, all of which will be taken up in order named.

The purpose and aims of the Institute is clearly defined in the projects to be submitted.

According to the proposed by-laws, the objects of the Institute, shall be to facilitate the acquirement and interchange of professional knowledge among its members and to encourage investigation in connection with all branches and departments of knowledge relating to the profession of architecture, and to hold exhibitions at such times as are deemed advisable.

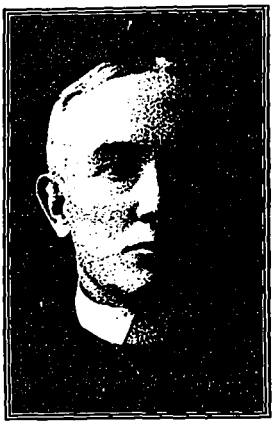
The City of Ottawa will be the headquarters of the Institute, and its office shall be located in the city where the secretary resides.

The government of the Institute is to be vested in the Council which shall consist of the President, Vice-President, Treasurer, Secretary and Councillors, five of whom shall constitute a quorum. It shall be the duty of the Secretary to keep an accurate record of the transactions of the Institute and the Council, and to conduct all correspondence, give notice of meeting, and under the direction of the Council edit the transactions of the Institute. He shall also act as custodian of the library, in connection with which all books are to be recorded in catalogue form.

The funds of the Institute will be in charge of the Treasurer who will receive all monies due and honor all accounts and orders approved by the President or the Finance Committee. Meetings of the Council shall be held at the call of the President as often as the business of the Institute requires.

The section of the proposed by-laws relating to membership provide that the Institute shall consist of Honorary Members, Corresponding Members, Associates and Fellows, and that all titles shall be designated according to the following abbreviation forms, Hon. M.A.I.C., Cor. M.A.I.C., F.A.I.C., A.A.I.C.

Qualifications for election as members restrict Fellowships to architects who have been engaged in the pro-



WM. H. ARCHER, F.A.I.A.
VANCOUVER, B.C.

C. B. CHAPPEL
CHARLOTTETOWN, P.E.I.

F. DEGGENDORFER, A.A.A.,
EDMONTON, ALBERTA.

Members of Council, Architectural Institute of Canada.

fession for at least ten years, while a candidate for membership as an Associate must have at least two years' experience in the practice of architecture. Honorary Members shall be distinguished men, eminent in architecture or kindred sciences. The title of Corresponding Member is limited to non-residents of Canada, who, by reason of their attainments as architects or archaeologists, or who because of their artistic, scientific or literary acquirements may render assistance in promoting the interests of the Institute.

Any member in good standing of any Canadian, British or foreign Association of Architects may, upon presenting his credentials, be admitted by the Council to membership.

Regarding the expulsion of a member, one of the proposed by-laws provide, that upon specific charges being preferred by ten or more members, the Council shall take the matter into consideration and, if there should be sufficient reason, the said member shall be advised that his resignation will be accepted. The member, however, may upon demand receive a copy of the charge against him and prepare a written defence. He further has the alternative of appealing from the decision of the Council and having the question of his membership submitted to a general vote to be taken by letter ballot.

A schedule of charges governing entrance fees and annual dues has been prepared and will be submitted to the assembly for approval. Honorary or Corresponding members shall not be subjected to fees or dues, nor be entitled to the right to vote, and the Council may exempt any member distinguished in his professional career, who from ill-health or any other good reason assigned, is unable to meet his financial obligations to the Institute. Any member may compound his fee and become a life member on payment of a sum of $100.00.

A prohibitory measure set forth in the projected by-laws is to the effect that no member shall himself be either a building contractor or manufacturer or dealer

DAVID EWART, I.S.O., O.A.A.,
OTTAWA, ONT.

T. E. FAIRWEATHER,
ST. JOHN, N.B.

E. GATES,
HALIFAX, N.S.,

Members of Council, Architectural Institute of Canada.

H. B. GORDON, O.O.A.,
TORONTO, ONT.

W. W. HILTON, R.A.C.,
REGINA, SASK.

R. P. LE MAY, P.Q.A.A.,
QUEBEC, QUE.

Members of Council, Architectural Institute of Canada.

in building materials or supplies, nor shall he enter into partnership with any one engaged in any of these occupations.

The General Assembly shall be held annually at such place as the members may direct, the matter of fixing the date being left to the Council.

Another provision empowers the Council, upon the request of not fewer than five members who desire to form a local chapter of the Institute, to authorize the same in any place not less than fifty miles from the headquarters of the Institute, or from any existing chapter.

Copies of all lectures and addresses must be forwarded to the Secretary for the purpose of being examined by the Council. If deemed of sufficient interest, they shall be published and sent to every chapter where they will be read and discussed at the regular meetings.

The Code of Ethics deals with the principles with which members of the Institute are to be governed in their professional capacity. It provides that compensation for services rendered in professional practice shall be limited to the fees of a client, and prohibits any member from entering into a partnership in any form or degree, with a builder or contractor in any building operations, or from being a party to a building contract except as owner. In event of a member having any ownership in any building materials, device or invention, intended to be used on work for which he is the architect, his client shall be apprised of the fact.

It shall be contrary to code for any member to attempt to supplant another architect after definite steps are taken toward his employment, or to criticize the professional conduct or work of another, except over his signature or under the authority of a professional journal.

In competition for public or private work, no designs are to be submitted unless an advisor satisfactory to the competitors is employed to draw up the conditions and assist in the awards. The President of the Institute in this connection, shall proffer his good office as an hon-

H. C. MCBRIDE, O.O.A.,
LONDON, ONT.

L. MUNRO, O.O.A.,
HAMILTON, ONT.

R. B. PRATT, M.A.A., A.R.E.,
H.W.A., WINNIPEG, MAN.

Members of Council, Architectural Institute of Canada.

orary advisor to promoters in their appointment of assessors, whenever his services are required.

Members are prohibited from submitting drawings except as an original contributor in any duly instituted competition or from attempt to secure any work in such competition while it remains undecided. Another restrictive clause provides that, if a contractor or his employee makes plans or specifications in competition with, or in the capacity of an architect, no member shall permit such contractor to estimate or contract for work in or through his office.

The proposed Regulations for Architectural Competitions, takes up the subject fully and comprehensively. It stipulates that one of the first steps on the part of a promoter should be the selection of one or more professional assessors, architects of established reputation, whose duty shall be, after conferring with the promoter, to prepare the program for the competitors, all documents pertaining thereto to be so drafted as to constitute an agreement between the promoter and the competitors. It shall also be the duty of the assessor or assessors to determine whether the designs conform to the instructions, and to advise the promoters on the relative merits of designs admitted to the competition. No promoter of a competition and no assessor engaged upon it, nor any employee of either, are to compete for the proposed work.

EDEN SMITH, L.A.C., TORONTO, ONT.
Member of Council A.I.C.

Other features relate to the manner of conducting open and limited competitions, the number, scale and method of finishing of the required drawings, and the question of remuneration and awards. All designs should be numbered by the promoters in order received and should bear no mottos, device, or other distinguishing mark.

The proposed Schedule of Charges regulates the usual and minimum charges to be maintained by members of the Institute for professional services, such services consisting in the making of necessary preliminary studies, working drawings, specifications, large scale and full size details, and in the general direction and supervision of the work. It fixes the minimum charge for all building over $10,000 at 5 per cent. upon the cost of the work and for less than that amount at 6 per cent. For alterations and additions to existing buildings and for furniture, monument, decorative and cabinet works, the commission shall not be less than 10 per cent. Furniture or other articles purchased under the direction of the architect shall entitle him to extra compensation.

Consultation fees for professional advice are to be paid in proportion to the importance of the work involved, while the charge per day which an architect may make will depend upon his professional standing, in no case, however, being less than $16.00 per day of eight hours. Time occupied in travelling will be charged at the rate of $2.00 per hour, if in office hours, and $1.00 per hour if otherwise. All necessary travelling expenses are to be paid by the owner.

Alterations to contracts, drawings and specifications and professional and legal services incidental to negotiations for site, disputed party walls, right of line, measurement of work, or failure of contractors, are not covered by the above amounts, and are to be charged for according to the time and trouble involved, when such services are necessary.

When heating, ventilating, mechanical, electrical and sanitary problems in a building are of such a nature as to require the assistance of a specialist, the cost for such services is to be borne by the owner, as is also the cost of chemical and mechanical tests when required.

The schedule of charges also specifies the stages in the progress of his work when the architect's payments are due, and it further holds that drawings and specifications as instruments of service, are the property of the architect.

The usual scale of charges for assessing competitions is specified at one-fifth of one per cent. upon the estimated cost of the proposed building, plus travelling expenses.

Where any material, etc., used in the construction of a building is provided by the owner, its value is to be added to the sum actually expended on the structure before the architect's commission is computed.

Other phases of the measure go into the question of fees relative to the abandonment and suspension of a building operation, and the duties of an architect or his deputy in the supervision of work during the process of construction.

Another matter which will be discussed at the Assembly is a communication received by Mr. Alcide Chausse, Secretary of the Institute, from the Committee appointed by the American Institute of Architects to consider the relations of that body and its chapters to the various architectural societies throughout the country, with a view to formulating some scheme tending to bring them closer together in the future. The communication says in part: "It is evident that the ultimate aims of the Institute and the various societies are similar and although consolidation might be undesirable, if not impossible, much may be gained by a limited co-operation, so successfully tried in other countries, notably that of Architectural Society of London, and the Royal Institute of British Architects.

JOS. VENNE, P.Q.A.A., MONTREAL, QUE.
Member of Council A.I.C.

PHILADELPHIA'S NEW BUILDING CODE provides that reinforced concrete shall be understood to mean an approved concrete mixture reinforced by steel or iron of any shape, so that the steel or iron will take up all the tensional stresses and assist in the resistance to compression and shear. A competent foreman must superintend the work. It may be used for fireproof buildings of the first class, provided the aggregate be clean, broken, hard stone, clean graded gravel, together with clean siliceous sand or fine grained gravel. Only Portland cement may be used. It must be tested in car load lots or in quantities equal to same, and report filed with the bureau of building inspection before its use. The contractor must be prepared to make load tests in any portion of a reinforced concrete building within a reasonable time after erection, and as often as may be required. The tests must show that the construction will sustain a load equal to twice the calculated live load without signs of cracks.

CANADIAN BUILDING, FRANCO-BRITISH EXHIBITION, LONDON. ALTHOUGH LESS DECORATIVE IN GENERAL EFFECT THAN MANY OF THE OTHER BUILDINGS SEEN AT THE EXHIBITION, IT IS SYMMETRICAL IN OUTLINE AND EXCELLENTLY DETAILED. ITS DOME AND CUPOLAS BRING THE BUILDING UP TO AN AGREEABLE HEIGHT, WHILE BROAD CURVING LOGGIAS IN THE CENTRE OF EACH FAÇADE FURTHER ADD TO ITS ATTRACTIVENESS.—PHOTO BY E. N. BIRKETT, LONDON.

FRANCO-BRITISH EXHIBITION.---Architectural and Constructive Features of the Several Buildings---Work of both British and French Architects.---The Apex of Freedom of Design in Exhibition Architecture Reached.

By HUGH B. PHILPOTT

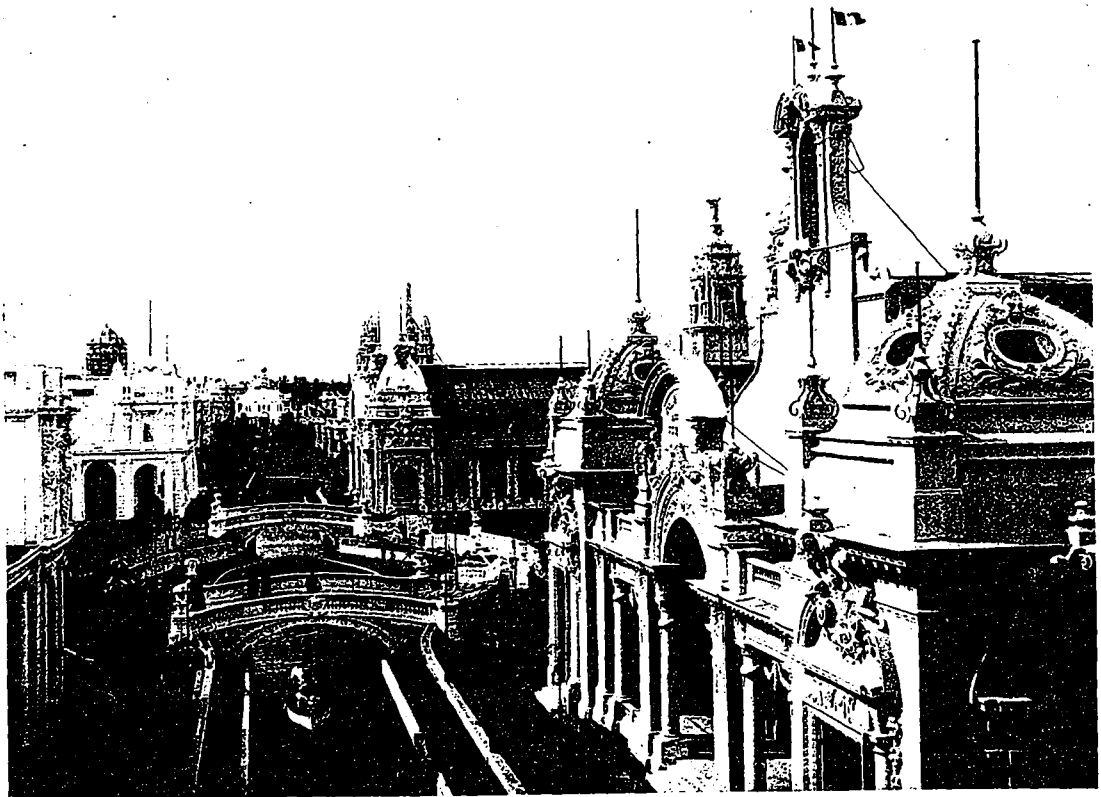
THE great exhibition at Shepherd's Bush, which we Londoners, impressed by its contrast with the generality of buildings in our smoke-begrimed metropolis, have agreed to call "the White City," is the biggest thing in exhibitions yet achieved in the old country. It stands on a site of 140 acres, of which over 40 acres are covered with buildings. Compared with this, the "Great Exhibition" of 1851, the pioneer of international exhibitions, with its 16 acres of buildings and total area of 21 acres, was but a puny thing. It is estimated that the buildings at Shepherd's Bush have cost something like £2,000,000 to erect—a huge sum when one remembers that they are destined to disappear after a few months.

It is not, however, in respect to size or cost that the Franco-British Exhibition specially demands the attention of those interested in building, whether on the artistic or the constructional side. The builders of this exhibition have had at their disposal constructive methods which were either unknown or in a more or less experimental stage when earlier exhibitions were built. Steel framework construction has been adopted for nearly all the exhibition buildings at Shepherd's Bush, and in view of the results here achieved it is probable that this method of building will long be regarded as the building method *par excellence* for a great exhibition. No other method so well fulfils the conditions demanded for this kind of building—a stable structure, capable of rapid erection, as fire-resisting as may be, and affording ample opportunities for decorative treatment.

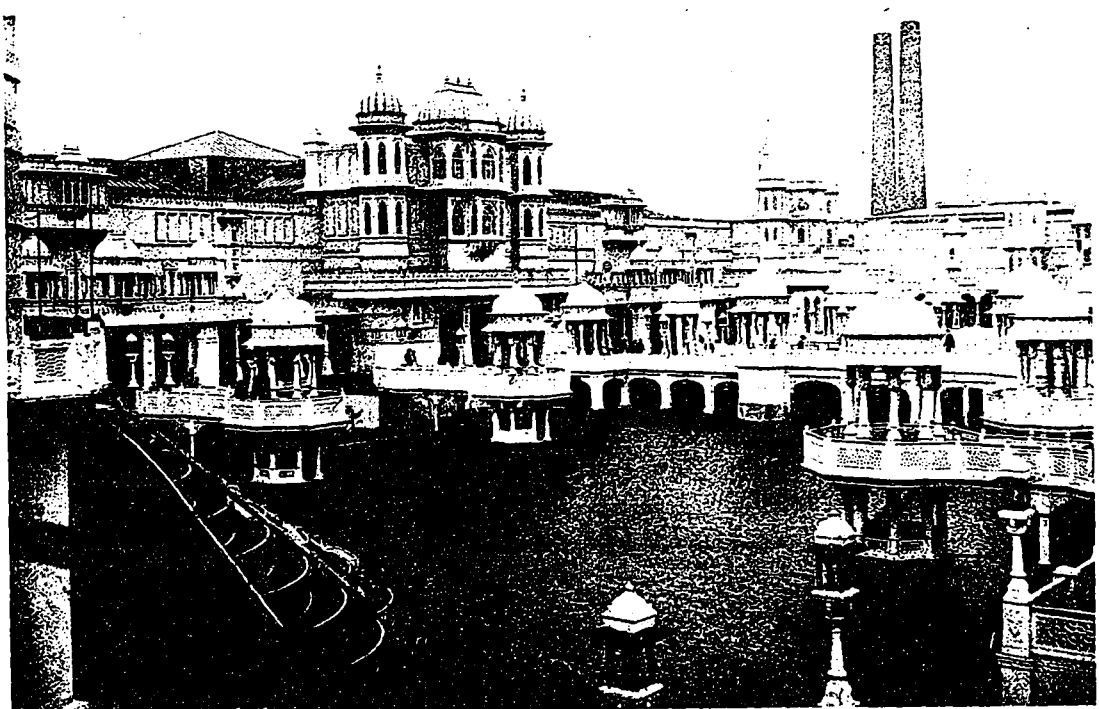
As regards the outward form of the buildings, the "White City" follows the precedent of all recent exhibitions, using fibrous plaster with great freedom and variety of decorative effect. We have travelled very far in exhibition architecture from the simplicity and honesty of the original exhibition style—the glass and iron structure of Sir Joseph Paxton. It must be admitted that the Lamp of Truth is not much in evidence in modern exhibition architecture. At the Franco-British Exhibition nearly every architect has deliberately concealed the structural character of his building; the numerous columns which appear to be doing so much work are the merest shams, concealing the iron staunchions which really bear the weight of the superstructures.

But these are not considerations which need trouble the critic very much, as he contemplates exhibition architecture. This is work to which the ordinary canons of criticism do not apply. The function of the exhibition architect is so different from that of the architect responsible for permanent building. Here he is scarcely concerned with planning or with construction. The planning of the buildings is simplicity itself, a big rectangular hall being all that is generally required, and the construction is all carefully figured out by the structural engineer. It was when the steel skeleton was erected and filled in with concrete that the architect's work really began. His task was to clothe these grim and gaunt structures in a comely architectural robe.

The order of procedure in connection with the Franco-British Exhibition seems to have been something like this: Mr. Imre Kiralfy—the originator and generalissimo of the whole scheme—having obtained his site, proceeded to prepare his general plan, and with the aid of a staff of draughtsmen, to work out the general form of the buildings it was proposed to erect. These preliminary sketches were then sent to the structural en-



A TYPICAL SCENE AT THE FRANCO-BRITISH EXHIBITION, LONDON, SHOWING ONE OF THE WATERWAYS, WITH THE PALACES OF FRENCH AND BRITISH APPLIED ARTS ON THE RIGHT. THE GENERAL SCHEME IS WELL ARRANGED, PRODUCING A SYMMETRICAL AND WELL BALANCED EFFECT.—PHOTO BY E. N. BIRKETT.



THE INDIAN COURT, ONE OF THE MOST FASCINATING SPOTS AT THE FRANCO-BRITISH EXHIBITION, LONDON. THE LAGOON IS DIVIDED INTO TWO PORTIONS BY THE BRIDGE SHOWN AT THE RIGHT SIDE OF VIEW. RISING OUT OF THE WATER IN EITHER HALF ARE FOUR OCTAGONAL PAVILIONS IN TWO STORIES, CAPPED BY A DOME RESTING ON SLENDER COLUMNS. FOUR SIMILAR PAVILIONS ADORN THE CENTRE OF THE BRIDGE, WHILE AT ONE END OF THE COURT IS A CASCADE, THE WATER FALLING OVER A TERRACED SEMI-CIRCLE OF TRANSLUCENT GREEN GLASS.—PHOTO BY E. N. BIRKETT, LONDON.

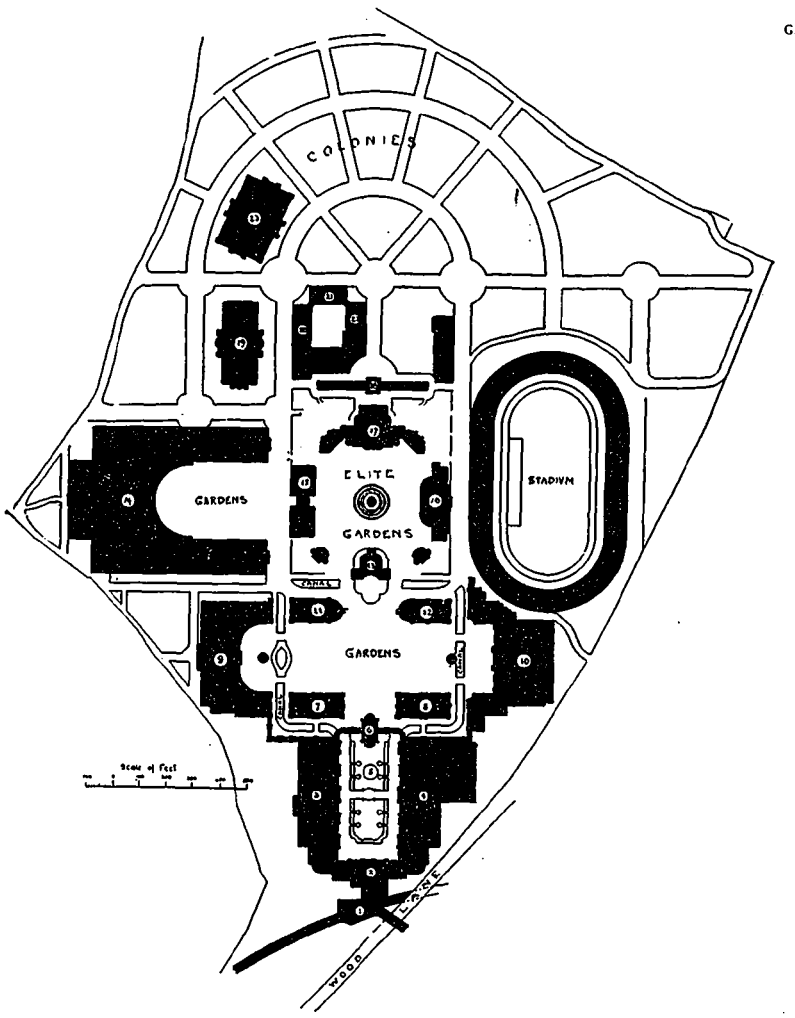
gineers who worked out all the details of the steelwork. Then a number of distinguished architects, both English and French, were invited to prepare drawings showing how the steel skeletons might be rendered comely and pleasing to the public eye.

With the forms of their buildings thus settled for them the opportunities of the architects were, it must be admitted, considerably restricted. And this restriction, coupled with the consciousness that their work would necessarily be ephemeral in character, would no doubt tell against the production of anything that could be called great architecture. On the other hand, the architects have had unlimited freedom in many directions, and they seem to have revelled in it. With a plastic and comparatively inexpensive material as their medium, the architects seem to have let themselves go, delighting in the opportunity of using their art mainly as a means of pleasing the eye, without being hampered by the prosaic and utilitarian considerations which so often vex the soul of the artistic architect in his ordinary practice.

The buildings for the most part seem to suggest that their authors have thoroughly enjoyed themselves. It is the architecture of men in a playful mood, and if sometimes one is inclined to complain of a plethora of swags and garlands and to wish for a little more restraint, one has to remember that it is all in accordance with the rules of the game.

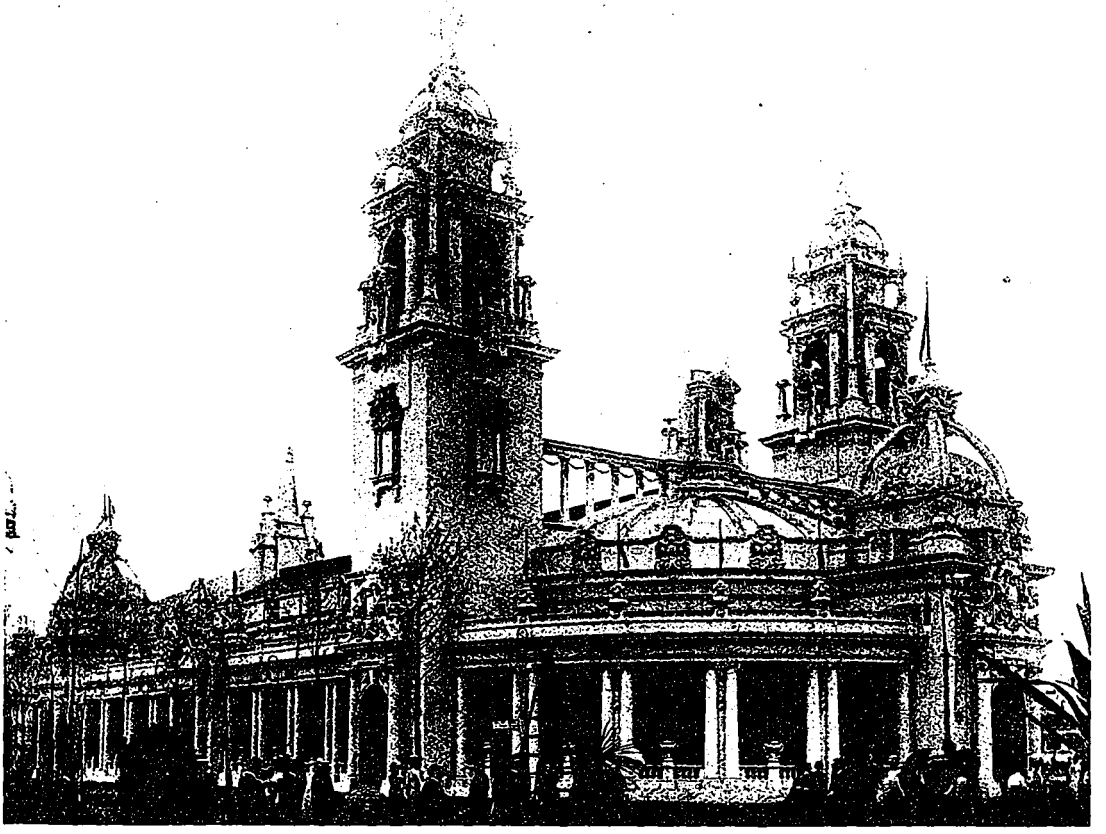
The effect of the exhibition buildings, as a whole, is more pleasing than that of any one of them, and this is mainly due to the admirable way in which the site has been planned. Many of the important buildings are grouped round a series of open courts, which succeed one another in a fine sequence, and lead to a broad semi-circular avenue, round which the colonial buildings are arranged. There is symmetry and balance in the arrangement of buildings, and the gardens and waterways have been planned with equal care to enhance the total effect.

Probably most visitors will agree that the most striking architectural achievement, apart from the general planning of the exhibition, is the Court of Honor, the first of the series of courts or quadrangles which the visitor enters. This is understood to be mainly the work of Mr. Imre Kiralfy himself. It is an example of pure Mohammedan architecture, both as to general form and details. The lake in the middle of the court is surrounded by terraced walks and spanned by a bridge with many graceful arches, while piers with domed pavilions at their extremities project into the lake at intervals. On every side the buildings are of the characteristic Indian type with lattices, pierced balustrades and small domes. The building which closes the view at the end of the lake is the Congress Hall, from the rounded end of which a cascade falls down a series of steps into the



GENERAL GROUND PLAN—FRANCO-BRITISH EXHIBITION, LONDON.

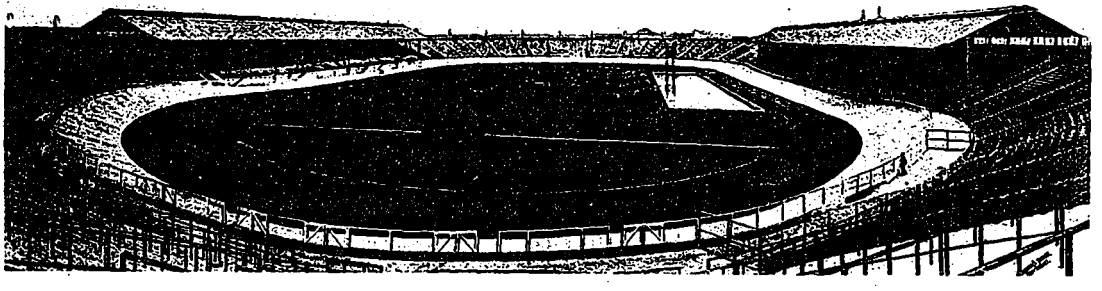
1—ENTRANCE AND STATION.
2—ELECTRICITY.
3—FRENCH INDUSTRIES.
4—BRITISH INDUSTRIES.
5—INDIAN COURT.
6—CONGRESS HALL.
7—FRENCH APPLIED ARTS.
8—PALACE OF MUSIC.
9—DECORATIVE ARTS.
10—FINE ARTS.
11—BRITISH APPLIED ARTS.
12—WOMEN'S WORK.
13—IMPERIAL TOWER.
14—MACHINERY HALL.
15—TWIN RESTAURANT.
16—GARDEN CLUB.
17—GRAND RESTAURANT.
18—"FLIP-FLAP."
19—CANADA.
20—NEW ZEALAND.
21—CROWN COLONIES.
22—AFRICA.
23—AUSTRALIA.



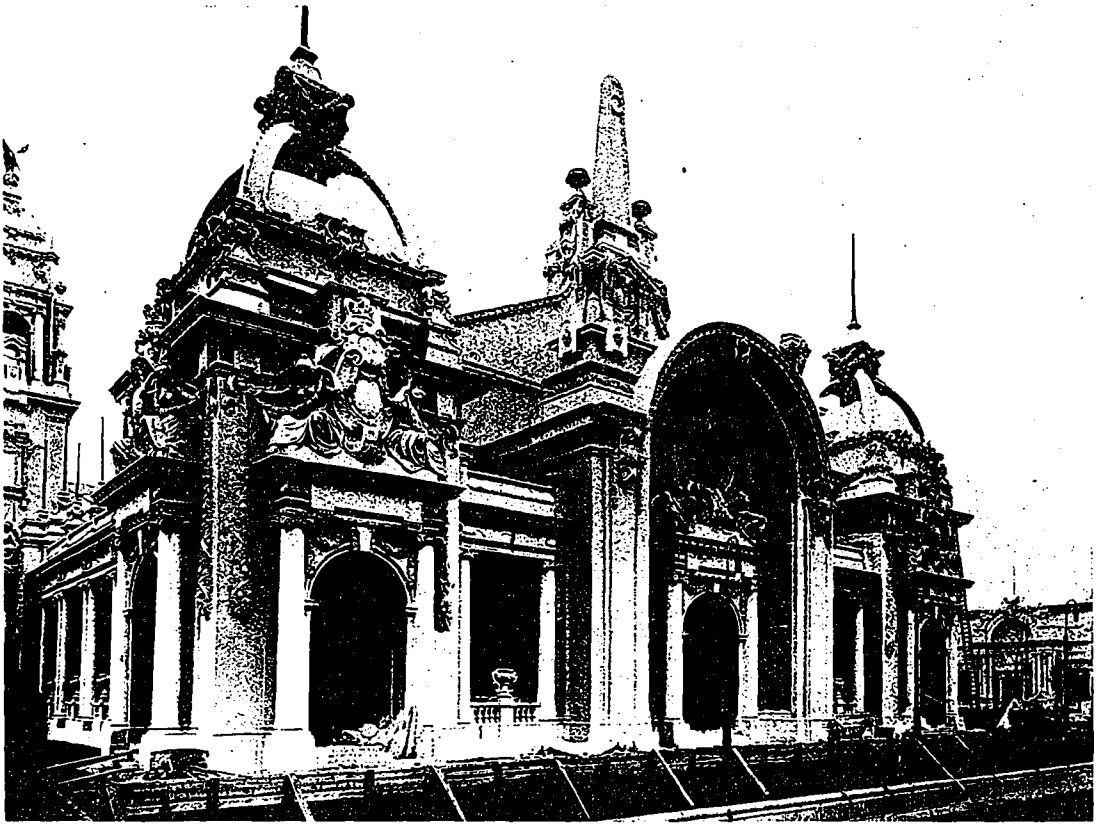
PALACE OF BRITISH APPLIED ARTS, FRANCO-BRITISH EXHIBITION, LONDON. DESIGNED BY MR. J. B. FULTON, A.R.I.B.A. A GRACEFUL AND HIGHLY PLEASING CONCEPTION, IN WHICH IS SEEN TO WHAT EXTENT LEGITIMATE LINES MAY BE EMPLOYED IN EXHIBITION ARCHITECTURE. WITH ONE OR TWO MINOR EXCEPTIONS, EVERY STRUCTURAL MEMBER SEEMINGLY HAS AN IMPORTANT UTILITARIAN VALUE.—PHOTO BY E. N. BIRKETT, LONDON.

lake. The general effect of the court is singularly pleasing, and when the architectural lines are marked out by thousands of electric lights, and the cascade is illuminated with colored lights placed behind it, the spectacle is as fascinating as anything that has been seen in London for many a year.

The Congress Hall mentioned above, although not the largest of the exhibition buildings, is probably the heaviest structure in proportion to area covered. It weighs about 1,300 tons. The main supports are eight latticed columns, each built up of two 12-in. channels with alternate plates and lattice bars as the case required. They have a girth of 74 inches and weigh 3 1-4 tons each with a steel base area of 10 feet super. placed on the concrete foundation. As a precaution against any possible shifting of the columns the bases have been laced together, forming an open frillage of ties. These ties are of 5x3 inch R. I. joists buried in the concrete below the floor level. The floor of the building which is 22 feet above the artificial lake and has an area of 6,700



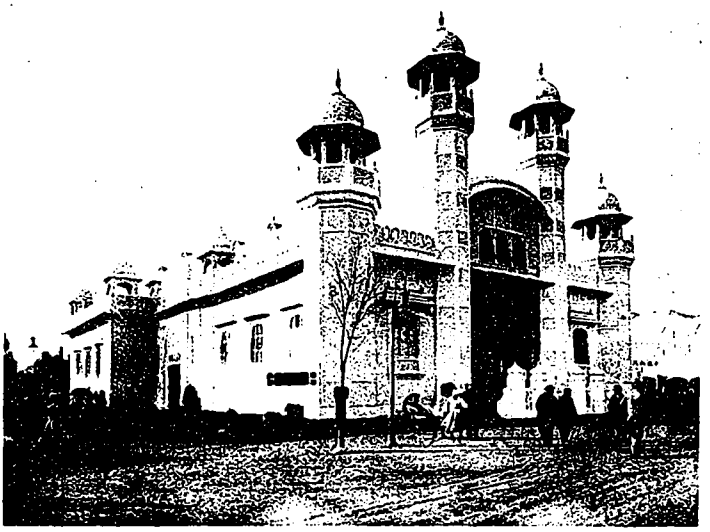
STADIUM, FRANCO-BRITISH EXHIBITION, LONDON, IN WHICH THE RECENT OLYMPIAN GAMES WERE HELD. THE SURROUNDING TIERS, WHICH WILL SEAT 60,000 PEOPLE, 20,000 UNDER COVER, ARE CONSTRUCTED OF REINFORCED CONCRETE. THEY ARE CARRIED ON STEEL JOISTS, 15 INCHES DEEP, SET 20 FEET APART, AND BRACED BOTH LONGITUDINALLY AND TRANSVERSELY.



REAR VIEW, PALACE OF BRITISH APPLIED ARTS, FRANCO-BRITISH EXHIBITION, LONDON, SHOWING THE MASSIVE AND LAVISHLY WROUGHT DETAIL EFFECT OF THE EXTERIOR, WHICH TO THE HYPER-CRITIC, MIGHT APPEAR A TRIFLE TOO CUMBERSOME AND EXTREME.—PHOTO BY E. N. BIRKETT, LONDON.

feet with a calculated load of 500 tons, is a network of steel. The main cross-beams, which are of heavy make, 18x7 inches, are secured to the main columns at the side of the building with built-up brackets of plates and angles projecting 2 feet.

Two massive water tanks, each holding 11,000 gallons of water, are placed on a steel platform 25 feet above the level of the lake. These tanks supply the fall to the cascade below. Their gross weight, together with the towers on which they stand, is 65 tons. As some indication of the immense amount of work involved in the construction of these steel-framed buildings, it may be mentioned that this structure alone contains 68,900 parts, and involved the preparation of 688 separate detail drawings.



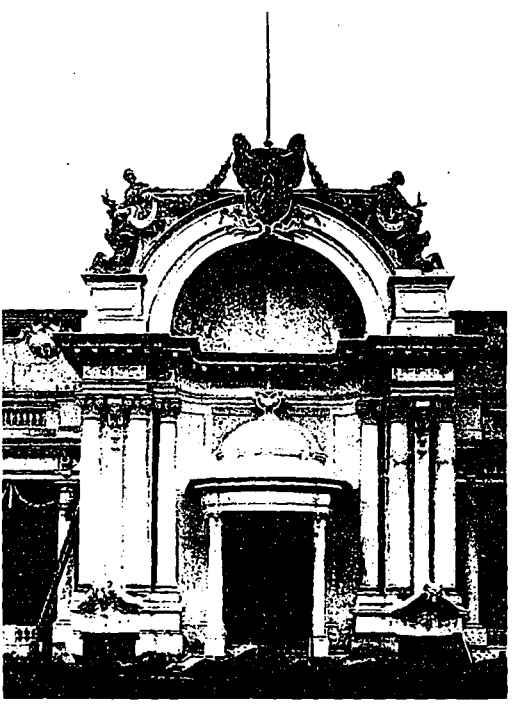
INDIAN PALACE, FRANCO-BRITISH EXHIBITION, LONDON. A CHARACTERISTIC STUDY IN MOHAMMEDAN ARCHITECTURE. THIS BUILDING AFFORDS AN EXAMPLE OF THE EXCEEDINGLY RAPID RATE AT WHICH MUCH OF THE WORK ON THE EXHIBITION SITE HAS BEEN CARRIED OUT. IT IS 140 FEET LONG AND 99 FEET WIDE AND WAS ENTIRELY BUILT IN SIX WEEKS.—PHOTO BY E. N. BIRKETT, LONDON.

Passing into the next of the courts, the Court of Arts, we have an opportunity of studying the more general types of exhibition architecture, for the Indian work of the Court of Honor is quite exceptional in character. On our left are three important buildings in which the traditional Renaissance forms are used, though with considerable freedom and a more lavish use of embellishments than would be found in a permanent stone building. Facing

PALACE OF FRENCH APPLIED ARTS, FRANCO-BRITISH EXHIBITION, LONDON. DESIGNED BY MR. LIONEL G. DETMAR, A.R.I.B.A. AN ARCHITECTURAL RENDERING IN EXHIBITION WORK WHICH IS HIGHLY ACCEPTABLE IN ITS GENERAL TREATMENT, THE ONLY FAULT IN THE ENTIRE DESIGN BEING THE GARLANDS CONNECTING THE COLUMNS OF THE COLONNADE TO THE CENTRE OF THE BAYS, WHICH DETRACTS FROM THE APPEARANCE OF STRENGTH WHICH A TREATMENT OF THIS KIND IS INTENDED TO SUGGEST. THE TOWER, SURMOUNTED BY ITS WINGED FIGURE, 22 FT. HIGH, IS PARTICULARLY SATISFACTORY, BOTH IN DESIGN AND DETAIL.—PHOTO BY E. N. BIRKETT, LONDON.

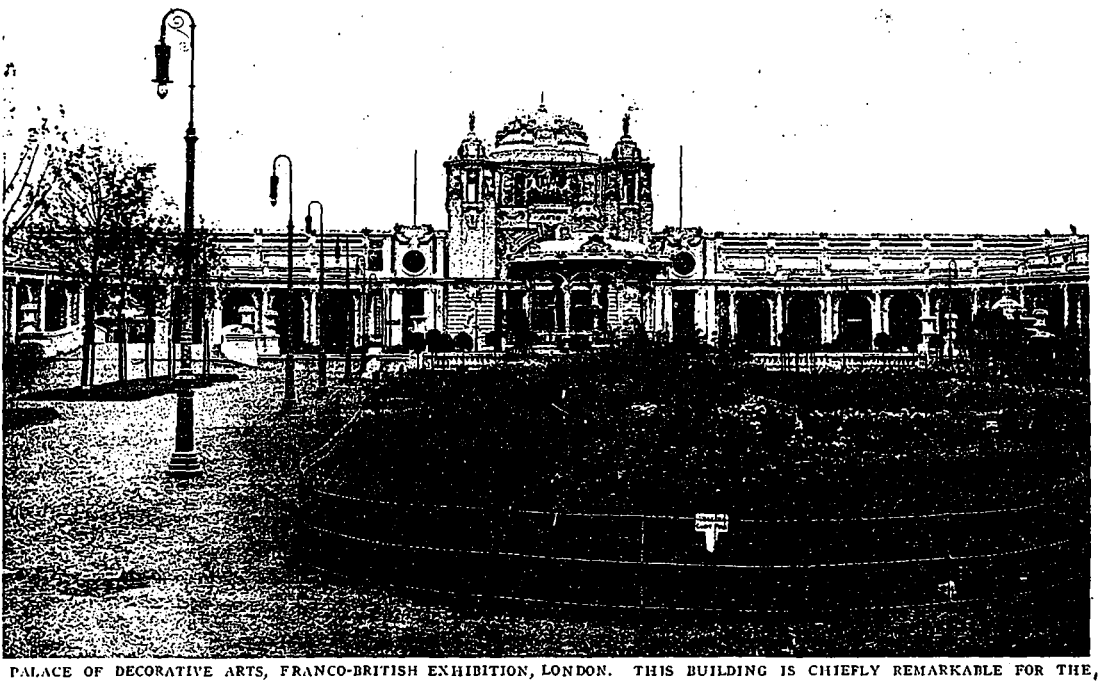
them across the open space are other buildings in a nondescript style of architecture. Perhaps we might call it the exhibition style, for it has been seen before at exhibitions, though nowhere else. Or we might call it the wedding cake style, for it seems to have decided affinities with the joyous and irresponsible sugar architecture of the confectioner. But that might sound disrespectful, and really it is quite worthy of respect as an attempt, albeit of doubtful success to develop something which shall not be a copy of any old style, but an appropriate architectural embodiment of the ideas underlying a twentieth century exposition.

Of the three Renaissance buildings, all of which are by British architects, the most successful is the British Applied Arts Palace by Mr. F. B. Fulton, A.R.I.B.A. It has an Ionic colonnade surrounding it, and two lofty towers of graceful design rising on either side of the main entrance. With a little less exuberance of detail—perfectly justifiable in a temporary plaster structure—such a building if carried out in stone would make a notable addition to the architecture of any town. The French Applied Arts Palace, which is close at hand, was designed by Mr. L. G. Detmar, A.R.I.B.A. Its most notable feature is the graceful tower, which is surmounted by a winged figure 22 feet high, holding in outstretched hand a torch, which contains a 2,000 c.p. electric light. The Palace of Decorative Art, a building with a very long frontage, is chiefly remarkable for the very fine central feature, a characteristic piece of work by Mr. Belcher, A.R.A. The sculpture over the entrance, a chariot with four plunging horses, driven by a female charioteer, is a most spirited and effective group.

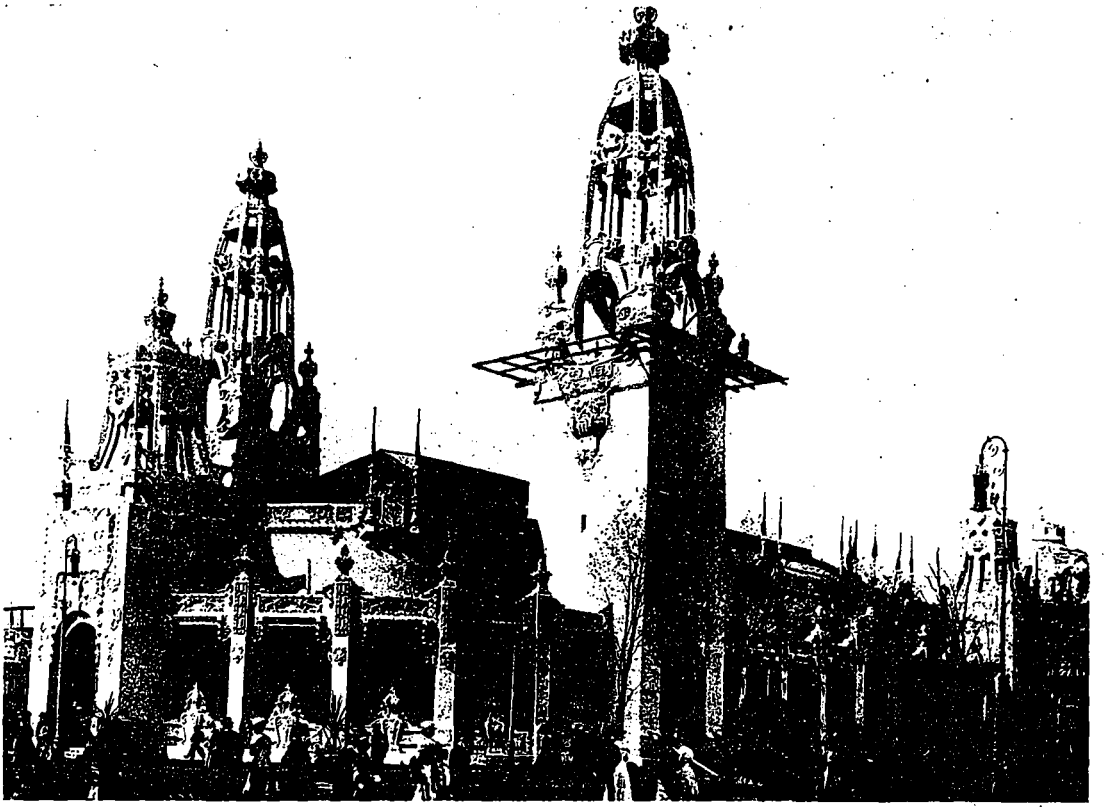


DETAIL OF ENTRANCE, PALACE OF FRENCH APPLIED ARTS, FRANCO-BRITISH EXHIBITION, LONDON.—PHOTO BY E. N. BIRKETT, LONDON.

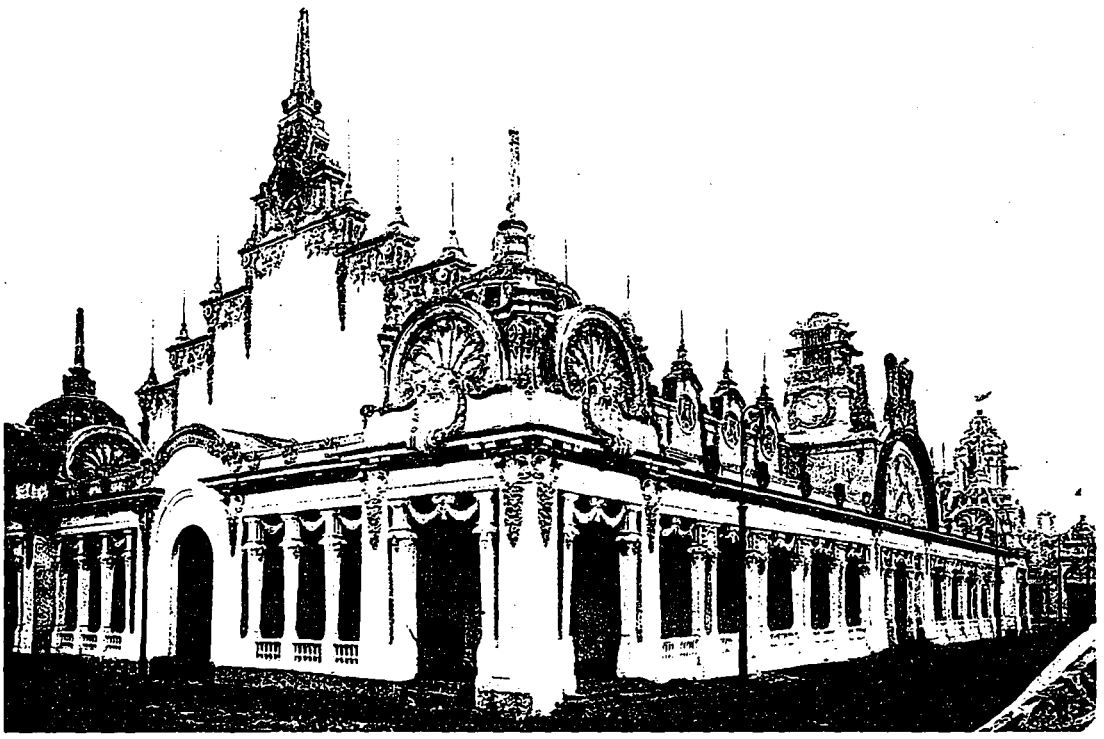
The buildings on the opposite side of the court, the Palaces of Fine Arts, of Music and of Women's Work, are all in the nondescript or exhibition style. They are all the work of French architects and reveal a praiseworthy courage in breaking away from traditional forms, but the re-



PALACE OF DECORATIVE ARTS, FRANCO-BRITISH EXHIBITION, LONDON. THIS BUILDING IS CHIEFLY REMARKABLE FOR THE VERY FINE CENTRAL FEATURE, WHICH IS A CHARACTERISTIC PIECE OF WORK BY THE DESIGNER, MR. JOHN BELCHER, A.R.A. THE SCULPTURAL FIGURE OVER THE ENTRANCE, A CHARIOT WITH FOUR PLUNGING HORSES, DRIVEN BY A FEMALE CHARIOTEER, IS MOST SPIRITED AND EFFECTIVE.—PHOTO BY E. N. BIRKETT, LONDON.



PALACE OF WOMEN'S WORK, FRANCO-BRITISH EXHIBITION, LONDON. AN ART NOUVEAU PRODUCTION BY ITS FRENCH AUTHOR, SHOWING THE UNRESTRAINED FREEDOM ENJOYED BY ITS CREATOR. THE RESULT, HOWEVER, IS NOT AS PLEASING TO VIEW AS THE WORK OF THE LESS ADVENTUROUS ENGLISH MAN.—PHOTO BY E. N. BIRKETT, LONDON.

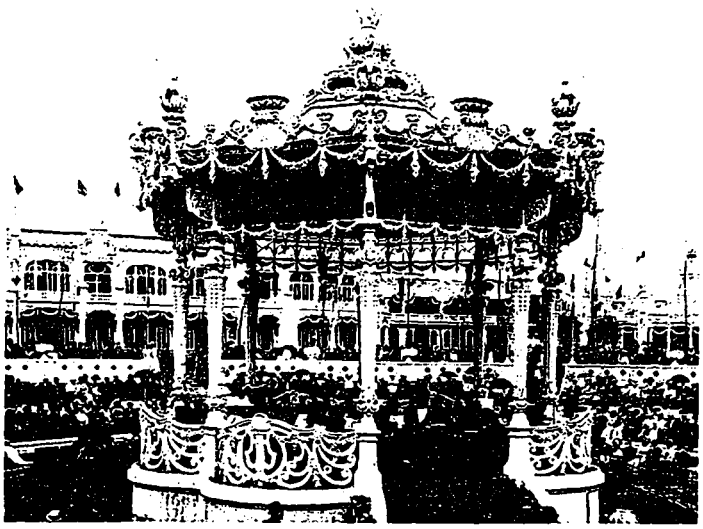


PALACE OF MUSIC, FRANCO-BRITISH EXHIBITION, LONDON. ANOTHER FLIGHT OF FANCY BY A FRENCH ARCHITECT, WHICH HAS CARRIED HIM COMPLETELY OUT OF THE REALM OF TRADITIONAL EXHIBITION STYLE, AND WHICH PLAINLY DEMONSTRATES THE LATITUDE GIVEN DESIGNERS OF EXHIBITION WORK IN THE COUNTRY FROM WHENCE HE CAME.—PHOTO BY E. N. BIRKETT, LONDON.

sult is not so pleasing to look upon as the work of the less adventurous Englishman.

Although not particularly remarkable from the point of view of design the Machinery Halls call for mention as being the largest of the buildings at the exhibition. They are V-shaped in plan, the two main halls being 661 feet long by 131 feet wide and the connecting hall 302 feet long by 310 feet wide; the area covered by the three halls is nearly eight acres. The main buildings have been divided into three bays, having one central span of 50 feet and two outer spans of 40 feet. The outer columns are 28 feet high and the inner columns 37 feet high from floor to eaves.

Another structure which claims attention, rather from the point of view of construction than of appearance is the huge Stadium, where the Olympic contests have been held. Here no attempt is made to please the eye. Indeed, the view of the Stadium from the exhibition grounds is quite unsightly, and one feels that some attempt might have been made to give architectural character to the approaches by which the visitor reaches the Stadium. But once in his place there, he cannot fail to be impressed by the vast expanse of the arena and the mighty sweep of the encircling concrete tiers. Here the huge simplicity of everything is unmarred by any attempts, which would almost necessarily have been futile, to introduce decorative elements.



SUNKEN BANDSTAND, FRANCO-BRITISH EXHIBITION, LONDON. A NOVEL ARRANGEMENT, IN WHICH THE GROUND IS DEPRESSED BY A SERIES OF CONCENTRIC CIRCLES, SO THAT THE MUSICIANS ARE PLACED ON A LOWER LEVEL THAN THE AUDITORS. THE BUILDING IN THE BACKGROUND IS THE GARDEN CLUB. PHOTO BY E. N. BIRKETT, LONDON.

LONDON BRIDGE IN 1630. FROM A MODEL BY MR. JOHN B. THORP, AT THE FRANCO-BRITISH EXHIBITION.

MODELS OF OLD LONDON.---A Series of Cleverly Constructed Miniature Studies in English Architecture of the Sixteenth Century, Which is One of the Attractions at the Franco-British Exhibition.*

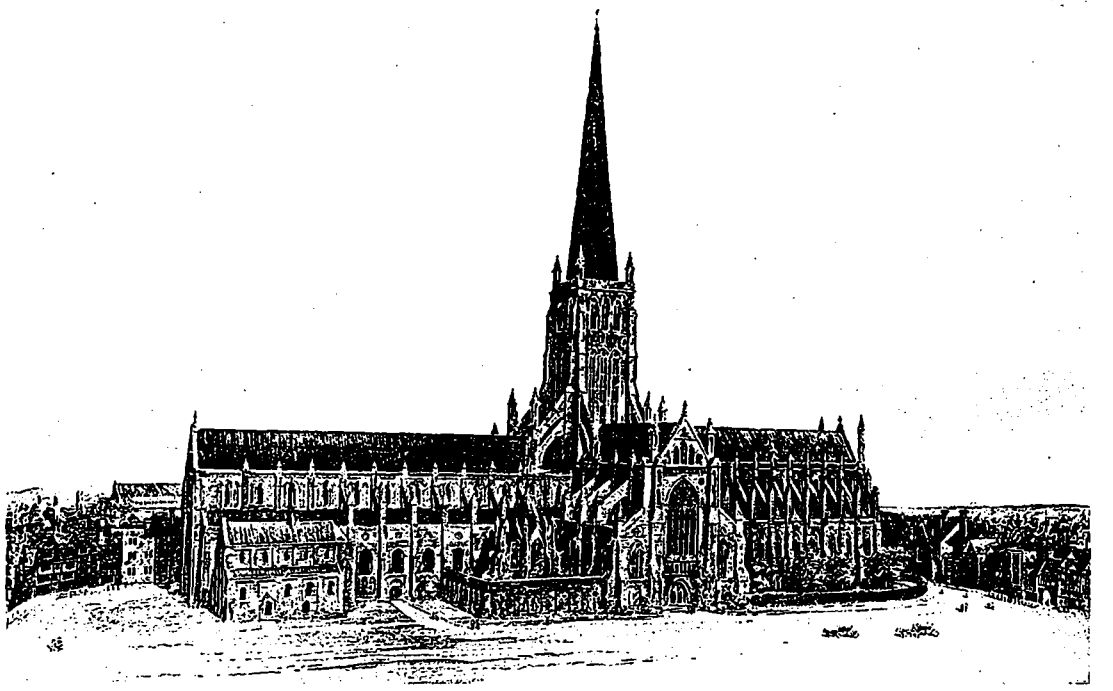
ONE of the sections of the Exhibition which every architect and builder should make a point of visiting is Old London. This cleverly constructed and well arranged series of models is proving most attractive to all sections of the general public, from the Queen downwards, but it has a special interest for the architectural student. It presents a picture of Tudor and Stuart London—London as it was immediately before the Great Fire of 1666—which has never been equalled for artistic realism.

The models (five in number) have been prepared on a large scale by Mr. John B. Thorp, who has long been a specialist in architectural model work. Arranged behind glass, with the accessories of cleverly painted scenery and brilliant illumination from hidden electric lamps, they enable the visitor to realize the appearance of the London which Shakespeare knew, and of which but very small portions remain to the present day. The models have been prepared from old engravings and records, and, although in some points of detail there must be an element of conjecture, every care has been taken to secure actual architectural accuracy. Wood is the principal material used, and the models are strongly constructed in sections, so that they can be readily taken to pieces for transference from place to place, a useful precaution, for we understand the Exhibition is later on to visit many towns in England and the Colonies.

The first of the models shows Cheapside as it was in 1580. The visitor looks towards the northern side of the street, and sees a long line of gabled, half-timbered houses, of the type still to be seen at Holborn Bars, and the openings of several streets, with clustered roofs and chimney stacks, and here and there a church rising above them. St. Peter's church, seen in the model at the corner of Wood street, was not rebuilt after the Great Fire, but the churchyard still remains, with a solitary tree standing in it. Close by, in the middle of the road, is seen Queen Eleanor's Cross, one of the series of crosses erected by Edward I., in memory of his beloved queen. The other erection standing in the roadway is the "Great Conduit in West Cheape," which was opened in 1431 and continued in use until 1666.

Perhaps of all the models, the most striking in its complete dissimilarity to anything that modern London —or any modern British city—can show, is that of Old London bridge. The model shows the bridge in 1630, when it was covered with buildings—some of a very remarkable character. The east side of the bridge is shown, and we notice, on the right or north bank of the river, the church of St. Magnus, at the corner of Fish street hill. The many-towered Elizabethan city is effectively suggested in the background, with the spire of Old St. Paul's towering high above all the other buildings. A tower seen at the northern end of the bridge was part of a system of waterworks erected in 1582 to supply the city with water. The most remarkable of the buildings on the bridge was the famous Nonsuch House, a building which was constructed in Holland, brought to England, and put together on the bridge with wooden pegs. Close to this building was a drawbridge which was raised to allow of the passage of ships. Near the Southwark end

*From the Carpenter and Builder, London. The illustrations in this article are used with the permission of Campbell-Gray Ltd., 17 Cheapside, London, E.C. They are a part of a complete series of copyright photos of Old London models which this firm also published in form of photogravures.



OLD ST. PAUL'S IN 1560. FROM A MODEL BY MR. JOHN B. THORP, AT THE FRANCO-BRITISH EXHIBITION.

of the bridge stood the Traitors' Gate, above which the heads of executed rebels were displayed. This grim detail is not omitted from the model, and can be clearly seen in our illustration. The projections at the base of the piers were known as "stirlings"; they strengthened the foundations, but caused a serious obstruction to traffic.

Old St. Paul's is represented on an even larger scale than the other portions of Old London.

The ancient Cathedral Church is seen from the south-west. The nave was Norman in style and had on the south side the parish church of St. Gregory, which was also Norman. Shortly before the Great Fire, Inigo Jones was employed to build a classical portico. It was much admired and did not altogether disagree with the round arches of the nave. The church was begun after the first Great Fire in 1136.

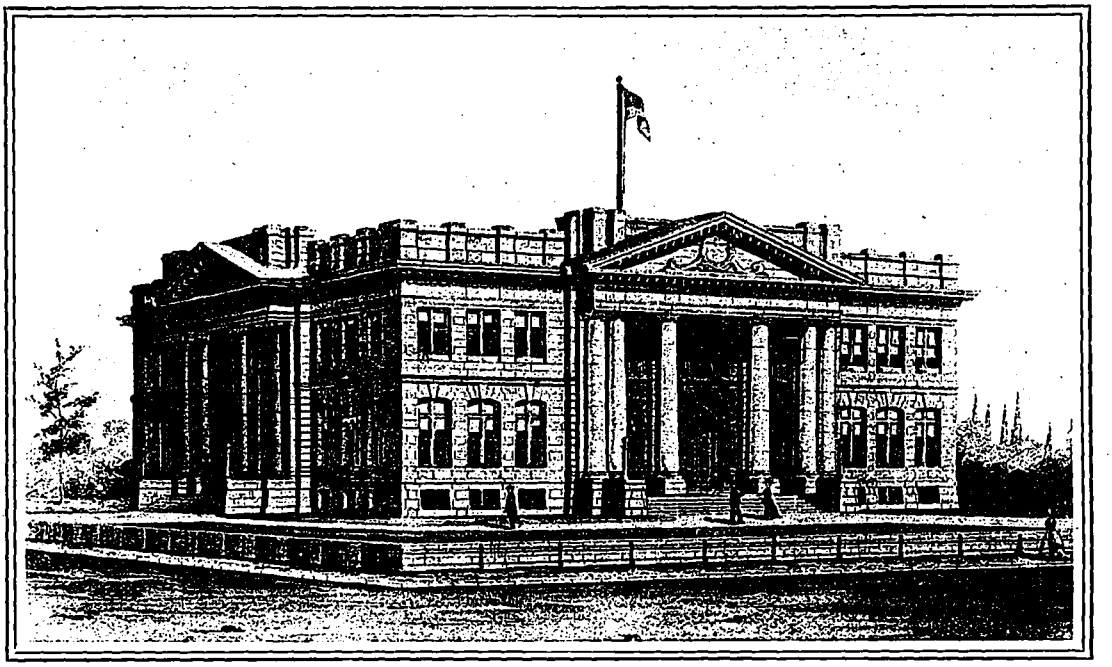
The spire was reckoned the tallest in Europe, and rose 520 feet from the pavement. On the top was a ball supporting a cross and terminating in an eagle. It was completed in 1498. It was burnt, probably by lightning, in 1501, but several views of it exist in contemporary manuscripts, from which, as published by the late Mr. Sparrow Simpson, it will be seen to have had pinnacles at the corners. At the west end were two massive towers, one of which contained a lock-up for ecclesiastical offenders, and was known as the Lollards Tower. The Bishop's Palace was on the north side and behind it was the great church of the Grey Friars, on the site of the choir of which Christ Church, Newgate street, now stands. At first, Old St. Paul's had no cloister, but in 1332, the garden of the Dean and Chapter was taken for the purpose, and the roof of the Chapter House will be seen rising on the western side of the south transept. There was a school for the choir boys at the east end, but the great foundation of Dean Colet, known as St. Paul's School, stood just outside the church wall.

The interior of the Cathedral was very spacious but was much blocked up with monuments. Those to Sir Philip Sydney, in the north aisle of the choir, near to Sir Francis Walsingham, and one of enormous size to Sir Christopher Hatton, in the south aisle, were almost new in Shakespeare's time. An older tomb was that of Sir John Beauchamp, popularly believed to be that of Humphrey, Duke of Gloucester, who was, however, buried at St. Albans. "To dine with Duke Humphrey," meant to wander dinnerless in the Cathedral nave.

Another model gives us a riverside scene in the 16th century, showing Bridewell Palace, Baynard's Castle, and

(*Concluded on page* 53.)

CHEAPSIDE IN 1580. FROM A MODEL BY MR. JOHN B. THORP, AT THE FRANCO-BRITISH EXHIBITION.



PERSPECTIVE VIEW OF EDMONTON'S PROPOSED COURT HOUSE, WHICH IS TO BE OF MASONRY AND FIREPROOF CONSTRUCTION, HAVING CALGARY SANDSTONE EXTERIOR WALLS WITH GRANITE COLUMNS AND GRANITE FACED BASEMENT WALLS UP TO THE FIRST FLOOR. DESIGNED BY MR. A. M. JEFFERS, SUPERVISING ARCHITECT, PROVINCIAL DEPARTMENT OF PUBLIC WORKS.

PROPOSED EDMONTON COURT HOUSE.---A Building That is Representative of What the Canadian West is Achieving in the Way of Public Buildings.---General Design and Arrangement Carefully Worked Out.---Planned for Present and Future Requirements.

WHILE STILL a country in the early stages of its development, Western Canada has, nevertheless, in many particulars, assumed a metropolitan aspect that contrasts it strongly with other new countries in similar periods of progress. Compared for instance, with the early growth of the western section of the United States, we find a condition so radically different, a modern influence so pronounced, that the tremendous strides which are being made in transforming Western Canada from a primeval wilderness into a civilized territory, can be regarded as little short of magical.

Towns and communities have sprung up over night, cities have multiplied at an amazing rate, the railways have been actively engaged in tapping new sections and new agricultural districts are being continually opened up. Aside from this, industrial exploitations in other lines are being carried on, the timber resources are being utilized, new mills are being established, mineral deposits are being developed, and manufacturing plants are increasing rapidly.

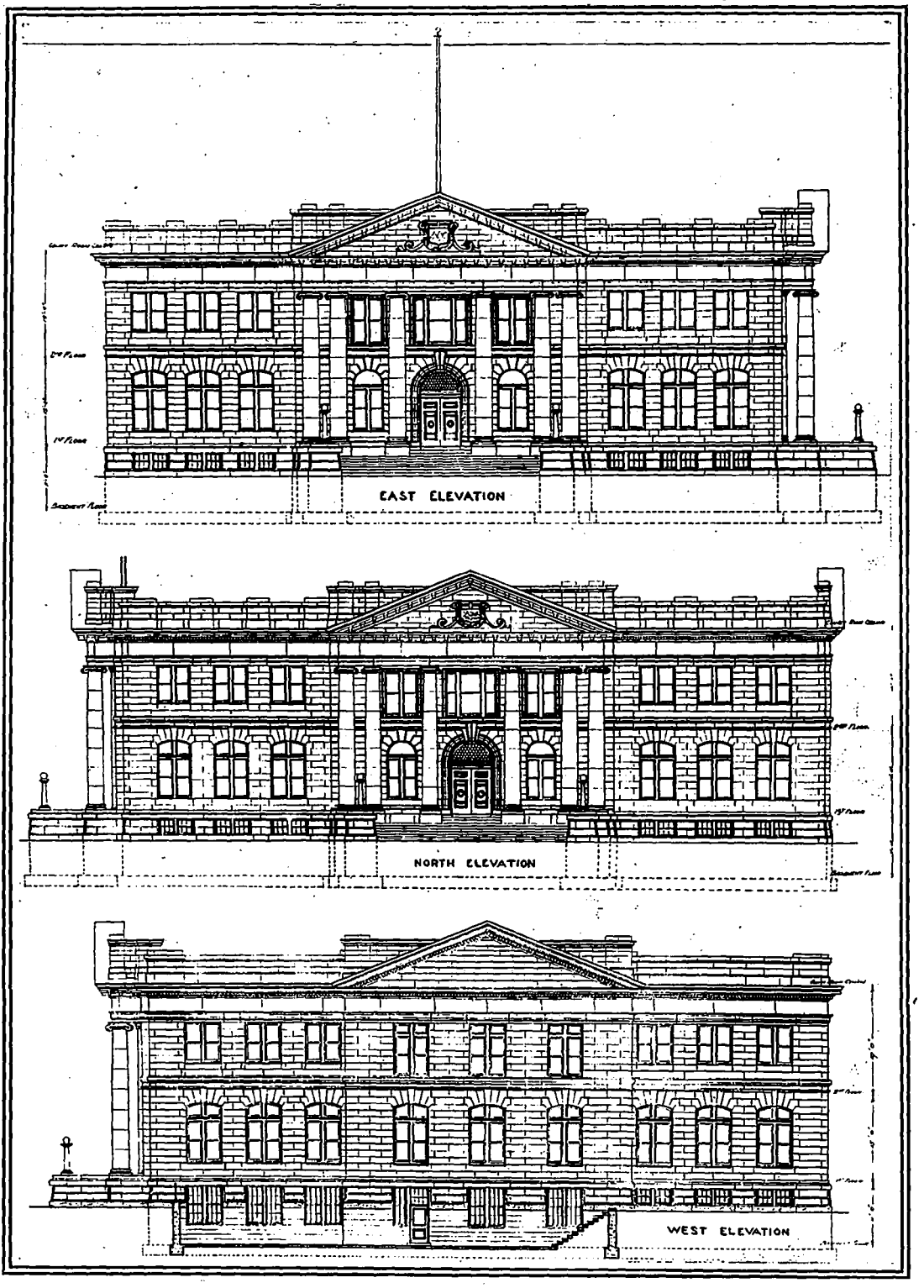
This phenomenal growth can possibly be ascribed more to the railways of the country than to anything else. Although Canada, like other countries, had her pioneers who "blazed the trails" into the unexplored regions of her domains, the great army of settlers who have been continually pouring into the west from a time antedating the present by a handful of years, found that in most instances the railways preceded them and provided means of transportation which were entirely different from the "prairie schooner" of the early settlers who treked from east of the Mississippi into western territory of the United States.

The advantage which the railways have given Western Canada in the way of transportation facilities, has enabled her to keep in constant touch with the east, to import machinery, materials, and supplies necessary to her development without delay, and to reach the market with her products in the shortest possible manner. With it all has come many modern, well planned and substantially built structures. In schools, alone, we find many buildings either projected or in course of erection, that would be a credit to any of the largest cities in the eastern provinces.

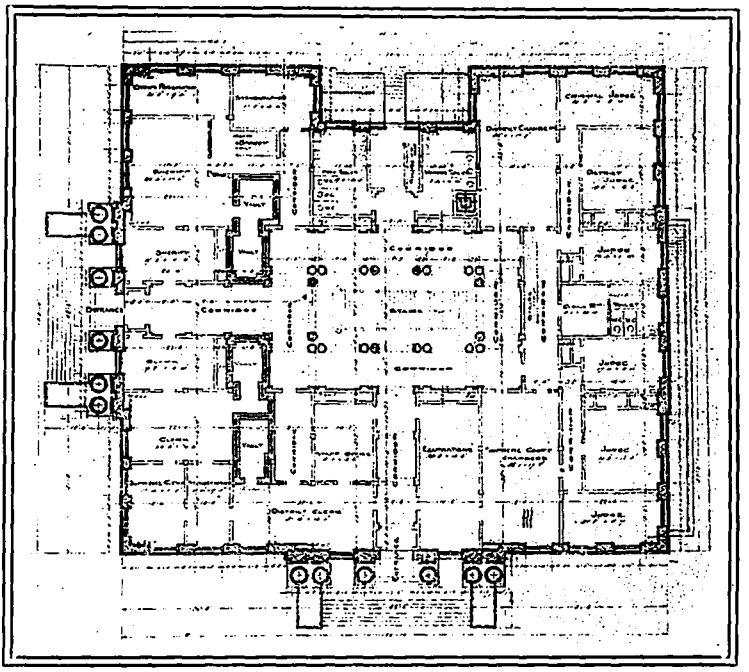
However, it is in completed and prospective structures of a governmental type that Western Canada as a new country is distinctly transcendent in the building line. No other country so youthful has ever seen work of this character carried on in such a thorough manner. All public buildings which have been erected or are to be built, are designed to meet both present and future requirements. In general plan, architectural treatment and constructive features, they are in a number of instances superior to many public buildings in the more metropolitan cities of the east.

There is absolutely no comparison between these buildings and the early public buildings of the western section of the United States. The public buildings of the Canadian West are planned along far more substantial lines, are more monumental in design and better adapted to the purpose for which they are intended.

Among the governmental buildings recently designed, one that in architectural treatment, character of construction and general arrangement, will, when completed, be



EAST, NORTH AND WEST ELEVATIONS, PROPOSED COURT HOUSE, EDMONTON, ALTA., SHOWING THE DETAIL OF MAIN ENTRANCES.
MR. A. M. JEFFERS, PROVINCIAL DEPARTMENT OF PUBLIC WORKS, SUPERVISING ARCHITECT.



GROUND FLOOR PLAN, PROPOSED EDMONTON COURT HOUSE, SHOWING THE ARRANGEMENT OF THE VARIOUS DEPARTMENTS AND OFFICES. MR. A. M. JEFFERS, PROVINCIAL DEPARTMENT OF PUBLIC WORKS, SUPERVISING ARCHITECT.

representative of the class of public buildings in our western country, is the new Edmonton Court House.

This structure, which is to be a two story and basement building of masonry and fireproof construction, will be located at the south-west corner of McDougal avenue and May street. The general treatment of the exterior, which produces a purely classic effect, leaves nothing wanting from an architectural standpoint. There is just sufficient detail in the entrances and cornice to agreeably relieve the broad, simple lines of the facades.

Owing to the location of the site, the building will have two principal entrances, both of equal importance, one being on McDougal avenue and the other on May street. Both of these entrances are similar in design, following the Ionic order, each consisting of a broad flight of granite steps flanked on either side with masonry buttresses, surmounted with electroliers of an appropriate design.

At the top of the steps are six columns, each three feet in diameter and twenty-eight feet high, surmounted with a stone pediment, the tympanum of which has a seal of the Province in the centre, executed in carved stone. On either side of the porches are wings of a plainer design, thus emphasizing the classic beauty of the entrances.

The arched doorways of the main entrances, which are in the centre of the porches, have moulded stone architroves and pannelled bronze doors. From the entrance a corridor having public and private offices on either side, connects with the central rotunda.

Access to the building can also be obtained from the basement and side entrances opening onto the lane, the basement entrance connecting with the police headquarters, while that of the side entrance leads to the rotunda.

The rotunda is of rectangular shape, having ornamental marble and plaster columns and pilasters together with beamed ceilings. The principal staircase, leading up to the second floor, is placed in the centre of the rotunda facing McDougal avenue. This staircase is built of marble, plaster and ornamental iron.

On the second floor, the rotunda is surrounded with a gallery, having ornamental plaster columns, pilasters and beamed ceilings, the centre feature of the ceiling being an ornamental ceiling light set in plaster work. Opening off the second floor gallery are the public entrances to each of the four court rooms and library. Between the court rooms are located the jury room and judges' retiring room.

In general the building will be finished in oak and ornamental plaster work, being appropriately pannelled and finished to harmonize with the particular uses of each court or room.

In floor arangements the disposition of the various courts, departments and offices have been worked out with a view to facilitate the transaction of business between them. The arrangement of the second floor is especially worthy of comment. Here the four courts are so placed as to be entirely separate from each other, the civil, criminal and district courts each being provided with an

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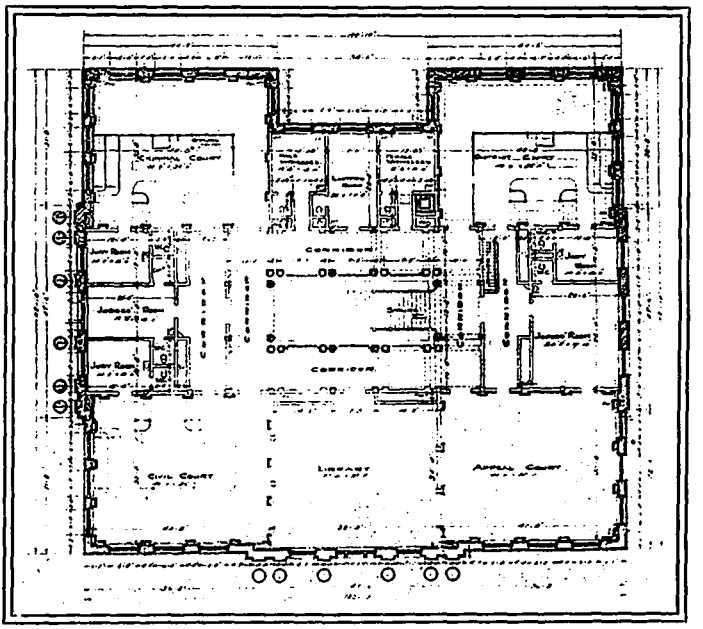


SECOND FLOOR PLAN, PROPOSED EDMONTON COURT HOUSE. AN ADMIRABLE ARRANGEMENT IN WHICH THE FOUR COURT ROOMS HAVE BEEN ENTIRELY SEPARATED FROM EACH OTHER. MR. A. M. JEFFERS, PROVINCIAL DEPARTMENT OF PUBLIC WORKS, SUPERVISING ARCHITECT.

BUSINESS SYSTEM FOR GENERAL CONTRACTOR.---How the Records of Extensive Building Operations are Kept from the Time the Estimate is Submitted to the Completion of the Structure.---Forms and Methods of Tabulation Fully Described and Illustrated. By HUGH WRIGHT*

IN this business the usual method of procedure in obtaining work is as follows: Plans and specifications are submitted by the architects to several general contractors; these contractors make an estimate of the value of the work, add their profit, and submit proposals for the doing of the work for a certain sum of money. Usually the lowest bidder is awarded the contract. Only a limited time is allowed for the compilation of this estimate and the greatest need in an estimating department is a check by which any omissions are discovered before the proposal is submitted.

Estimates are drawn off on a form (Exhibit 1) which is unit ruled on one-eighth inch scale and permits the making of free hand sketches to facilitate pricing. The quantities of the various materials are first tabulated. The sheets are then given into the hands of men competent to estimate the labor necessary to set these materials in place. Lastly they are priced. In order to obtain the prices the cost records are consulted, and a previous cost on similar work is used, the changes in valuation of materials and labor owing to location and fluctuations having first been made.

When all the items are priced, extended and checked, it is then necessary to recapitulate them and a form (Exhibit 2) is used which covers, in general, all the subdivisions of work which may be encountered in building construction. This form is especially valuable in that it calls attention to any omission which may have been made.

When the proposal is successful the owner submits a contract for signature. This contract is submitted to the legal advisor of the general contractor and certain changes recommended. If the owner grants these amendments the contract is signed and the work of construction begins.

Should the general contractor desire to sublet any of the work he invites sub-contractors to submit proposals. In preparing their figures the sub-contractors are placed in the same relative position with the general contractor that it was in relation to the owner before submitting its proposal.

Plans are secured from the architect and are listed on a plan record (Exhibit 3). As soon as any plan is received it is numbered. All movements are recorded, showing the date of the movement. This informs the general contractor at all times of the exact location of every plan, and is oftentimes necessary as a proof of the time a plan was given out and of the particular plans which were then in possession of a sub-contractor at a given time. For instance, if it can be shown that the sub-contractor had, or had not, on a certain date, a revised plan in his possession, it is conclusive evidence that his claim for extra compensation for the work of revision is, or is not, valid.

Having secured proposals from the sub-contractors the general contractor enters into contracts with the lowest bidder (Exhibit 4). This contract is printed and, while occasionally modified in certain respects, represents a perfectly equitable agreement between a general contractor and a sub-contractor. As the contract itself must determine the equity of all subsequent points of dispute it follows that the actual document is the most particular thing to be considered in the entire work. Therefore, this particular form of contract represents the results of

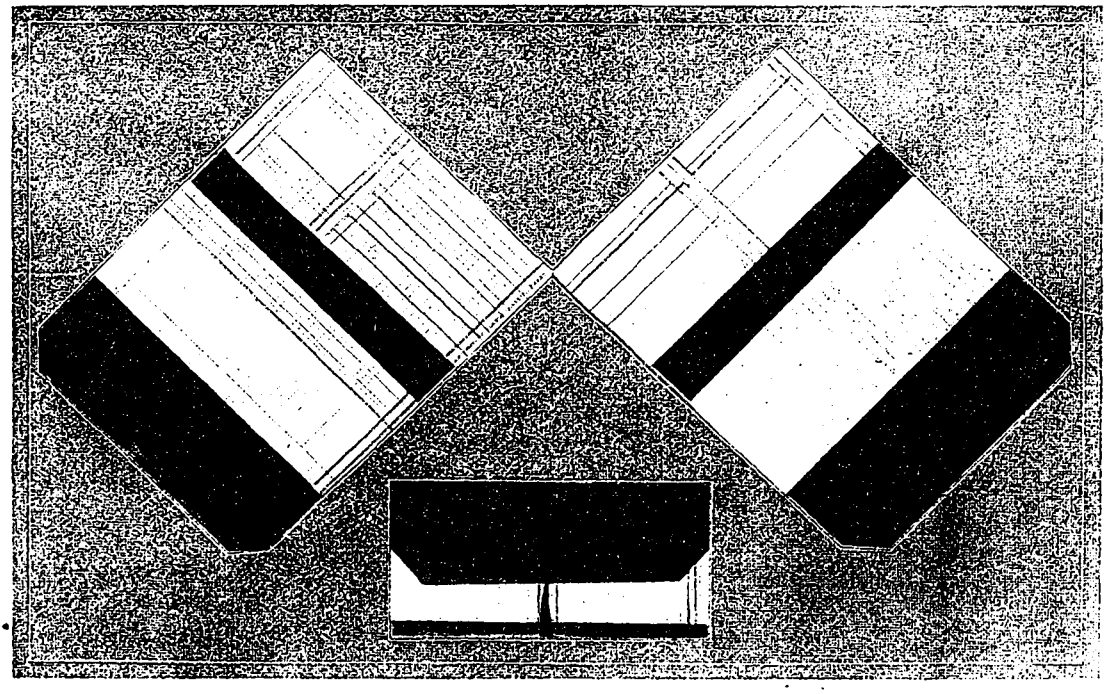


FIG. 14.—CONTRACTORS' PORTFOLIO WHICH CONTAIN A COMPLETE HISTORY OF EVERY TRANSACTION IN CONNECTION WITH THE CONTRACT.

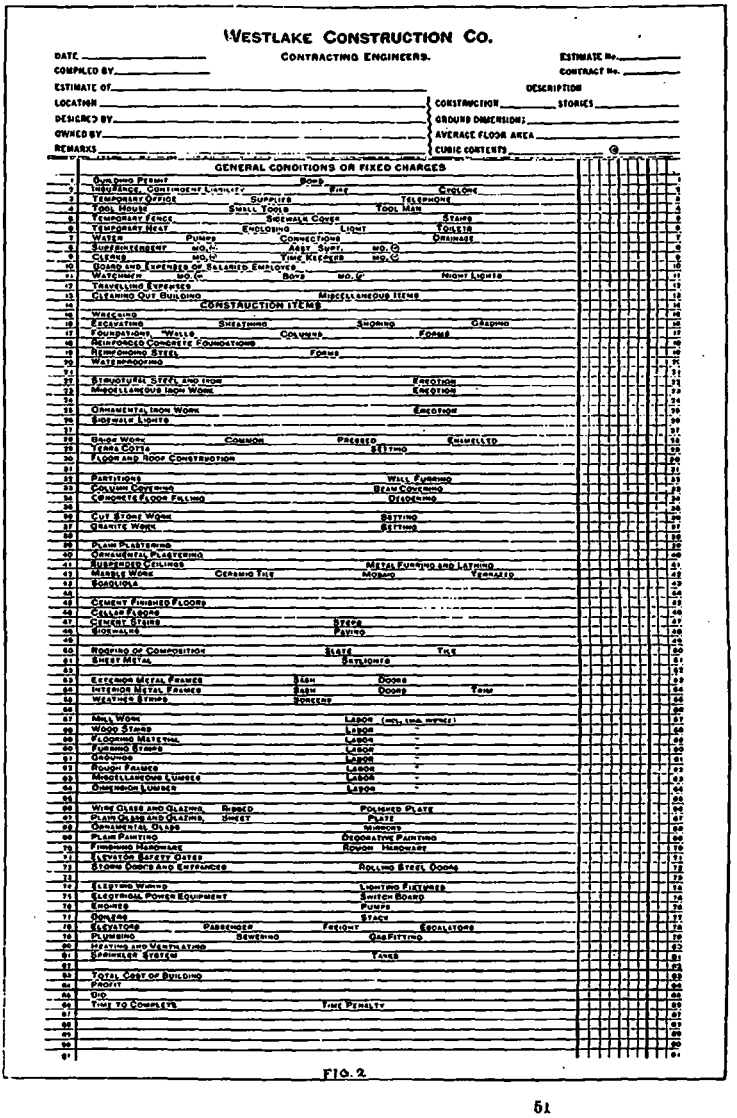
*From Book-keeper, Detroit.

months of earnest thought together with best legal advice.

The actual building operations are now started. A superintendent, timekeeper and clerk of works are sent to the job. A bank account is opened with some reliable bank and a deposit placed subject to the check of the superintendent and of the home office managers. All employees who are to handle money are bonded. At any time the home office may see proper it adds to or draws on the working balance originally placed in the bank. It also, from time to time, obtains from the bank a statement of account which is checked against the superintendent's weekly cash report (Exhibit 5). This report must be accompanied by receipts for each and every item disbursed. A pay roll (Exhibit 6) is sent in O.K.'d by the superintendent and the individual receipts for wages (Exhibit 7) must be produced for every amount shown on the pay roll. In case the wages have not been paid they are reported as unpaid and remain a charge against the superintendent until paid. Freight paid must be attested by paid expense bills and even sundry purchases for office supplies are attested by receipted bills. The columns of "Charge" and "Credit" must be filled out in every instance and must conform to the cost distribution.

The first duty of the superintendent when he is ready to start work is to engage foremen. The foremen in turn hire their workmen. When a new man is employed he is given a note to the timekeeper (Exhibit 8). The timekeeper numbers him and gives him a brass check bearing his number which he deposits on entering and leaving work. If he is a skilled workman he obtains, in addition, a "Time Check" card (Exhibit 9) on which he enters the various duties he performs daily and the length of time devoted to each. These cards are collected each evening by the foreman and are carefully revised. They act as a check upon the time as taken by the timekeeper and supply certain data for his daily cost report (Exhibit 10) which is one of many similar forms. A daily cost report is rendered on each subdivision of the work. These are checked against the weekly pay rolls and charges from the cash report of the superintendent with the additions of the charges for items paid direct by the home office. The home office renders a weekly report to the job office of all expenditures made by it. The job office transfers these items to their last cost report for the week and thus is obtained a perfect balance of the cost of the work to date.

The cost clerk, located in the home office, compares the daily cost report, which as may be noticed by reference to Exhibit 10 gives also the estimate. He notes and reports to cumulative cost, against the original the management the details which are costing more than the estimated cost. An imediate examination is made and the reason of the excess cost determined. The leak, if any exists, is promptly stopped.



WESTLAKE CONSTRUCTION CO.

CONTRACTING ENGINEERS.

GENERAL CONDITIONS OR FIXED CHARGES

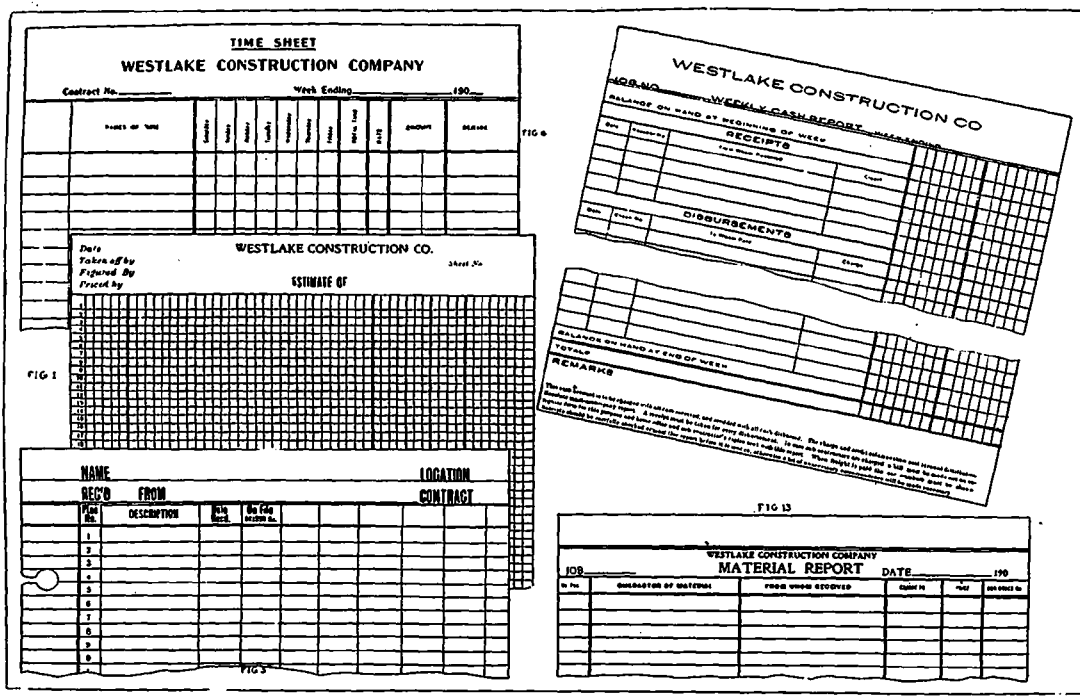
CONSTRUCTION ITEMS

FIG. 2

Reverting to the receipt cards (Exhibit 7), these are distributed as statements on pay-day morning. If any corrections are necessary all complaints are inquired into and adjusted before the paying off begins. When a workman falls into line to be paid off he must sign his receipt card. If the card is presented unsigned he is required to take his place in the rear of the line. The timekeeper takes the receipt, thus identifying the workman, calls the number and amount, and the paymaster hands out the corresponding envelope; thus a large body of men are paid off promptly and the usual delays incident to paying off are avoided.

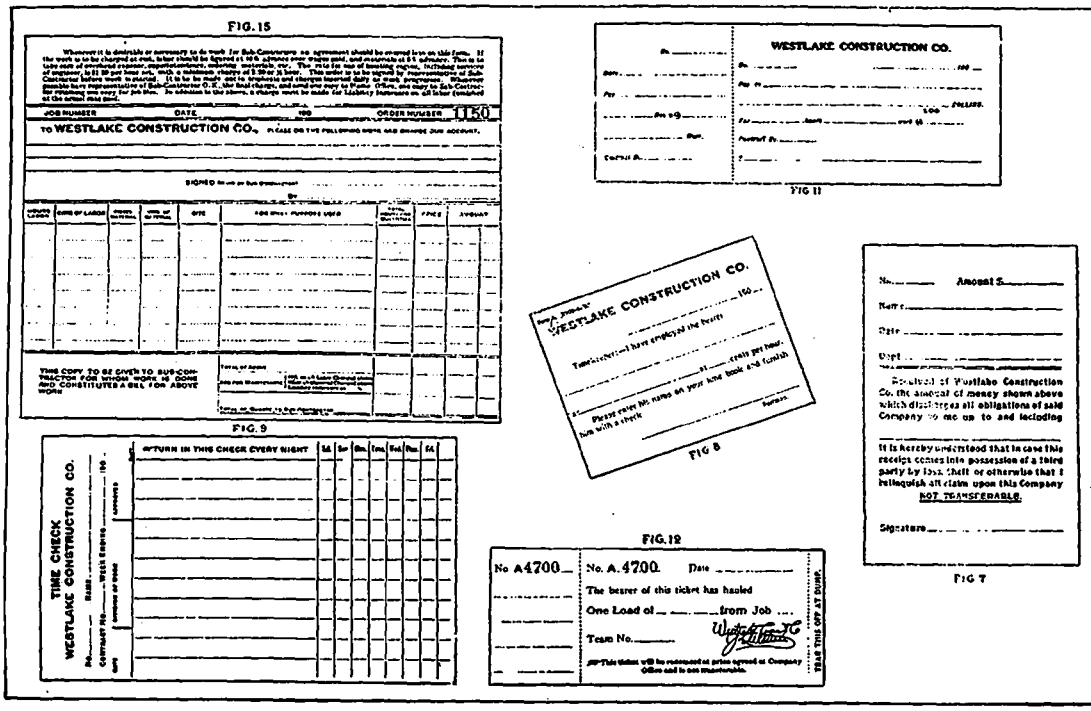
Each foreman carries a book of "Pay Off" slips (Exhibit 11). When he discharges an employee he signs and gives him one of these slips. This slip is presented to the timekeeper, who checks the time, extends the slip and O. K.'s same to the paymaster. The paymaster obtains a receipt by having the discharged man indorse the slip with his name.

In such work as requires the use of drivers and teams (where company teams are not used) the compensation is usally a certain price per load. The size of a load is fixed and the wagon beds are measured once a day. The price per load is conditional upon the amount hauled, the character of the materials and the length of the haul. A driver obtains for every load a receipt (Exhibit 12). These are exchanged weekly for a receipt card (Exhibit 7) and are forwarded to the home office. The home office



examines these slips and checks the total of the material hauled against the totals reported as taken away or received, and thus guards against any abuses of this system. For instance, the sizes of the loads being determined quantities, if 2,000 yards of excavation were removed during the week and tickets issued in excess of this amount the difference would be quickly noted and examined into.

Most of the materials for the work are contracted for before the actual process of construction begins. But it often becomes necessary for the superintendent to order the purchase of certain necessary items. For this an order blank is used which differs in no essential particular from the regular orders used in other lines of business. But all materials received must be reported and a form (Exhibit 13) is used for this purpose. These reports are checked against the invoices rendered and act as a check against overpayments and collusion.



Each contract with a sub-contractor is filed in a portfolio (Exhibit 14). This portfolio is posted currently, being checked monthly against the ledger account, and gives a complete history of every transaction.

If it becomes necessary or desirable to do work for a sub-contractor, to pay freight, or advance funds, a charge is rendered on a form (Exhibit 15). The sub-contractor signs this form and it becomes an invoice, one copy for the sub-contractor, one for the job, and on for the home office which is filed in the sub-contractor's portfolio (Exhibit 14). In this way any disputes which may arise between the general contractor and the sub-contractor are disposed of at the time and are not allowed to drag on until the completion of the work when all the evidence may have become vague and meaningless.

There are many points in favor of the portfolio (Exhibit 14) which may be mentioned but, in a limited article, these cannot be recovered at length. Sufficient it is that the daily status of the sub-contractor is ever apparent in a manner that "He who runs may read."

To describe fully the fancy points which are covered in the business of the general contractor would require a volume o fconsiderable length and this article is concluded by remarking a few of the books and forms which are not here exhibited.

The main books in the home office consist of a general ledger, cost ledger (card system), accounts payable ledger (card system), main cash book, voucher register and journal. Subordinate cash books are kept for each job.

The superintendents, timekeepers and clerks of works are furnished with printed instructions which completely cover every question that may arise in the ordinary course of construction. These instructions cover cost-keeping, financing and general instructions as to methods of construction.

The handling of extra work, the financing of contracts, coverage by fire, tornado, liability and bank insurance, and the subject of bonds would be complete subjects in themselves, and in consequence they are herein omitted.

MODELS OF OLD LONDON.---Miniature Studies in English Architecture of the Sixteenth Century.---Continued from Page 46.

the entrance to the Fleet River, now a covered sewer, but then, a pleasant stream flowing into the Thames at Blackfriars. Finally, we have old Charing Cross, showing the nobleman's palaces which, before the Great Fire, stood in Whitehall. The city of London, with St. Paul's, is shown

To the accompaniment of a lecture by a well-informed guide, the examination of these models is an interesting and instructive experience, which no visitor to the Exhibition should miss.

PROPOSED EDMONTON COURT HOUSE.---Planned for Present and Future Requirements.---Continued from Page 49.

individual jury room conveniently situated. Located between the criminal and districts courts are rooms for male and female witnesses, each being separated from the other by a third room, to be used for the accommodation of lawyers interested in the court proceedings. The library, a large spacious room, conforming in general outline with civil and appeal courts on either side, is advantageously placed at the front of the building.

The basement wall of the building up to the first story will be faced with granite on all four sides, above which course Calgary sandstone will be used for all elevations.

The plans for the building were prepared by the architectural staff of the Provincial Board of Public Works, Edmonton, in charge of Mr. A. M. Jeffers.

WILLIAM GEORGE ELLIOTT, managing director of the Ontario Portland Cement, and a contractor of Provincial reputation, passed away at Brantford, Sept. 13, after an illness of several weeks, following a stroke of paralysis. He was 44 years old.

WESTLAKE CONSTRUCTION CO.

Daily Report of Erection of Iron Work

WEATHER CONDITIONS | ——— DATE ——— SHEET NO. ——— JOB NO. ——— CLERK ——— FOREMAN ——— SUPT. ———

BUILDING ———

	EMPLOYES ON PAY-ROLL TO-DAY	STATE WHAT KIND OF WORK AND IN WHAT PART OF THE BUILDING IT WAS DONE	HOURS	RATE PER HOUR	PAY-ROLL FOR TO-DAY ONLY	TOTAL AMOUNT INCLUDING TO-DAY
1	..... Iron Setter					
2	..... Bunkers					
3	..... Helpers					
4	..... Laborers					
5	..... Engineers					
6						
7						
9						
8						
10	..... Foreman					
11	TOTAL AMOUNT PAY-ROLL					

	CLASSIFICATION OF WORK	TOTAL COST FOR TO DAY: QUANTITIES	AMOUNT FOR MATERIALS &C.	AMOUNT OF LABOR FROM PAY-ROLL	TOTAL COST UP TO AND INCLUDING TO-DAY: QUANTITIES	UNIT RATE	TOTAL AMOUNT FOR MATERIALS &C.	UNIT RATE	TOTAL AMOUNT PAY-ROLL LABOR
12	Weight of Column, Foot Plates, Set								
13									
14	" " Girders, Struts, etc., Set								
15									
16	" " Foundation Reinforcing Steel Set								
17									
18	" " Steel Columns Set								
19									
20	" " Cast Iron Columns Set								
21									
22	" " Beams, Girders, etc., Set								
23									
24									
25									
26									
27									
28	" " Plate Girders Set								
29									
30	" " Trusses Set								
31									
32	Use of Derricks and Outfit @ ..... per day								
33	All Hands Spent on Derricks, etc.								
34									
35	Use of Engines, etc. @ ..... per day								
36	All Hands Spent on Engines								
37									
38	Field Riveting ..... Rivets Driven To-Day								
39	Riveting Plant @ ..... per day								
40	All Hands Spent on Riveting Outfit								
41									
42	Plumbing and Bracing of Columns, etc.								
43	Temporary Flooring								
44	Scaffolding, Runways, etc.								
45									
46	Correcting Shop Errors								
47									
48	Field Painting								
49	Rental of Unloading Yard								
50	Engines and Derrick Outfit at Yard @ ..... per day								
51	All Hands Spent on Yard Outfit								
52	Labor Unloading, Sorting and Loading at Yard								
53									
54	All Supplies, Small Tools, etc.								
55	Freight outfit and Iron								
56	Freight and Cartage on Machinery and Tools								
57	Demurrage on Freight								
58	Trucking and Pushing Shipments								
59	Total Expense Shop Inspection								
60	Liability Insurance								
61									
62	Credit Charges Against Other Contractors								
63	Credit Salvage on Lumber								
64	Credit Errors Charged Against Steel Contractor								
65	Credit Payments on Freight on Steel and Iron								
66	Credit Salvage on Supplies and Small Tools								
67									
68	TOTALS								

NOTE—Materials received must be checked daily against materials used.

FIG 10

MODERN METHODS OF FLUSHING CLOSET BOWLS.---Different Types of Tanks in Use, Their Advantages, and the Principles on Which They Operate.---Flushometers or Direct Pressure Flushed Closets.

THE water closet is the most important fixture in the field of sanitary appliances, and has probably received more attention from sanitary experts than any other fixture. The various types of water closet bowls were fully explained in a previous number and it is the purpose of this article to, in a measure, explain some of the different modern methods of flushing water closet bowls. The hopper, pan, plunger and all non-flushing rim types of closets have been condemned by sanitary engineers and tabooed by all municipalities having a sanitary law, making it compulsory to use a flushing rim closet bowl. The most common method of flushing water closet bowls of the flushing rim type, is by an overhead open tank or cistern, placed six feet above the inlet of the flush opening in the closet bowl, and connected to same by flush pipe having at least one and one-quarter inches diameter, which has been found to be the correct distance and size to give the water proper fall and force to thoroughly flush and scour the bowl. This type is known as an open-tank pull-operating closet combination. These tanks are of different sizes, according to the size and type of the closet bowl, and are of different mechanical construction and shape, but in operation are practically the same. These tanks are generally lined with either copper or sheet lead, the copper lined being the more popular and used in the majority of cases; however, in certain localities the water is of such chemical composition that the action of same on the copper readily destroys it, and in such cases the lead lined tank is preferable.

Open-tank pull-operating tanks have but two absolutely essential valves to each tank, viz., a valve to control the supply of water to the tank and one to regulate the discharge of water from the tank to the closet bowl. The valve controlling the water supply to the tank is

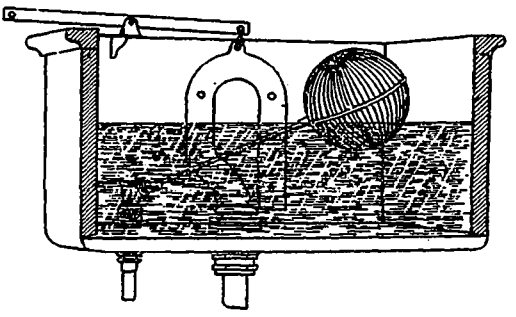


FIG. 1.

operated by a lever and float ball. When the tank is empty, the weight of the ball on the end of the lever causes the valve to open, and as the tank is filling with water, the ball is floated, gradually floating the valve. The lever and float must be so regulated as to close the supply valve before the water reaches a height in tank equal to, or on a level with, the crown of the flush valve, as in that case the valve would siphon. When not equipped with a regulating device, the amount of water desired is obtained by bending the lever up or down. These valves are of two types, top and bottom supply. In the top supply type, the valve is in the top portion of the tanks and the water supply pipe is brought up to the tank, inside of the wall, and in the bottom supply type, the valve is in the bottom portion of the tank and the water supply pipe is exposed and is run from the floor, or taken from the wall at a point just below the tank. The valve to regulate the discharge of water from the tank to the closet bowl is a siphoning flush valve which, when raised from its seat by the pull of a chain or rod attached to a lever connected to it, empties by siphonage. This valve should be so regulated as to discharge not less than four gallons of water into the closet bowl, at each discharge, in such time and with such force as shall thoroughly cleanse the closet bowl at each flush. The most common type of valve used for this purpose is the goose neck siphon valve, as shown

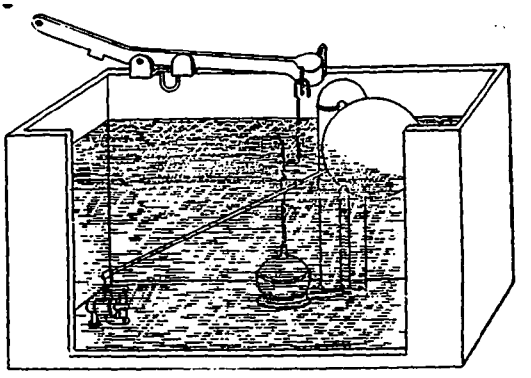


FIG. 2.

in Fig. 1. Another type which is very popular is the rubber ball valve, as shown in Fig. 2. In both of these types, the pull on the lever lifts the valve, starting the flow of water and causing a siphonic action which empties the tank.

An ingenious regulating float valve is shown in Fig. 3, and is known as the "Madden Patent," the operation of which is as follows: When the valve is raised by the pull on the lever, water is admitted to the flush pipe through the valve base. The quantity of water to be discharged is measured by the duration of the float in suspension, which is regulated by means of a set screw, "A." This flush valve regulating device makes it possible to obtain as many discharges of a given amount of water as the capacity of the tank will permit. The refill of the water necessary to replace that which is discharged from the bowl when being flushed, is obtained from the flush pipe by means of the auxiliary float "B" and cap "C," which, as the water in the tank recedes, seats itself on the overflow pipe, hermetically sealing the same and retarding the outflow of water left in the flush pipe after the main valve closes.

Closet tanks are placed on the face of the wall directly over the closet bowl, except in cases where it is desirable to conceal the tank, flush pipe and operating mechanism, to prevent meddling persons from tampering with them, such as stealing the pulls, chains, etc. Fig. 4 shows the manner of installing closets to accomplish this purpose. The flush valve is lifted from its seat by the push button arrangement; the tank and all working parts are concealed by a wall, slate or marble partition.

In modern construction, when an installation of this kind is desired, a utility corridor or shaft back of the line of closets is provided, in which the supply and waste pipes are run, making it possible for the attendant to have access to all of the operating mechanism without entering the toilet room. In a large battery of closets, such as are installed in public buildings, schools, etc., this arrangement reduces to a minimum the exposed brass parts, effecting a saving of some item in labor of cleaning and polishing. An excellent ventilating arrangement for

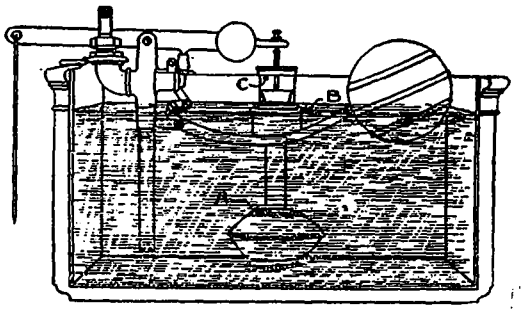


FIG. 3.

the toilet room can be secured by connecting this corridor to a vent flue and placing a register in the partition back of the closet.

LOW DOWN TANK COMBINATIONS.

The low down tank combination was designed with the object in view to furnish a closet which could be placed under windows, stairways, and other places where conditions made it impossible to set the high tank at the proper height. To obtain the same capacity as the high tank and provide a tank that would not necessitate setting the closet out into the room any farther, the low down tank is made with less breadth but more width and height than the high tank, and the flush pipe connection between the tank and the closet and the inlet of the closet bowl is 2 inches instead of 1¼ inches, commonly used on high tank combinations. The proximity of the tank to the closet bowl and the shortness and enlargement of the flush connection when used with a good type of siphon jet bowl, enables the manufacturers to produce a closet combination as near noiseless in operation as it is possible to get in a tank closet outfit. After years of experiment, the rubber float valve has been generally adopted by manufacturers of low down tank combinations, such as shown in Fig. 5. In operation this tank works as follows: The push button, engaging a trip lever, lifts the rubber ball from the valve seat; the ball floats until the receding flow of water draws it to its seat again, by suction. When the rubber ball is seated, all the water to the bowl through the flush pipe is shut off, and on account of the shortness of the flush connecting pipe, there is not enough water left in the flush pipe to refill the closet bowl and maintain its seal. It is therefore necessary to provide a refill or flow of water sufficient to maintain the seal in the closet bowl by other means, which is done by a refill pipe, attached to the supply valve, and empties into the overflow tube as shown in Fig. 5. This works as follows: The bypass in the supply valve, to which this refill pipe is connected, is constructed as follows: When the supply valve is open to permit the tank to refill, the bypass is open, and permits the water to flow through the refill pipe into the overflow, and thence into the closet bowl, and as the supply valve is gradually shut by the floating of the ball, the water supply is shut off so that when the tank is filled, the bypass is completely closed; some supply valves have a set screw which permits regulating of the refill flow by enlarging or diminishing the water way of the bypass. The low down tank is made in a great variety of shapes and material. While the wooden tank, copper lined, has been commonly used, some manufacturers are now placing on the market tanks made of iron, enameled in and out with porcelain enamel. Other manufacturers are furnishing a tank made of solid porcelain ware. Neither of these tanks requires any lining. While the rubber float valve is used in the majority of cases, there are a number of patterns of different flush valves, such as the regulating float valve, as described and shown previously in this article, in a high tank, and the siphon valve that reseats immediately after the push button is released, and relying upon siphonic action entirely, to empty the tank.

OPEN TANK SEAT OPERATING AUTOMATIC CLOSETS.

In Fig. 6 is shown a sectional cut of a closet bowl equipped with a seat operating automatic open flush tank. When the seat is depressed, the operating rod is raised, tipping the lever so that it engages a button on the top of the float valve stem. When the seat is released, the falling of the operating rod trips the lever, lifting the float valve from its seat and permitting same to siphon. This closet is recommended where it is desired to use an automatic closet, and especially where the water supply pressure is weak.

AUTOMATIC SIPHONING TANKS.

When it is desirable to use an automatic siphon flushing tank, the most common fixture that can be used is

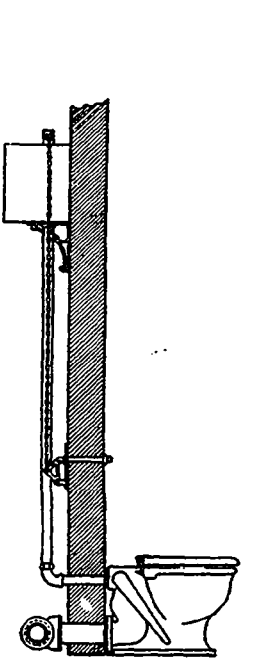


FIG. 4.

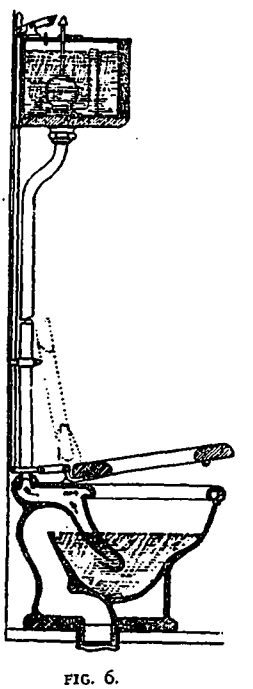


FIG. 6.

shown in Fig. 7. The lever of the supply valve is so regulated as to permit the water to flow into the tank until it runs over the crown of the siphon valve, which causes the water in the tank to siphon until it is discharged to a point where the lower end of the goose neck can get air, thereby breaking the siphon; the float then being down, opens the supply valve to its complete capacity, and permits the water to refill the tank. A tank of this description can be so regulated as to flush as often as required, by turning the small regulating

screw marked A, which enlarges or diminishes the water way of the valve, so if it is desired to have the tank emptied every fifteen minutes, this set screw should be so regulated as to take fifteen minutes to fill the tank to a point of siphonage. There are a great many different types of automatic siphoning tanks on the market, but the goose neck valve, on account of its simplicity.

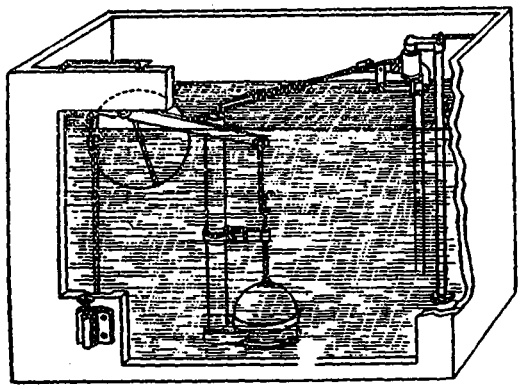


FIG. 5.

being without intricate parts, is generally used and answers the purpose very well, such as flushing urinal bowls and troughs.

FLUSHOMETER OR DIRECT PRESSURE FLUSHED CLOSETS.

Another type is the direct pressure flushed closet, operated by flush valves, or flushmeter. There are a great many types of these valves on the market, but the operation of all flushmeters is very similar. The valve is opened by a push button or a lever, permitting the valve to flush, and being released after flushing, the valve is automatically closed, by the force of a water jet conducted from the pressure side of the valve through a bypass to the valve chamber beyond the piston head,

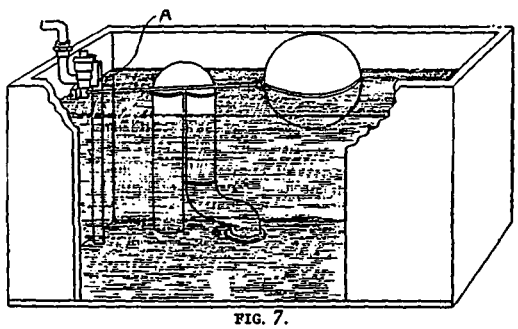


FIG. 7.

which it slowly forces to its seat. The purpose of the flush valve is to provide by direct pressure or suitable storage tank or tanks, means for properly flushing the closet bowl without the use of individual tanks, and is thoroughly adapted for large office buildings, hotels, hospitals, schools, public and penal institutions. These closets are also largely used for residence work, but are more adapted for large apartment buildings (where a large number of closets are necessary), where the economy of installation and maintenance is of great importance.

This valve cannot produce volume, and can deliver only the amount of water furnished by the supply pipe in a given length of time. Therefore, it is necessary in the installations of this fixture, to have an ample water supply through the water main to a point connected to the fixture, large enough to supply each closet with a volume of water sufficient to thoroughly flush the bowl, and the pipe should be at least as large as the flushing pipe used on the high tank combinations, viz., 1¼ inches. When more than one closet is installed under this system, the volume must be enlarged in proportion and the water pressure must be also considered in determining the size of the pipes, as it is necessary to have a pressure of not less than ten pounds to the square inch to obtain satisfactory results, so that if the water supply is taken from a storage tank, instead of direct connection from the water main, this tank cannot be located at less than twenty feet above the level of the highest fixture, and must be large enough to contain at least four flushes.

REINFORCED CONCRETE TOWERS

PROBABLY the first reinforced concrete towers ever built in place were those recently erected at Brownsville, Pa., by the West Penn. Railways Company, to carry electric cables over the Monongahela river. The main tower rises 115 feet above its foundation and supports, one end of the company's transmission line crossing the river at this point. The second tower, only 55 feet high, acts as an anchorage and takes the direct strain of the main span. The following is taken from an account of the work, prepared for the Connellsville Weekly Courier, by F. W. Scheidenhelm, mechanical engineer for the West Penn. Railways Company.

The problem was to support a 1014-foot span across the river at a minimum height above low water of 79 1-2 feet, to provide the prescribed Government clearance for navigation. On the Brownsville side of the river the span anchorage is in the local substation, a strongly built brick, concrete and steel structure. On the West Brownsville side some form of a tower was found necessary. As between the use of reinforced concrete and steel comparative estimates of cost and considerations of maintenance gave the preference to reinforced concrete, and it was decided that two towers would be necessary, the main or higher tower being built as close to the river bank as practicable, and designed to take as a maximum load only the wind stress on the tower itself and the weight of the wires, and the shorter tower, built about 230 feet back of the main tower, and having the cables anchored to it.

Gravel concrete was used exclusively. The gravel used for the footing was rather course, but that used in the tower concrete was specified to pass a 1-inch ring. The sand was clean and sharp. Atlas Portland cement was used, the resulting concrete finish being almost white after thoroughly drying. For the footings the proportions were 1: 2 1-2: 5, for the towers themselves 1: 2 1-2: 4. The concrete was put into the tower forms so wet that it would readily flow, and the result was a smooth and pleasing finish.—*Cement Age.*

ARCHITECT J. M. LYLE, OF TORONTO, who was the designer of the Royal Alexandra Theatre in that city, has made a plea for an individual style of architecture for North America. Mr. Lyle in an address before the Architectural League of America, which recently held its annual convention in Detroit, Mich., pointed out that the architects throughout the United States and Canada, follow the various schools in their work, and that no American style has as yet been developed. It was his belief that co-operation, exchange of ideas and general discussion might serve to develop a style which would be characteristic of the new world.

CONSTRUCTION

A JOURNAL FOR THE ARCHITECTURAL, ENGINEERING AND CONTRACTING INTERESTS OF CANADA.

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Ivan S. Macdonald, Editor and Manager

Address all correspondence to "CONSTRUCTION," Saturday Nigh Building, Toronto, Canada.

Telephone { Private Branch Exchange connects with all Departments } Main 6640 6641

BRANCH OFFICES:

MONTREAL - - - Board of Trade Building (Phone Main 285)
LONDON, ENG. - - - - - Byron House, 85 Fleet Street, E. C

SUBSCRIPTIONS.—Canada and Great Britain, $2.00 per annum. United States, the Continent and all Postal Union Countries, $3.00 per annum in advance.
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. 1 September, 1908 No. 11

Current Topics

RECENT FOREST FIRES on Vancouver Island are said to have been the most destructive in its history. It is estimated that the timber loss will reach close to $5,000,000.

* * *

AS A RESULT OF THE DESTRUCTION by fire of the bridge at Dumfries, a prominent official of the C.P.R. states that the company will, in the near future, replace all wooden bridges on its system with steel and concrete structures.

* * *

THE CANADIAN FRONTIER will soon witness a new improvement in the way of a mammoth dry dock to be built at the shipyards of the Canadian Shipbuilding Company, near Bridgeburg, Ont. Plans for the project have been completed, and the work of construction is about to proceed.

* * *

MAYOR OLIVER AND CITY TREASURER COADY, of Toronto, are at present negotiating to float bonds for the various projects which the city has decided to carry out. These are the filtration plant to cost $2,750,000, the sewage disposal works, which will require $2,400,000, and the power distributing plant, which will represent an expenditure of $275,000, bringing the total up to $5,900,000.

* * *

A DEPUTATION FROM GUELPH, including the Mayor and City Engineer, recently visited Chicago, where they investigated a new pavement called Westrumite, a German invention, which has been in use in the States for a couple of years. It is a liquid asphalt that can be put on cold and which hardens in a short time after being exposed to the air. In Chicago and the suburbs, where the material has been laid, it was found that it wears better than either the ordinary asphalt or bitulithic.

GARAGES OR SIMILAR INSTITUTIONS in Montreal will not hereafter be allowed to occupy the basement or lower portion of buildings used as public halls for any purpose whatever. Building Inspector Chausse declares that the new building by-law governing this restriction will be rigidly enforced.

* * *

TORONTO HAS TWO BOASTS in the way of buildings. In the Traders Bank Building it has the tallest structure in the British Empire, while in the mammoth addition now nearing completion for the Robert Simpson Company, it lays claim to the largest building of steel frame construction under the Union Jack.

* * *

THERE WERE FEWER LABOR DISPUTES in Canada during the month of July than in June or in July, 1907. According to statistics of the Labor Department only ten occurred as against fourteen in June and thirty in July, 1907. About seventy-five firms and 1,394 employees were affected. Definite settlements were reached in seven of the ten disputes. The number of working days lost was twenty-one thousand, as compared with eighty-one thousand in July, 1907.

* * *

A REINFORCED CONCRETE CHIMNEY, measuring 787 feet from base to summit, is under construction at the G.T.R. shops at Stratford, Ont. The reinforcement will consist of 168 one and one-quarter inch bars having shear diagonals, for the first 25 feet, from which point the number will decrease to 12 bars at the top. The chimney will stand on a concrete monolith 25 feet square and its inside diameter will be 7 feet 6 inches. A continuous air space will extend up the stack for 98 feet, where it will enter into the opening of the chimney proper.

* * *

RECENT OFFICIAL TESTS of Winnipeg's new high pressure plant proved it to be highly efficient and satisfactory in every respect. The system was subjected to various pressures ranging from 100 to 300 pounds per square inch, the latter being maintained when all engines were running to their full capacity. It means that Winnipeg is to have one of the most efficient fire-fighting systems in the world, not excepting that of Pittsburg's, whose high pressure plant has heretofore been regarded as being the finest on this continent.

* * *

LESS RED TAPE AND A BROADER POWER where it properly belongs will result in the decision of the Board of Control of Toronto to amend the building by-law relating to the issuing of permits for store buildings. In the past plans for buildings of this character have had to be passed upon in turn by the City Architect, Property Commissioner and Board of Control. Hereafter the City Architect is to be vested with full authority to act in the matter, and unhampered by any unnecessary formal or tedious procedure, his department will be able to give a more satisfactory service in every particular.

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IT IS EXPECTED THAT THE WORK of dredging the Richelieu River to improve navigation between St. Johns and Lake Champlain will be commenced shortly. This improvement is to be a preliminary step to the construction of a stoppage dam 1,350 feet in length. The dredging is estimated to cost $90,000, and the whole work about $200,000. The object of the dam is to lower the crest of the rapids at St. Johns by almost five feet. This will raise the water in Chambly Canal a foot, and will prevent the annual spring flooding of about thirty thousand acres of land along the Richelieu. The water levels will be regulated all the way from St. Johns to Rouse's Point.

ONE OF THE LARGEST COAL POCKETS in Canada is now under construction at Mile End, Montreal, for Hart & Adair. It is of reinforced concrete, and the first of its type to be built in this country. It will have a capacity of 6,000 tons of coal, all stored overhead. The structure is expected to be ready for use some time in October.

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THE WORK OF REBUILDING Three Rivers has started in an energetic manner, now that the question of widening the streets has been finally decided. Already a number of substantial structures are well under way and many sites are being cleared of their debris preparatory to rebuilding. The entire western side of Notre Dame St. from Alexander to Des Forges is being rebuilt by mercantile firms.

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A SYNDICATE, composed of Toronto, Ottawa and Montreal interests, has been granted the privilege of developing the large water power at Raven Lake, which is some three miles south of Larder Lake. Surveys and plans are being prepared, and J. Sampson Handley, of New Liskeard, has been retained as consulting engineer for the scheme. It is thought that several thousand horse-power can be generated from these falls, and the general outline of the scheme is to convert the power into electrical energy with a view of transmitting it to the various mines at Larder Lake on a high tension pole line.

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AIRSHIPS WILL HAVE TO BE CONSIDERED in the architecture of the future, and designers of buildings will have to look more to the artistic side of roofs than at the present time.

George Oakley Totten, of Washington, D.C., an American delegate to the International Architects at Vienna, in an address on the "Development of Skyscrapers in the United States," is responsible for the following: "Conditions are likely to arise which will greatly influence the architecture of the future. To sail through the air is no longer a mere picture of the imagination, and the day is not far distant when the architect will have to devote his attention to beautifying not only the fronts of the buildings but the roofs as well, so they will not offend the eye of the aesthetic traveler through the sky."

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AN ALL CANADIAN PROJECT has been brought to a head in the awarding of the contract by the Hydro-Electric Power Commission for the Government high tension transmission lines, which will carry electrical energy, developed at Niagara Falls, to various municipalities in the western portion of Ontario. The F. H. McGuigan Construction Company was the successful tenderer and the work, which is to cost $1,270,000 is to be completed in fifteen months. The length of the line will be 293 miles. It will extend from Niagara Falls to Dundas where the inter-switching station will be located, and from there will radiate to the different points forming the northern and southern loops. A two circuit line will be erected between Dundas and Toronto. The steel towers for the transmission line, of which there are to be 3,176, will be manufactured by the Canadian Bridge Company of Walkerville and the Ontario Iron and Steel Company of Welland, while the aluminum wire and pig aluminum amounting to 507 tons, required in its construction, will be furnished by the Northern Aluminum Company of America, whose plant is at Shawinigan Falls, Que. The Commission at the present time is receiving tenders for the construction of transformer stations and inter-switching apparatus. The specifications call for a voltage of 110,000, the highest in the world.

FERNIE IS TO RISE FROM HER ASHES a better and more substantially built place than existed before the fire. All buildings of the future are to be of brick, stone or concrete. An emergency fire limit order has been issued by the civic authorities to the effect that those who are preparing to put up wood shacks or structures of other light material, can do so only with the understanding that they will replace them with building of the more substantial type in ten months' time, failure to do so involving the liability of having the structure pulled down.

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MOVING A LARGE STEEL WATER TANK was successfully accomplished at Springer, New Mexico, on the Atchison, Topeka & Sante Fe Railway. The tank is 24 ft. in diameter, 43 ft. high, weighs 30 tons, and was moved by rail a distance of four miles. It was rolled in the ordinary manner to cribbing on the railroad track, where it was jacked up high enough to push two steel flat cars underneath it. The cars had been prepared by building timber platforms on them 24 ft. wide. The tank was securely chained to the sills and braced on each side. The track over which it was carried has two curves, each with an outer rail elevation of 5 in., and in order to avoid accident at these points the side bearings of the cars were blocked with short jacks, so that when the tank went onto the curves, the lower sides of the cars could be raised.—*Engineering Record.*

* * *

A NOVEL SANITARY FEATURE is to be introduced in connection with the three isolation buildings to be erected as part of the Royal Columbian Hospital at New Westminster, B.C., in that there will be no angles, cracks or ledges in or on which dust or bacteria can accumulate. Gypsum plaster will be used throughout with the exception of the floors, which will be of fir with melted wax coating, and all corners will be rounded so that the walls, ceilings and floors will practically continue into one another. The walls will also round into the shelves and door and window openings, and there are to be no casings or bases. Each cottage will have two wards and one general room, together with kitchen, pantry, nurses' room, fumigating room, four bathrooms, doctors' entry room, and patients' departure room. The rooms are to have no carpet and only the plainest kind of furniture, such as can be easily moved and sterilized.

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THE BOARD OF CONTROL of Toronto has appointed Kenneth L. Aitkens, C.E., of that place, as engineer to take charge of the construction and operation of the proposed municipal electrical distribution plant, at a salary of $3,600 a year. Mr. Aitkens, who is an associate member of both the American Institute of Electrical Engineers and the Canadian Society of Civil Engineers, has had a broad experience in work of this character and is eminently qualified to assume the duties in connection with this position. Since engaging in electrical work he has held important positions with Westinghouse, Church, Kerr and Co., New York; Sprague Electrical Co., Bloomfield, N.J.; Westinghouse Electrical Co., Pittsburg, Pa., and the Canadian General Electric Co., Toronto. During the past four years Mr. Aitkens has devoted a large part of his time to municipal work in Ontario, having been in charge of the construction and installation of power and machinery equipment of the plants at Milton, St. Mary's and Barrie. In addition, he has acted as consultant in a number of similar undertakings, and was recently appointed by the city of Chatham to conduct the official tests of the municipal producer gas plant. Mr. Aitkens was also the engineer for the engines and equipment for the factory of the Copeland-Chatterson Company at Brampton. In entering upon the duties of his new position he will relinquish his private practice and devote all his time to the city's interests.

AN OPERA HOUSE TO COST $4,000,000, in which the highest grade productions are to be given at prices within the reach of the masses, is projected at Berlin, Germany. The building is to be located on Potsdam Strasse and it is expected that Parliament will grant one half the amount and Berlin the other half necessary for its construction.

* * *

CEMENT TELEGRAPH POLES are being experimented with by the Pennsylvania railroad. A long stretch of track on the line between Pittsburg and Chicago, one of the most exposed parts on the System, has been fitted up with poles of this character, for the purpose of giving them a thorough test during the winter months.

* * *

TRADE COMMISSIONER—J. S. LARKE, in a communication to the Department of Trade and Commerce, states that the company formed to develop the slate quarries of British Columbia, should find a good market for their product in Australia, providing the slate is of the quality it is represented to be. It is encumbent, however, that the prices should be no higher than the prices at which it is produced and placed on board at New York and Bangor, Wales, and that the freight rates should be at least equally low as from these points. The latter ought to be secured by shipments by timber sailing vessels if not by the regular steamers.

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ACCOMMODATIONS FOR 420 *FAMILIES* will be provided in a group of apartment buildings, covering one block, to be erected early next spring in New York City. The site of this proposed improvement, which will probably be the largest single apartment building operation ever undertaken, is at Convent avenue and St. Nicholas Terrace, the property fronting 216 feet on the avenues and 585 feet on the streets. It is owned by Sonn Brothers, by whom the apartments will be built. The plans call for eight structures, each covering a plot 100x130 feet. Each one will be separated from its neighbor by a garden space 25 feet wide, an arrangement designed to produce the best result both in lighting and ventilation. A central power plant, to be established on the premises, will furnish heat, power and artificial light. The facades of the buildings will be of the Georgian style of architecture, executed in brick, limestone and terra cotta. The group will represent an expenditure of over $1,500,000.

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THE AMOUNT OF MATERIAL USED in its construction, its general dimensions, and its vast accommodations, all combine to give the recently completed terminal building in New York City the distinction of being the largest and most wonderful building in the world. It is 22 stories high, and, while lacking in height when compared to some of the late buildings of skyward propensities, it more than offsets any disparity in this respect by covering a ground area of 75,000 sq. ft. The floor space in the building amounts to 18,150,000 sq. ft. When every office is taken it is estimated that 10,000 persons, a number necessary to an incorporate city, will be lodged under its roof, and that over half a million people will enter it daily. Sixteen million bricks, 75,000,000 lbs. of cement and 25,000 tons of steel were embodied in its construction. There are 4,200 rooms in the building, with more than 5,000 windows and 5,200 doors, of which 3,000 have panes of ground glass. Nearly 125 miles of picture rail was tacked on the walls of the rooms; 113 miles of electric wiring was laid and 30,000 electric light bulbs placed on 6,000 electroliers and 7,000 brackets, and even these figures will be enlarged. There are 16 miles of plumbing, 29 miles of steam heating pipe and 95 miles of conduit. The elevator service includes 29 cars, and one round trip on all of them from the lowest basement to the top storey represents a journey of 3 1-2 miles. The force of employees, including engineers, firemen, electricians, elevator boys and janitors will number 150.

BUILDINGS MORE THAN 20 *STORIES HIGH* cannot be operated at a profit according to the general opinion expressed at a convention held recently in Chicago by building managers from all over the country. Above this height, it is said, the expense of maintaining adequate elevator service is so great as to make a building financially impracticable. The outcome of the convention will probably be the formation of a national organization to meet annually for the purpose of discussing economical means for running office buildings.

* * *

A CONTRACT FOR 4,500,000 *BARRELS* of cement, the largest single order that has been placed in the history of the cement industry, has been awarded by the United States Government to the Atlas Portland Cement Company. The cement is to be used on the Panama Canal, and it will cost about $5,500,000. Nothing demonstrates more clearly the increasing output of cement and its growing popularity in constructive work than this huge contract. Had this order been given out at as late a date as ten years ago, no mill or combination of mills could have filled it.

* * *

PORTLAND CEMENT PIPES were made in England probably as early as 1825, before the period when earthenware sewer pipes were beginning to be manufactured. Cement pipes of large size, with socket joints, are now extensively used in Germany, and they withstand not only the effects of a severe climate, but the chemical action of sewage. Moreover, they show an extraordinary endurance and remain perfect after a severe frost; also capable of repair, which is a point of no small importance. These pipes improve materially by age, and at the end of a year or two, they ring, when struck, with a clear metallic sound. The modern sewers of Paris are constructed of concrete. As early as 1869 thirty miles of concrete branch and main sewers had been laid in that city, and to-day throughout Europe both pipe and large sewers are, to a great extent, made of this material. In America the use of concrete sewers is now beginning to assume magnitude. Since engineers have become more conversant with the properties of concrete their hesitancy in establishing concrete sewers is rapidly disappearing.—Cement Age.

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PROFITING FROM EXPERIENCE with both earthquake and fire, Kingston, Jamaica, has passed a new building law which provides that in the future, so far as possible, earthquake proof and fire-resisting structures only shall be erected. The framework of all building, whether of steel, iron or wood, must be securely and rigidly connected and covered with a hard, durable, fire-resisting material securely attached to the framing at all points. No timber-framed buildings shall contain more than two storey's having an aggregate height of 25 feet, or have a cubical content exceeding 100,000 cubic feet, nor shall any timber-framed building be erected or used for any other than residential purposes. All members of a steel or iron framework of any building shall be of the same material, and no cast-iron shall be used in any part thereof. The walls of a building which may be constructed of either brick, concrete, stone or other hard and incombustible material, must, in all cases, be built on a foundation of cement concrete. Walls built of brick, dressed stone or other similar material must be solidly put together with Portland cement mortar, and be reinforced by hoop or band iron not less than one inch wide and one-twentieth of an inch thick. Walls of cement concrete shall be composed of Portland cement, clean sand and clean broken brick or stone, and shall be reinforced by steel or iron bands, bars or wires. Roofs must be covered externally with hard, durable and incombustible material. Iron and steel framing specially manufactured for the construction of buildings and Portland cement are exempted from duty until April 1, 1909.

ARCHITECTURE IN CONCRETE.---Material Affords Exceptional Opportunity for Originality and Individuality Providing Its Possibilities and Logical Adaption are Properly Studied. ∴ ∴

THE MERE CONTEMPLATION of this subject, so large in its scope and as yet so little exploited, makes a writer feel like a traveler in a new land: to know where to begin and where to end; whether to follow the line of least resistance and make it a mere review of accomplished results, or taking courage, to strike out boldly, discover motives, express opinions, and generally lay down the law.

The one course would scarcely be appropriate here, because it requires no combined effort. The other course is full of danger, and if pursued alone would consume too much time and invite too much criticism for comfort. Let us, therefore, talk moderately of each and see whether we cannot make of this dissertation a monolithic concrete structure, with a mixture of one part good fellowship, thoroughly seasoned and tested according to the Interstate Standard, two parts clean, sharp sand and four parts unscreened crushed hopes and ideals, with a three per cent. reinforcement of illustrations taken from anywhere and everywhere.

After all, our subject, large as it may seem, really rests upon a very few fundamental principles, which, like the issues of a political campaign, must be repeated over and over again if we can ever hope to drive them home.

Above all, this discussion should properly be confined to concrete used structurally, having in view the possi- would justify a search for early examples of its use in bilities of a constructive architecture rather than the development of sculptural decoration. Proceeding upon this basis, we may at once eliminate all consideration of concrete blocks and artificial stone, inasmuch as these products, being mere substitutes for brick and stone, and being used in the same manner, do not alter the status of our art, but leave it just what it has been from the beginning, a gravity architecture, if this term may be used.

The great antiquity of concrete as a building material would justify a search for early examples of its use in architectural expression. But apparently this remarkable material which, after all, is only just beginning to reveal its ultimate possibilities, was used by the ancients only for the baser purposes of piling up masses of masonry, or at best as a backing for stone and marble facings. The first suggestion of its fitness for artistic expression came when builders undertook to construct architectural features of cement mortar.

There is undoubtedly a great fascination in being able to mould a thoroughly plastic material as cement mortar into any desirable form, or even to shape it by hand, while still soft, and so produce creditable work of decorative sculpture. But one invariably suffers a shock upon discovering that beautiful stately colonnades or arcades and porticoes, well designed and in style, are not built of stone, but that we are looking at a thin veneer of cement mortar, in short, that they are a horrible sham.

During this period of development, while architects were being led to adopt new materials, they did not concern themselves with the evolution of design in conformity with their new materials, and it followed quite naturally that no progress was being made toward the realization of a concrete architecture. In fact, no attempt was apparently made in this direction.

It would be difficult to estimate the power or extent of Ruskin's influence in bringing about a restoration of truthfulness in design. While it cannot be said to have extensively effected immediate and tangible results, it did not set men to thinking, and it is only in recent years, within the present generation in fact, that this subtle influence is gradually asserting itself, and naturally bringing about a revival of real artistic inspiration.

It is hard to depart from beaten paths, and men, as a rule, will not and dare not, until some genius boldly cuts a new way. It is hard to give up the old familiar forms that have become a veritable architectural alphabet, which seems to most of us entirely sufficient for the expression of our ideals. And now that we have entered upon an era of concrete construction, and that, too, with a suddenness and determination that is thoroughly and typically American, we cannot reasonably expect designers to throw aside all tradition and make for a new style. That will take time. Nevertheless, they are gradually coming to recognize in concrete a material that will afford abundant opportunity for originality and individuality, and, accordingly, both excursions have been made into the new field with credible results.

In looking about for inspiration, we may turn to a number of sources. There are, for instance, the oriental mosques with their picturesque domes and minarets, or the aristocratic old palaces of India, so full of suggestions of all kinds.

But, above all, we cannot resist the inspiration of the charming Spanish missions of the Pacific Coast countries. Here we find an architecture, which though not of concrete, strongly suggests the same in its simple treatment of wall surfaces and openings. The designers of these charming buildings were fearless in departing from traditions. They frankly recognize the limitations of available materials, and, working as they did, under the greatest possible disadvantages, succeeded because they studied the possibilities and logical adaptation of their material. Fortified as they were with the true principles of art, in which they were thoroughly grounded, they produced practically a new style, which, however, sacrificed nothing of quiet dignity and repose, and avoided the eccentricities and pitfalls of L'Art Moderne or Nouveau Art. Such is the spirit which should possess and guide the designer of concrete to-day.

Concrete, as it is used in superstructures, being the only kind which we are considering should be mixed by machine to produce the best results. This, however, cannot be economically done unless large quantities can be used without serious interruption; it follows naturally that such a structure is more or less perfectly monolithic, and at once this characteristic becomes the dominant note of the situation. Monolithic is freedom of joints or even semblance of joints. This is the fundamental idea that should be impressed on our concrete designs. To accomplish this successfully, we should endeavor to treat wall surfaces in masses as large as possible. They need not necessarily be kept entirely plain, although this would depend upon the nature of the design. In cottage work and small buildings generally, and to some extent in more ambitious work, such large plain surfaces are perfectly delightful, especially when given a rough finish. This can be accomplished in various ways, and here let us be technical for a few minutes.

First of all the concrete may be left just as it comes from the moulds. In this case the aggregate should be quite small, not even one-half inch, and the mix should have the minimum allowance of water, making what is called a dry mix. In doing this, however, there is great danger of the wall not being waterproof, so that, if possible, such a mix should be used directly against the forms for surface work only, and the balance of the wall made a wetter, richer mix and of fair thickness that will prove sufficient to be waterproof; or else this rich concrete may be used throughout and the forms removed before the final set, and the skin of the concrete removed with water and a good stiff wire brush or with acid.

Then again the concrete may be allowed to get good and hard and the surface tooled off.

But with all such treatments there is always the danger, as first indicated, of having a damp wall, especially

where it is not very thick, as is apt to be the case with reinforced concrete. Practical consideration, however, must finally prevail, lest the unfortunate architect's life be made miserable by the complaining client, who, naturally expects, and is entitled to a dry wall. Under such conditions, it is therefore advisable to plaster the concrete wall with a good coat of waterproof mortar and give this a rough finish by the various methods at hand, such as brooming or floating with a rough carpet-covered float, or stippling, or pebble-dashing, or splatter-dashing, all of which methods are commonly understood.

The fresh mortar thus applied may be modeled by hand, producing some simple ornamental design, naturally in low relief.

Advocates of Polychromatic Architecture, too, have here splendid opportunities of using tile or faience which may be incorporated in the surface with telling effect, provided that it is used sparingly, and entirely as a subordinate, so as to emphasize the character of the concrete and enhance its beauty and effectiveness.

In large massive work, the surface may be broken by raised or sunken effects, such as panels or ornaments, cast directly in the concrete by applying reverse moulds on the inner surface of the form work.

Cornices and band-courses, or other simple architectural features, may be fashioned in a similar manner.—Exchange.

TORONTO SELECTED FOR C.C.C.A. CONVENTION.---First Affair of Its Kind Ever Held in Canada.---Prominent Authorities on Various Branches of Concrete Construction to be Present.

THE first annual convention to be conducted under the auspices of the recently formed Canadian Cement and Concrete Association will be held in Toronto during the early part of the coming February. This was decided upon at a meeting of the Executive Board which took place at the St. Charles Hotel, Toronto, Sept. 24, and from now on a vigorous campaign will be instituted to make the forthcoming event one of the biggest affairs in the building line ever held in Canada.

Every interest of the cement and concrete industry is to be represented, and delegates and visitors from all over the Dominion will be in attendance. Arrangements are already under way to bring several of the highest authorities on various branches of the work from England and the United States, to address the gathering.

The exhibit to be held in connection with the convention will be of a most extensive character. Even at this early date, a large number of manufacturers have signified their intentions of exhibiting, and all types of machinery, devices and appliance used in the manufacture of cement products and in concrete construction will be displayed, demonstrated and seen in operation.

The progress of the Association in the short time that it has been organized is most encouraging. New names are being continually added to its membership and the present indications are that within the next few months all sections of the country will be strongly represented in the Association. It may be of interest to note that the Association has decided to petition the Dominion Government to establish a testing laboratory similar to the one now being conducted in St. Louis, Mo., by the United States Government, and towards which the sum of $100,000 is annually appropriated.

The arrangements for the coming convention are in charge of such prominent men as Prof. Gillespie, Toronto University; W. H. Pulford, London; Gustave Kahn, Toronto; Kennedy Stinson, Montreal; Mr. Dates, Owen Sound; and Cecil H. Thompson, Toronto.

THE ENGINEERING PENALTIES OF BOOM TIMES.—Serious Consequences and Costly Experiences Resulting from Production and Construction Under High Pressure.

THE remarkable period of industrial expansion which this country has been passing through brought with it several incidental penalties for a haste which simulated speed. That the tremendous pressure under which manufacturers, engineers and all persons engaged in construction labored resulted in errors of serious nature is beginning to be realized. We have perfected organization and system, improved machinery, invented new methods, and we have a right to expect an increased output per unit of labor, but there has been a tendency to forget that the human brain possesses, as it were, an elastic limit beyond which it cannot safely be stretched. To force and crowd production to a maximum without consideration of the limits of the ability of the people involved, is to court costly error.

Nowhere is this more strongly marked than in the field of engineering. It has been a common experience for many an engineering staff to put in long hours and to work under high pressure. A lack of sleep, a sort of brain fag from too long continued concentration, has brought many a man to his desk in a condition that caused him to allow vast quantities of work to pass under his direction with but the most hurried attention to details. As a result, serious errors crept into computations, checking, field orders and designs. These errors, now that there has been a slowing up of our commercial pace, are beginning to come to the surface and their rectification is proving bitter and costly.

Even errorless engineering, if such there can be, has been brought to naught by the haste of contractors, builders and manufacturers. The collapse of reinforced concrete buildings is but one glaring example. In the hurry to complete structures, forms have been taken down before the concrete had properly set; fresh concrete has been poured upon old without making a proper bond; chips and shavings have been allowed to fall in and remain between consecutive courses and the most ordinary precautions neglected. In some cases the forms have been too weak to sustain the wet concrete and badly distorted construction has resulted, if indeed, failure did not result before completion.

In structural steel work errors have been numerous. Small details of fastenings have been neglected. Poorly checked details have been sent into the fields hundreds of miles away, necessitating expensive alterations on the part of erecting men in order to bring the various parts together. In one case a building designed for a smelter had a 9-ft. flue passing through one side. The flue was carefully detailed, but the wall of the building had no opening through which to admit it. Lateral sway-bracing was entirely omitted, as if a row of columns, unattached to each other except through the purloins across the trusses resting on them, would stand of their own accord in any wind.

Even the simplest of foundations have caused trouble. A lack of investigation of the character of the supporting ground has been the cause of unit loads being superimposed many times in excess of the safe limit. Perhaps no more bitter experience can come to any constructor than to see some fair structure otherwise carefully and conscientiously built, calmly cracking and settling into the ground. Many a superintendent of construction has been proud of the number of cubic yards of concrete

his men have placed in one day. In one notable example when all previous records had been broken in placing the foundations of a massive deep mine hoist, the starting up of the engine revealed the fact that many batches of concrete had not been properly mixed, bunches of clear sand or gravel without any cement whatever revealing themselves. In addition several courses had not been properly tamped, the large excess of voids being the cause of serious cracks. As a result this particular mine had to be shut down entirely, during a period of high price for the metal it produced, in order that the hoist might be taken down and the foundation rebuilt. The lesson is obvious.

In the manufacture of machinery, from the mechanical rather than the engineering standpoint, the chief result of hurry has been the failure to finish to size. Shops which had hitherto maintained a most careful inspectorship and held a deep pride in their elaborate sets of precision jigs and gauges, manifested a disposition to pass out parts of machinery which were out in their dimensions a few thousandths of an inch. These sins of haste were not immediately visible to the eye. But the misery they caused to erecting men, engineers, and all who had occasion to operate such machinery, is beyond statement. From the shops of one builder of Corliss engines of national reputation there came out the crankshaft for a direct-connected 1,200-kw. cross-compound unit which had not been properly finished. In the effort to hurry the finishing cut the machinist had given his lathe too coarse a feed, with the result that the surface of the shaft was literally "threaded" or helically waved. This surface effect was not readily apparent to the casual observer. But the fearful manner in which the bearings, of most liberal surface, heated soon brought attention to this. Leaky pistons, badly fitted bearings, brasses bored but not scraped, loosely fitted valve gear, shaft keys bearing in spots only and soon working loose, faulty castings, are but a few of the many troubles incident to hastily constructed engines.

From an engineering standpoint errors have been many in engine building. There may be cited the case of a manufacturer of air compressors of world-wide and sterling reputatioin. As the time drew near for delivery on a certain contract, this firm observed that in the crowded condition of its shops it was not going to make the promised date. The compressor in question was of the two-stage air, cross-compound steam type, the air cylinders being tandem with the steam cylinders, with a coupling on the piston rods between the air and steam cylinders. In order to hurry this particular job the manufacturers sublet the frames and steam cylinders to another manufacturer of Corliss engines, specifying merely the size of cylinders and the connections to the air cylinders of their own make. Now it is well known that in air compressors of this type it is necessary to make the frames, bearings, connecting rods, piston rods and crossheads extra large in order to withstand the double strain at the end of the stroke, due to the steam in the steam cylinder and the air compressed in the air cylinder. The sub-contractor for the steam end did not, however, take this into account, but simply supplied his standard parts for the size of steam engine specified. The result was that this compressor has had a most heart-breaking series of breakdowns ever since being put into operation.

Examples could be multiplied without end, showing the costliness of production and construction under high pressure. Manufacturers the country over can tell of work they have had to repair, at a cost which eliminated all profit. In many cases the profits of our boom period of prosperity have been seriously reduced for many contractors and manufacturers by the aftermath of their haste. The temptation to employ inferior help, such as irresponsible draughtsmen, poorly trained machinists, careless laborers, on account of the inability to get better, has been the undoing of many an employer. The personal temptation to break records by turning out apparently marvellous quantities of work has caused detail after detail to slip by unnoticed until some day the inevitable crash comes.

Now that the pace has been slowed up, is it not time to take stock, to weed out incompetents and to make more rigid a system which will prevent these costly mistakes in the future? If this breathing spell be used to go over drawings and designs carefully and note on them where they have failed, it will be time well used. Too often draughtsmen to whom important designs are entrusted make the drawing files of the office in which they are employed the precedent for new work, without knowing the working history of the parts represented. A careful checking over of gauges and jigs in shops will often reveal that they are not accurate, due to rough usage. An investigation of systems of production will show certain points about them which have been a positive detriment to speed. Everybody believes in repairing machinery or replacing it by new when it becomes worn out. Is it not just as important to give an equal amount of attention to organization, in order that no man may be given the usual excuse for error, that he was compelled to do more than his abilities warranted? The country at large has been filled with admiration for men who did things. It is now time we substituted for this a search for men who do things well.—Engineering Record.

A BUILDING WITHOUT WINDOWS.—Unique Concrete Structure Erected at St. Louis, Mo.

A BUILDING without windows has been erected at St. Louis for the E. B. Lewis Publishing Company. It is built with solid walls, there being only two openings, for a door in the front and one in the rear of the building. The structure, which is known as the National Daily Building, measures 68 x 170 feet in plan, is 58 feet high, and is entirely lighted from a skylight in the roof, the main part of the building forming one large room. The building is of reinforced concrete, finished exteriorly with a 2-inch marble facing. A copper cornice, six feet high, backed with a parapet wall of concrete, one foot thick, runs around the top of the building and forms a striking contrast to the white marble surface. The roof is carried upon steel trusses, of 65-feet span, which rests on concrete piers built into the walls. Curtain walls are built between the piers, being single and 12-inches thick in the lower part, and double, with an air space between two 6-inch walls, in the upper portion. The air space is divided at horizontal intervals of three feet by solid vertical cross partitions of concrete. A reinforced lintel, eight feet above the level of the first floor carries the double wall between the piers and allows of a recess due to the greater thickness of the upper wall. The basement is lighted partly by area windows.

ONE OF THE ENGLISH FIRMS who have recently entered actively in the Canadian trade is Messrs. Doulton & Company, Ltd., of London, England, who have a world-wide reputation in the manufactory of pottery and other ceramic products. Since coming into the Canadian field this concern has secured a number of good contracts, among them the contract for furnishing "Carrara" glazed terra cotta, which is to be used in finishing the interior of the new medical building of the McGill University. This firm is represented by Mr. W. Beverly Robinson, Board of Trade Building, Montreal.

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.—The Union Stock Yards at West Toronto have been damaged by fire to the extent of about $150,000, with insurance of about $65,000. Mr. Andrew Dods, secretary of the company, states that they will rebuild at once.

Toronto.—Architect F. H. Herbert, 65 Adelaide street east, has prepared plans for the construction of a one-storey brick and steel, 60 by 200 ft. building to be erected on the east side of Fraser avenue, for the Canada Metal Co., William street. The building will have concrete foundation, concrete floors, steel roof, expanded metal partitions, electric lighting, factory plumbing and steam heating and fireproof doors. Estimated cost of building, $25,000.

Toronto.—The tannery of the H. B. Johnston Company, River street, has been destroyed by fire, entailing a loss on stock and building between $150,000 and $200,000, covered by insurance of $150,000.

Toronto.—The Harris Abattoir Company has been granted a permit for the erection of a $35,000 six-storey addition to their building on Strachan avenue.

Frankford, Ont.—The Trent River Paper Company's plant at this place, has been badly damaged by fire.

Peterboro, Ont.—The contract for the rebuilding of the Peterboro Cereal Company's plant at this place, which was recently destroyed by fire, has been awarded to Ald. A. McIntyre.

Sarnia, Ont.—The Imperial Oil Company will enlarge its present plant, at a cost of approximately $250,000.

Sarnia, Ont.—The plant of the Laidlaw Lumber Company, at this place, has been damaged by fire to the extent of $6,000.

St. Catharines, Ont.—Architect A. E. Nicholson has prepared plans for a two-storey factory building to be erected for Messrs. Whitman & Barnes. The building will be 265 by 45 ft., of mill construction, with stone foundation, felt and gravel roof, Georgia pine interior finish, factory plumbing, metallic lath and sheet metal work.

Hamilton, Ont.—Rollinger Bros., Pittsburg, Pa., have been awarded the contract for the plant to be erected here for the People's Brewing Company, which has been incorporated, with capital of $250,000. Estimated cost of buildings, $150,000.

Guelph, Ont.—Mr. Chris. Oliver, Galt, Ont., has been awarded the contract for the brick, stone and concrete work on the new furniture factory to be erected at this place for the Lowden Manufacturing Co. The building will be 200 feet by 75 feet, with an office annex 40 feet square and two stories in height.

Walkerton, Ont.—S. S. Arnold, of Toronto, is negotiating with the Town Council of this place for a site on which to establish a factory for the manufacture of hinges, springs, etc. The proposed plant will give employment to from 100 to 200 hands.

Deseronto, Ont.—The Deseronto Iron Company's smelting works at this place, have been totally destroyed by fire. The loss is estimated at over $100,000.

London, Ont.—The Canadian Packing Company's plant at Pottersburg, a suburb of London, Ont., has been practically destroyed by fire. The loss is estimated at $150,000, fully covered by insurance.

Stratford, Ont.—The Stratford Manufacturing Company has had plans prepared for the erection of a 54 by 140 ft. addition to its present plant at this place. The addition will be two stories in height, and of brick construction.

Arthur, Ont.—The factory and planing mill, owned by W. G. Gorvette, has been destroyed by fire. The loss is estimated at $6,000, partly covered by insurance.

Bancroft, Ont.—The sawmill of David Beal, at this place, together with over a million feet of lumber, has been destroyed by fire.

Montreal, Que.—Arthur Mireau, 333 St. Urban street, Montreal, will erect a three-storey brick and stone building to be used as a laundry. The structure will have concrete foundations and floors, and will cost $30,000. J. O. Guimont, 109 Villeneuve Annex, has the general contract.

Montreal, Que.—Architect J. Sawyer, 407 Gay street, has prepared plans for a stone warehouse and factory (for the estat of Victor Beaudry, 180 St. Jacques street) at a cost of $30,000. The fire sprinkler system will be used. H. Magloire, 633 Demontigny street, has the general contract.

St. Cyrille de Wendover, Que.—The following buildings at St. Cyrille de Wendover have been destroyed by fire: Sawmills of Messrs. Rogers-Duclos, the sheds at the railway station, a portion of the station building, and the Mercure tannery. The total loss is estimated at about $65,000.

Laurentide (St. Lin), Que.—The Sweet Milk Condensing Company's factory, at this place, has been damaged by a fire to the extent of $15,000.

Wolfville, N. S.—The Acadia Laundry building at this place, has been destroyed by fire. Loss estimated at $7,000, partly covered by insurance.

Moncton, N.B.—The Strathcona Coal Company's plant at this place has been destroyed by fire. Loss estimated at $30,000, covered by insurance.

Newcastle, N.B.—Anderson's furniture factory, at Newcastle, N.B., has been completely destroyed by fire. Loss estimated at $100,000, partly covered by insurance.

Sackville, N.B.—The Enterprise Foundry Company has decided to rebuild their works on the site of the former foundry which was recently destroyed by fire. Plans for the structure have recently been completed by Architect H. H. Mott, St. John, N.B.

Winnipeg, Man.—The J. D. McArthur Co., of Winnipeg, will in the near future commence work on the new brick roundhouse and turntable to be erected at Springfield road, for the Transcontinental Railway. The roundhouse, when completed, will have 72 stalls.

St. Boniface, Man.—It is reported that Swift & Co., of Chicago, have purchased 200 acres of land at this place on which they will erect an abattoir and lay out a stockyard, at an expenditure of over $1,000,000.

Kamloops, B.C.—No. 1 tipple, including the screening plant recently installed, at Middlesboro collieries, Nicola valley, has been destroyed by fire. Superintendent A. Faulds estimates the loss at $16,000.

Wetaskiwin, Alta.—The laundry building, owned by Jas. Heighington, has been destroyed by fire. Loss approximately $5,000. The structure will be rebuilt at once and new machinery will be required.

Port Essington, B.C.—Messrs. R. Cunningham & Son's sawmill, located one mile below this place, has been completely destroyed by fire. The loss is estimated at $25,000, fully covered by insurance.

Crow's Nest, B. C.—The directors of the Crow's Nest Pass Coal Company will rebuild the parts of their plant which were destroyed in the recent fire. It is estimated that the cost of rebuilding and refitting will be approximately $50,000.

Gas Plants, Elevators and Warehouses

Toronto.—John Leckie, 72 Wellington street west, has been granted a permit for the erection of a two-storey brick warehouse at 75-77 Wellington street, near Bay street, at a cost of $40,000. Smith & Hemmell are the architects.

Fort William, Ont.—The John King Company will erect a new $10,000 brick warehouse to replace the one recently destroyed by fire.

Montreal, Que.—Messrs. Gunn, Langlois and Co.'s cold storage plant on St. Amable street, has been damaged by fire to the extent of about $50,000, fully covered by insurance. The loss on the building is estimated at $15,000.

Brandon, Man.—The International Lighting and Heating Company of Cleveland, Ohio, the company which was granted a franchise by the City Council for the manufacture of gas in Brandon, has made application for an extension of the time limit. Mr. G. H. Harper, of this place, resident engineer for the company, states that, should the extra time be granted, work on the plant will be commenced at once.

Regina, Sask.—Architects Storey & VanEgmond have prepared plans for the erection of an addition to the Cockshutt Plow Company's warehouse at this place.

Regina, Sask.—Architects Storey & VanEgmond have completed plans for a warehouse to be erected here for the New Hamburg Company.

Saskatoon, Sask.—Messrs. Saul & Irish, Winnipeg, Man., have been awarded the contract for the erection of a warehouse at this place for the A. Macdonald Company, Saskatoon.

Saskatoon, Sask.—The Rogers Fruit Company has purchased a site for the purpose of erecting a one-storey and basement brick fruit warehouse, 40 by 100 feet. The building will have three cold storage rooms.

Electrical Construction

Toronto.—The Hydro-Electric Power Commission has awarded the contract for the erection of the transmission line from Niagara Falls to the various municipalities in Western Ontario to the F. H. McGuigan Construction Company at contract price of $1,250,000.

Toronto.—The Hydro-Electric Power Commission will receive tenders up to 6 p.m., Sept. 28, for the electrical apparatus necessary to connect with the transmission line to be built by the McGuigan Company. Specifications call for a voltage of 110,000. Tenders are also asked for the main interswitching station at Dundas, and interswitching and "step-down" stations" at Toronto, Guelph Preston, Berlin, Stratford, St. Mary's, London, St. Thomas, Woodstock and Brantford.

Hamilton, Ont.—The Fire and Water Committee has decided to install synchronous motors of 66 cycles at the Beach pumping stations.

Nelson, B.C.—A by-law will be submitted to the ratepayers for the purpose

of authorizing the installation of a second unit in the new power plant at Nelson, B.C.

Revelstoke, B. C.—The Revelstoke Trout Lake and Big Bend Telephone Company's plant, in the Cowan Block, has been damaged by fire. The switchboard, electrical fixtures and office furniture have been destroyed.

Lethbridge, Alta.—The ratepayers have passed a by-law authorizing the expenditure of $196,000 for the purchase of an electric lighting plant, the erection of a second stand pipe, and installation of a new force main and septic tank.

Edmonton, Alta.—The Canadian General Electric Company, of Peterboro, have been awarded the contract for the motor supplies for the street railway. The cars will be built by the Ottawa Car Works.

Saskatoon, Sask.—The contracts for supplying the necessary equipment for the extension of the power-house plant have been awarded as follows: Robb Engine Co., 225 H.P. engine, $3,903; Canadian Westinghouse Co., 125 K. W. generator and other electrical appliances, $4,175.

Bridges, Wharves and Subways

Toronto.—City Engineer Rust, in his annual report, recommends the following improvements: New bridge on Winchester street, to replace the present structure; new steel or concrete bridge at Crawford street, over Bellwoods Park; entire renewal of the Brock street wharf, and the reconstruction of the wharf frontage from Yonge to Bay street and westerly.

Toronto.—Peter Arnot has been awarded the contract for the construction of the easterly portion of the new sea wall from Sunnyside to the Humber, at contract price of $41,544. The work will consist of the construction of 1,500 feet of solid concrete wall on timber cribwork, with two landing stages.

Ottawa.—Contracts have been awarded as follows for alterations to be made to the Somerset street bridge: Filling and abutment work, Thomas McLaughlin; steel contracts for widening of bridge, Dominion Bridge Company. The structure will be made about sixteen feet wider, the electric railway to pay three-quarters and the city one-quarter of the cost, which is estimated at from $14,000 to $15,000.

Ottawa.—Tenders will be received by the undersigned up to 4 p.m., Sept. 24, for the construction of a wharf at Whitney Pier, Cape Breton County, Province of Nova Scotia, according to plans and specifications on file at the offices of C. E. W. Dodwell, resident engineer, Halifax, N.S.; E. G. Millidge, resident engineer, Antigonish, N.S.; the postmaster at Whitney Pier, N.S., and at the Department of Public Works, Ottawa. R. C. Desrochers, Assistant Secretary, Department of Public Works, Ottawa, Ont.

Ottawa.—The Board of Control, Ottawa, has authorized the city engineer to proceed with the preliminary work on the new city aqueduct. The esimated cost of the work is about $50,000. The forebays are to be deepened, a new intake pipe is to be laid and new piers are to be constructed.

Ottawa.—J. R. Booth has made application to the City Council for the privilege of building overhead bridges on Bridge and Head streets for carrying pulp, etc., from his mills.

Owen Sound, Ont.—The Town Council has awarded to J. M. Miles, of Atwood, the contract for building the Union street bridge at contract price of $8,496.

Cainsville, Ont.—The T. H. & B. Railway will, in the near future, erect a new overhead bridge over its tracks at this place.

Port Arthur, Ont.—The Canadian Northern coal docks at this place have been badly damaged by fire. The dock is one of the largest in Canada.

Brantford, Ont.—Ald Suddaby, chairman of the Board of Works, has ordered the city engineer to make a report on the Cockshutt bridge, which is said to be in an unsafe condition. It is expected that a new bridge will be constructed.

Brantford, Ont.—Mr. T. H. Jones, city engineer, has recommended to the Board of Works the immediate construction of a new bridge to replace the Market street bridge.

Niagara Falls, Ont.—H. D. Symmes, has been awarded the contract for the first two of the four bridges to be constructed along the route of the Niagara Falls-Fort Erie boulevard. The bridges will be of stone and concrete construction, and will cost approximately $6,000 each.

L'Original, Ont.—Tenders will be received by the undersigned up to Oct. 6 for the construction of an iron highway bridge over the Big Castor River, 115 ft. span, and for the removal of the old span. Tenders are also asked for the masonry work required for the Big Castor bridge, estimates to be received on both stone and concrete. Plans and specifications may be examined on application to Mr. O. Duford, at the village of Embrun, County Russell, and at the office of E. Abbott Johnson, County Clerk, Prescott and Russell, L'Original, Ont.

St. Mary's, Ont.—At a meeting of the town council it was decided to have a competent engineer prepare plans and estimates for the erection of a new bridge over Wellington street.

Latchford, Ont.—Tenders will be received by the undersigned up to 4 p.m., Sept. 21, for the construction of a dam across the Montreal River at Latchford, and for dredging the channel at Port Rapids, District Nipissing, Ont. Plans and specifications may be seen at the office of J. G. Sing, resident engineer, Confederation Life Building, Toronto, on application to the postmaster at Latchford, Ont., and at the Department of Public Works, Ottawa. Tenders must be made on forms supplied. R. C. Desrochers, Assistant Secretary, Department of Public Works, Ottawa, Ont.

New Liskeard, Ont.—The contract for the construction of the new bridge over the Blanche River, in the District of Temiskaming, has been awarded to Messrs. Sinclair & Smith, of this place. The bridge will cost $5,000.

Gurney, Ont.—The C. P. R. bridge, at this place, has been destroyed by fire. It will, in all probability, be replaced by a steel and concrete structure.

St. John, N.B.—Tenders will be received by the undersigned up to 4 p.m., Oct. 5, for the construction of an extension to the wharf in West St. John harbor, according to plans and specifications which may be seen at the offices of E. T. P. Shewwin, resident engineer, St. John, N.B.; C. E. W. Dodwell, resident engineer, Halifax, N.S.; J. L. Michaud, resident engineer, Merchants Bank Building, Montreal, and at the Department of Public Works, Ottawa. Tenders must be made on forms supplied. Nap. Tessier, Secretary, Department of Public Works, Ottawa, Ont.

St. John, N.B.—J. D. McLaughlin has been awarded the contract for the construction of the St. Jacques bridge, Madawaska County, at a contract price between $12,000 and $13,000. The bridge will consist of two covered Howe truss spans, and will be about 325 feet in length. It will have concrete piers and abutments.

Fredericton, N.B.—The contract for the construction of the superstructure of the new spans of the Fredericton highway bridge has been awarded to McNeil & Co., New Glasgow, N.S. The contract calls for three steel spans, including a 260 ft. pin-connected span, a swinging draw span of 144 ft., of the rivetted cantilever arm principle, and of sloping dock girdle for the Fredericton end of the bridge, 108 ft. in length; work to be completed by April 1.

New Glasgow, N.S.—W. P. McNeil & Co., of this place, have been awarded contracts for the following work in New Brunswick for the Grand Trunk Pacific Railway, viz: Bridges, one 80-ft. span over the Segas River; one span over Green River; one over Baker River, and one over Four Mile Brook; the latter to be a thirteen deck girder span, carried on six towers sixty feet high.

Winnipeg, Man.—The city engineer will shortly submit to General Manager Morse, of the G. T. P., a statement of what space the city will require on a joint railway and traffic bridge to be constructed at the foot of Lombard street. It is expected that the company will have plans and estimates prepared within the near future.

Brandon, Man.—At a meeting of the City Council it was decided to construct the proposed bridge on First street of steel, in place of concrete, as previously planned.

Victoria, B.C.—Mr. R. H. Sperling, general manager of the British Columbia Electric Railway Company, in commenting upon the proposed work to be undertaken by the company, stated that the work of constructing the Sumas dykes would soon be commneced. Plans for the improvement, which will cost $750,000, will be completed in about a month's time.

Savona, B.C.—Two spans and a portion of the superstructure of the Government bridge across the Thompson River at Savona, at the foot o. Kamloops, have collapsed. The bridge will, in all probability, have to be entirely rebuilt, which will involve a cost of $10,000.

New Westminster, B.C.—Plans and estimates of the new Lulu Island bridge have been submitted to the City Council by Engineer J. A. L. Waddell, of the firm of Waddell & Harrington.

Waterworks, Sewers and Canals

Toronto.—The Board of Control has instructed the Assessment Commissioner to purchase the Leslie property in Riverdale, as a site for the sewage disposal plant. The property comprises about 42 acres.

Owen Sound, Ont.—At the request of a number of ratepayers of Owen Sound and Brooke, who are considering annexation, Mr. Wm. Morrison has submitted an estimate for a pumping plant, as an auxiliary, to supply any deficiency that may arise from the present gravity system, viz.: Artesian wells, $3,000; pumping station, complete with duplicate pumps, each for a million gallons capacity, $10,000; a dock for handling fuel for boilers, $3,000; 12,750 ft. of 12-in. main, laid, $20,000; 5,500 ft. of 10-in. main, $7,750; new reservoir with 2,250,000 gallons capacity, $4,000; connecting pumps with gravity system, with automatic valves and by passes, $2,000.

Wiarton, Ont.—The Town Council has decided to expend the sum of $15,000 on a sewerage system this fall.

Cobalt, Ont.—The Township Council has agreed to guarantee the town's bonds to the extent of $75,000 for the construction of a waterworks and a sewerage system.

Welland, Ont.—The contract for widening the sidewalk on the canal bridge has been awarded to the Hamilton Bridge Company, Limited, Hamilton, Ont.

Omemee, Ont.—Messrs. Smith & Smith, engineers and land surveyors, Lindsay, have completed plans and profiles for an extensive drainage system for the lowlying farm lands in the valley of Stoney Creek to cost approximately $30,000.

Montreal.—Tenders, addressed to the city clerk, will be received up to noon, Sept. 18, for the construction of a reinforced concrete compensating well and a reinforced concrete double conduit to the pumps at the low level pumping station, Point St. Charles. Plans and specifications may be seen by applying to George Janin, Superintendent and Chief Engineer, Montreal Waterworks.

Winnipeg, Man.—The special committee appointed by the City Council to investigate the cost of the high pressure plant to be installed at this place have decided to call for new tenders for the producer plant, which, it is estimated, will cost $585,000, about $200,000 more than the previous estimate.

Edmonton, Alta.—The City Council has awarded to W. J. Carter the contract for the construction of the septic tanks at the eastern sewer outlet at a contract price of $16,125.00.

Calgary, Alta.—John Gunn & Sons, Winnipeg, have been awarded the contract for the construction of the big gravity water system at this place.

Calgary, Alta.—A by-law has been passed by the ratepayers authorizing the installation of additional sewers in this city.

Victoria, B. C.—At a meeting of the Fire Wardens it was decided to forward a report to the City Council advising that tenders be called for the installation of the two pumps required for the high pressure salt-water system and for the supply of the valves required in connec-

tion with the laying of the salt-water mains. The pumps will have a capacity of 4,000,000 gallons per 24 hours, one to be operated by steam and the other by electricity.

Vernon, B.C.—A by-law will be submitted to the ratepayers for the purpose of authorizing the expenditure of $55,000 for the construction of a sewerage system.

Public Buildings

Toronto.—Plans have been prepared for the erection of a three-storey brick and stone addition to the post office on Adelaide street east. It will cost approximately $25,000.

Toronto.—The city has taken out a permit for the erection of a two-storey brick wagon house on Agnes street, near Terauley street, at a cost of $15,000. Wm. Forbes & Son have the contract for the work.

Toronto.—The contract for the construction of a magazine for the Militia Department has been awarded to Hugh C. Baker, jr., and Anders Jordahl, local contractors, at contract price of $3,500.

Toronto.—The Government offers to erect a modern life-saving station at the western entrance to the harbor and grant $500 annually towards its maintenance, providing the city will keep it in repair and maintain an efficient service in Toronto and vicinity.

Parry Sound, Ont.—The contract for the erection of the new registry office in connection with the new jail building at this place has been awarded to Mr. Wm. Beatty.

Kingston, Ont.—Architects Power & Son, Kingston, have submitted to the City Property Committee plans and estimates for the construction of a new dome on the city hall building.

Durham, Ont.—Tenders were recently opened for a new two-storey armory to be erected here. The structure will be 32 ft. by 35 ft., and will contain a drill room, a room for cadet corps, etc., and a large lecture room.

Whitby, Ont.—Tenders will be received by the undersigned up to 4 p.m., Sept. 22, for the construction of a public building at Whitby, Ont. Plans and specifications may be seen and forms of tender obtained at this Department, and at the post office, Whitby, Ont. Nap. Tessier, Secretary, Department of Public Works, Ottawa, Ont.

Guelph, Ont.—The Board of Directors of the Guelph Winter Fair have voted $10,000 towards the construction of the new fair building for which the Government has appropriated the sum of $20,000.

Stayner, Ont.—A by-law has been passed by the ratepayers, authorizing the expenditure of $5,000 for the erection of a town hall and market building.

Welland, Ont.—The contract for the erection of a new public building at this place has been awarded to Messrs. Nagle & Mills, Ingersoll, Ont., at a contract price of approximately $26,500.

Peterboro,—The contract for the installation of a heating system at the local Armory has been awarded to the Bennett & Wright Co., of Toronto, at contract price of $5,000.

Halifax, N.S.—Freeman Brothers have been awarded the contract for the completion of the exterior of the new city workshops at contract price of $4,500. It is estimated that the building complete will cost $30,000.

Halifax, N.S.—A permit has been issued for alterations to be made to the post office building at estimated cost of $100,000. M. E. Keefe Construction Company has the contract for the work.

Brandon, Man.—The Brandon Construction Company has been awarded the contract for the new Court House to be erected at the corner of Eleventh street and Princess avenue, at a cost of $100,000.

Winnipeg, Man.—J. H. Tremblay has been awarded the contract for the erection of an addition to the Carnegie Library, at a contract price of $28,000.

Calgary, Alta.—A site has been selected for the new Carnegie Library to be erected at a cost of $50,000. Plans will be advertised for in the near future. Work on the building may be commenced this fall.

Edmonton, Alta.—A proposition has been laid before the City Council for the erection of a market building at this place. A committee, composed of Ald. Bellamy, McInnes and Fraser, has been appointed to go into the question and report at a meeting in the near future.

Regina, Sask.—Peter Lyall & Sons, Montreal, general contractors for the Legislative Buildings, to be erected here, have sub-let the following contracts: Excavation, John Brodt & Co.; electric wiring, North-West Electric Co.; plastering and interior finish, May, Sharpe Construction; metal work and roofing, Hastings & Willoughby, all local firms.

Business Buildings

Toronto.—Dr. C. Cuthbertson, 502 Board of Trade Building, has taken out a permit for the erection of a four-storey brick store and office building, at 282-84 Yonge street, at cost of $20,000. Plans for the structure were prepared by Architect Brown, Board of Trade Building.

Toronto.—The World Newspaper Company has been granted a permit for the erection of a brick building on the south side of Richmond street, between Yonge and Bay streets, at a cost of $50,000.

Toronto.—W. Harland Smith and Geo. C. Taylor, corner King and Bathurst streets, have taken out a permit for the erection of a two-storey brick store and office building on the west side of Bay street, near Temperance street, at cost of $16,000. Plans for the building were prepared by Architect Wm. R. Gregg. H. M. Dancy has the general contract.

Toronto.—Mr. E. Shuttleworth, 125 Dundas street, West Toronto, has had plans prepared for a two-storey store and dwelling to be erected at the corner of Dundas street and Western avenue. The building will be of brick construction, with stone foundation, cement floor in basement, hardwood floors, composition roof, electric and gas lighting, open plumbing and hot water heating. Specifications include metal ceilings, galvanized iron cornice, and plate glass.

Toronto.—Messrs. C. L. Gray & Sons, 10 Geoffrey avenue, Toronto, will erect a three-storey, 64 by 88 ft., brick building at the corner of Bloor and Margueretta streets, to contain four stores, with dwellings above. The building will have a flat roof, hardwood floors, pine interior finish, open plumbing, electric and gas lighting, hot water or furnace heating, metal ceilings, plate glass and leaded glass.

Toronto.—Architect Leonard Foulds, 43 Victoria street, Toronto, has prepared plans for a newspaper plant to be erected in East Toronto for The Stanadrd Publishing Co. The building will be two stories and basement in height, 25 by 50 feet, of mill construction, with brick exterior walls, stone foundation, cement floor in basement and concrete foundation for presses, tar and gravel roof, electric lighting and hot water heating, metal ceilings, cornice, two skylights, metal lath and plate glass.

St. Catharines, Ont.—The contract for the new Whitman & Barnes building has been awarded to the Builders' Supply Company. A. E. Nicholson is the architect.

London, Ont.—The Westman Building, 121 Dundas street, has been destroyed by fire. The loss is estimated at $100,000, divided among the following concerns, viz.: Westman Hardware Co., loss, $50,000, insurance, $26,000; Darch & Hunter, flour and feed, loss, $25,000, insured; Morrison Shoe Co., loss, $5,000, insured; Cowan Hardware Co., loss, $7,000, insured; John Friend, confectioner, loss, $1,000, insured; Canada Packing Co., loss, $500, insured. The building was owned by P. Cronin and valued at $20,000. It will be rebuilt.

Fort William, Ont.—Mr. T. M. Piper will erect a solid brick restaurant building on Simpson street near the C. P. R. telegraph office.

Fort William, Ont.—The Carter, Halls, Allringer Company, Winnipeg, Man., have been awarded the contract for the new Culbertson block to be built here this year at an estimated cost of $100,000.

Galt, Ont.—Messrs. Hancock & Thomas have been awarded the contract for the mason work on a 44 by 100 ft. brick store and office building to be erected for Mr. J. C. Dietrich.

Montreal, Que.—E. Reeves, Beaubien & St. Ambroise street, has been granted a permit for the erection of three stores and dwellings at estimated cost of $18,000.

Montreal, Que.—Stanley Hall, opposite the Windsor Hotel, together with the plant of the Automobile Import Company, has been completely destroyed by fire. Loss approximately $25,000.

Quebec, Que.—A. Fackney has the contract for a building to be erected on Sauvageau street, for Mr. M. Campagne, at cost of $9,000.

Halifax, N. S.—Mr. John Lebrun's drygoods store at this place has been destroyed by fire, entailing a loss estimated at $25,000.

Calgary, Alta.—J. C. McNeil has been awarded the contract for a $14,000 business block to be erected on Eighth avenue for Messrs. G. T. C. Robinson and J. C. Sinton, of Calgary. The building will be two storeys in height, of brick construction, with stone foundation, galvanized iron roof, steam heating, electric lighting, open plumbing, and wood interior finish. Specifications include cement work, structural iron, fire escapes, plate glass and prismatic glass. Plans for the building were prepared by Architects Dowler & Michie.

Vancouver, B.C.—A permit has been issued for a three-storey business block to be erected at the corner of Homer street and the lane between Hastings and Cordova streets for Messrs. H. J. Cambie and S. O. Richards. The building will be of mill construction and will cost $21,000. Dalton & Everleigh are architects.

Banks

Sawyerville, Que.—The Bank of Montreal will erect a branch establishment at this place.

Fernie, B.C.—The Bank of Hamilton has purchased from A. C. Liphart & Co., a lot at the corner of Cox street and Victoria avenue, on which they will erect a new bank building.

Railway Construction

West Toronto, Ont.—The Intersuburban Electric Railway Company of West Toronto, has been granted a charter; capital, $400,000. The directors are E. S. Edmondson, Fred. Grundy, A. N. Eprine, M. McDonald, Charles H. Porter, G. D. Lewis, of Toronto, and George T. Turnbull of Seaforth. The Company has authority to operate a steam or electric railway, to manufacture and sell electricity, as well as water power.

Britarnia, Ont.—The Ottawa Electric Railway Company will erect a new brick station building at this place to replace the one recently destroyed by fire.

Chatham, Ont.—It is reported that the P. M. R. and G. T. R. Companies contemplating the erection of a depot at this place.

Weston, Ont.—The Grand Trunk Railway station at this place has been destroyed by fire. The company will rebuild at once.

Welland, Ont.—The Michigan Central Railway will erect a new station at Welland in the near future.

Quebec.—The Ha-Ha Bay Railway Company, recently incorporated, will, in the near future, let contracts for the construction of a railway line between Jonquieres and Bagotville, on the Saguenay River. The line will be about 20 miles in length, but it is the intention of the company to extend to St. Catharines Bay, to join the Quebec & Saguenay Railway.

Prince Rupert.—Messrs. Dixon & Moore have been awarded the contract for building a twelve-mile section of the Alberni branch of the E. & N. Railway, the section extending from a point twelve miles beyond Wellington, to the twenty-four mile post. Contract price about $100,000.

Calgary, Alta.—At a meeting of the street railway committee, a proposal was made by the Montreal Engineering Company, Limited, Montreal, Que., regarding the proposed electric railway system for the city of Calgary. The proposal will be submitted to the Board for consideration.

Edmonton, Alta.—Contracts have been awarded as follows for a new electric railway line between Edmonton and Strath-

cona, viz: Mr. J. A. Bagley, contract for grading the right of way from Ninth street to the bridge; Mr. Oscar Barnstead, contract for poles; The Westinghouse Company, contract for the generator; Messrs. Gorman, Clancey & Grindley, Edmonton, contract for rails, copper wire, bolts, etc.

Winnipeg, Man.—The National Transcontinental Railway has purchased a tract of land comprising 309 acres, adjoining the present Elmwood limit, as a site for their yards, and new shops.

Minnedosa, Man.—The C. P. R. roundhouse at this place has been badly damaged by fire. The structure will be rebuilt.

Clubs and Societies

Toronto.—The Canadian Order of Foresters have purchased the Ardagh estate on College street, with frontage of 65 ft., on which they propose to erect a new temple to cost approximately $65,000. The following is a list of the directors: J. N. McKendry, R. L. Baker, W. W. Miles, T. W. Gibson, A. E. Wright and R. G. Hinde.

Toronto.—The Parkdale Canoe Club, Sunnyside, has taken out a permit for the erection of a two-storey frame building at Sunnyside Beach, Lakeshore road, at cost of $12,000. Plans for the structure were prepared by architects Chadwick & Beckett.

Windsor, Ont.—The Rushmore club at St. Clair Flats has been destroyed by fire, entailing a loss of $75,000.

London, Ont.—It is proposed to purchase the adjoining property on either side of the present Y. M. C. A., for the construction of an exclusive junior department. Mr. Mel. Brock can be addressed.

Winnipeg, Man.—The Cartor, Hall, Aldinger Co., Ltd., Union Bank building, have been awarded the contract for the erection of the Y. M. C. A. building. It will be five storeys in height, 80 x 100 ft., of brick, stone and concrete construction and will cost $35,000. Herbert E. Rugh, 927 Union Bank building, is the architect.

Portage La Prairie, Man.—The Independent Order of Oddfellows will, this fall, erect a new temple, at cost of from $100,000 to $150,000.

Fernie, B.C.—Plans are being prepared for a new building to be erected for the Fernie Club.

Opera Houses and Rinks

Toronto.—Messrs. Lambert & Sons, architects, Rochester, N.Y., are preparing plans and specifications for the new Shea's theatre to be erected on the south-east corner of Richmond and Victoria streets, Toronto. It is estimated that the building will cost over $200,000.

Toronto.—Plans have been prepared for a vaudeville theatre to be erected on Yonge street, north of Bloor street. It will have a seating capacity of 1,000.

Brantford, Ont.—A building permit has been granted to Mr. Frank Jonson for the erection of the opera house to contain four stores on the ground floor, at a cost of $7,500.

Winnipeg, Man.—Plans have been completed by architects A. & W. Nelville, for a three-storey brick opera house to be erected at the corner of Jarvis and Main streets, for Wm. J. Gillman of New York. The building will be 56 x 120 ft., with seating capacity of 1,200, and will cost $80,000.

Winnipeg, Man.—Architects Wilson & Herraid have completed plans for the remodelling of the Winnipeg theatre. The work involves the complete alteration of the interior of the building.

Vancouver, B.C.—The Vancouver Horse Show Association proposes to erect a large auditorium in the near future. The building will have a frontage of 131 feet on Gilford street, with depth of 264 feet on Georgia street, and will accommodate 20,000. Plans of the building may be seen at the office of the association, on Seymour street. The provisional directors are Messrs. H. W. Kent, J. A. Russell, W. S. Holland, D. Thos. Tees, and C. R. Gilbert, Secretary-Treasurer.

Nelson, B.C.—The Nelson Opera House, leased by Messrs. Willis & Cosgrove, Calgary, Alta., is to be remodelled throughout, including repainting and decorating, remodelling of balcony. New opera chairs will be installed. Mr. George Horstead is manager.

Asylums and Hospitals

Toronto.—A site, bounded by Elizabeth, College and Christopher streets and University avenue has been purchased, on which to erect the new General Hospital. Architects, Darling & Pearson are preparing plans for the building, which, it is estimated, will cost $1,000,000.

Hamilton, Ont.—A by-law will be submitted to the rate-payers for the purpose of authorizing the expenditure of the sum of $20,000, for the purchase of a site and the erection of a home for consumptives. It is proposed to erect the building on the Sanitorium grounds at the summit of the mountain.

London, Ont.—Contracts have been awarded as follows for the erection of the new laundry in connection with the Victoria Hospital, viz.: Masonry, Geo. Everett, London, $2,770; carpentry, J. Grayson, $1,950; roofing, W. H. Roughley, $228; plumbing, Noble & Rich, $175; painting and glazing, I. Quick, $195.

Berlin, Ont.—The Berlin Orphanage Board has decided to erect a large addition and make several improvements to the present building.

Berlin, Ont.—The Board of Health has instructed the Town Clerk to communicate with Secretary Hodgetts of the Provincial Board of Health in reference to plans for the new Isolation hospital, which it is proposed to erect at this place.

Peterboro, Ont.—R. J. G. Sutherland, has been awarded the contract for the installation of a hot water heating system in the Children's Shelter on the old Hilliard property.

St. Sauveur, Que.—B. Vaillancourt, Sauvageau street, Quebec, has been awarded the contract for painting and glazing of the St. Sauveur Orphanage, at St. Sauveur, a suburb of Quebec, at contract price of $2,000. The building is to be completed by May 1, 1909. Ouellet & Levesque, 115 St. John street, Quebec, Que., are the architects.

Tranquille, B.C.—The contract for the erection of the sanitarium for consumptives at this place has been awarded by the executive of the British Columbia Anti-Tuberculosis Society, to Mr. William O'Dell, of Vancouver, at contract price of $65,000. It is estimated that the building, complete with plumbing, heating and furnishings, will cost in the neighborhood of $100,000.

Schools and Colleges

Toronto.—The Board of Education has decided to erect a new High School in the north-west part of the city. The structure will be built next year. It is also proposed to erect a five-room addition to the Clinton street school.

Toronto.—The Royal College of Dental Surgeons have taken out a permit for the erection of a three-storey brick college building, having terra cotta flat arch floor construction, to be erected at the north-east corner of College and Huron streets, at cost of $100,000. Architects, Burke, Horwood & White prepared the plans for the building. The general contract has been let Savidge & Lunn, 682 Bathurst street.

Toronto.—The Board of Control has decided to make an additional grant of $320,000 to the $280,000 already voted, for the purchase of a site and the erection of the new Technical School. It is proposed to purchase the Borden street school site, and the additional land close to Herrick street.

Toronto.—The Board of Education has taken out a permit for alterations to be made to Perth ave. school, at cost of $25,000. Architect, C. H. Bishop. Builders, Lucas & Son. A permit for alterations to Leslie street school, near Sproatt street, to be made at cost of $24,000, has also been granted. H. McLeod has the contract for the work.

Toronto.—Superintendent Bishop's reports on additions to the Girls' Home, Queen Alexandra, Morse and Huron street schools have been approved, and tenders will be called for in the near future.

Ottawa, Ont.—The Building Committee of the Separate School Board has recommended that the tender of Messrs. Pepin & Caron, Gatineau Point, at $16,500, be accepted for the erection of the proposed four class room addition to the Catholic Lyceum.

Orillia, Ont.—At a recent meeting of the town council a by-law was passed authorizing the issue of debentures to the amount of $10,000 for building an addition to the collegiate institute.

Kemptville, Ont.—The town council has passed a by-law authorizing the payment of $6,000 to the Board of Education for permanent improvements to the High and Public School buildings at this place.

Weston, Ont.—Plans have been completed for the St. Alban's Cathedral school to be erected at this place.

Ingersoll, Ont.—Bulk and separate tenders will be received up to noon, Sept. 21, for the several trades required in the erection and completion of a four-room public school building at Ingersoll, Ont. Plans and specifications may be seen at the Secretary's office, Ingersoll, or at the office of Taylor & Taylor, architects, Brantford, Ont. Dr. W. A. Sudworth, Secretary of Board of Education.

St. Thomas, Ont.—A by-law has been passed by the city council authorizing the expenditure of $10,000 for the erection of a new school building.

London, Ont.—The Educational Department is contemplating the erection of a public school building in connection with the Normal school at this place.

Dundas, Ont.—Tenders were recently opened for the erection of a High School building at this place. Plans and specifications were prepared by architect James W. Keagey. Thomas Reid is Chairman Building Committee.

Halifax, N.S.—Tenders were to be received up to Sept. 14, for the erection of a new brick or concrete school building on Chebucto road. Plans and specifications for the structure were prepared by Architect W. J. Busch, 60 Bedford Row. R. J. Wilson, Secretary, School Commissioner's Office, Halifax, N.S.

Halifax, N.S.—Messrs. W. T. Harris & Son have been awarded the contract for the erection of the new Oxford street school. The building will be of frame construction.

St. John, N.B.—The Board of School Trustees has awarded to R. A. Corbett the contract for the annex to the Winter street school, at contract price of $35,868. The sub-contracts amount to $13,318. The building will be of fireproof construction.

Montreal, Que.—The McGill University has taken out a permit for the erection of a four-storey library building, to cost $150,000; specifications call for front of Montreal Lime Stone, tile roofing, stone cornice, iron staircase for access to roof, hot water heating, and terra cotta tile to deaden floors; also permit for the erection of a Medical building, to cost $175,000, same specifications as above, with concrete foundations. Architects, Brown & Vallance, Canada Life Building, Montreal. Contractors, P. Lyall & Co., Board of Trade Building, Montreal, Que.

Montreal, Que.—Mr. Jos. Bourque, Hull, Que., has been awarded the contract for the erection of a new high school building in this city, at estimated cost of $390,000.

Winnipeg, Man.—The Winnipeg School Board has taken out a permit for the erection of a school building on Selkirk ave., at an estimated cost of $63,300.

Winnipeg, Man.—Cotter Bros. have been awarded the contract for heating and ventilating the Mulvey school, to cost $11,963.

Winnipeg, Man.—The School Board has awarded to Messrs. Ross Bros., Brown and Barker the contract for the erection of the King Edward School, in the Weston district at a contract price of $63,000.

Vancouver, B.C.—Messrs. Baynes & Horrie have been awarded the contract for the erection of the Kitsalano school. It will be of brick construction and cost $10,700.

Vancouver, B.C.—Contractor John M. McLuckie has taken out a permit for the erection of the Provincial Normal School on Fairview ave., at an estimated cost of $80,000.

Vancouver, B.C.—Messrs. T. R. Nickson & Company have been awarded the contraction for the erection of the Grand-

view and Macdonald schools. The building will be of brick construction and each will cost $12,600.

Moose Jaw, Sask.—The School Board has awarded to Messrs. Navin Bros. the contract for the construction of the Collegiate Institute, at contract price of $93,713. The contract for the heating plant will be awarded at the next meeting of the Board. The building is to be completed by Nov. 1, 1909.

Aberdeen, Sask.—Architect W. W. LaChance, Saskatoon, Sask., has prepared plans for a school building to be erected at this place. The building will be two storeys in height, of frame construction, with concrete foundation, shingle roof, fir interior finish, hot air heating, and will cost $4,000.

Regina, Sask.—Tenders will be received by the undersigned up to 7 p.m., Sept. 17, for single adjustable school desks and teachers' desks and chairs, for an eight-room school building. J. A. McLachlan, Secretary-Treasurer, Regina Public Schools, Regina, Sask.

Churches

Toronto.—The Davenport Road Presbyterian church will erect a new edifice to cost $25,000.

Toronto.—The congregation of the east Queen street Presbyterian church has decided to erect a new edifice.

Toronto.—St. Clarent's Mission has purchased a lot, 125 x 150 feet, on which they will at once erect a church and parsonage.

Toronto.—St. Michael's Palace will be remodelled at an estimated cost of $25,000. The present walls will be retained, but the interior will be materially altered. Rev. Father Whalen has been entrusted with the supervision of the work.

Toronto.—Architect E. R. Babington, 28 Toronto street, is preparing plans for a church building to be erected at Kalmy Beach, for the congregation of the Episcopal church. The building will be of the Gothic style of architecture, of brick and stone construction, with hardwood floors, hardwood interior finish, hot water heating and plumbing. Specifications include art glass windows. Estimated cost of building, $16,000.

Eglinton, Ont.—Contracts have been awarded for a church and Sunday school building to be erected at Eglinton, a suburb of Toronto, for the Presbyterian congregation, viz.: Masonry, Messrs. Thiele & Son; carpentry, Mr. Webster. The building will be one storey in height, 65 x 35 ft., of brick construction, with cement foundation, slate roof, pine floors, plumbing and furnace heating. W. R. Gregg, 20 King street west, Toronto, is the architect.

Kingston, Ont.—The contract for painting and decorating St. Paul's Anglican church has been awarded to the Thornton-Smith Company, 11 King street west, Toronto.

Hespeler, Ont.—Bulk and separate tenders will be received by the undersigned up to noon, Sept. 19, for the several trades required in the erection and completion of a proposed church building for the Presbyterian congregation at Hespeler. Plans and specifications may be seen at the office of the undersigned, The R. Forbes Co., Limited, Hespeler, or at the office of Taylor & Taylor, architects, Brantford, Ont. L. E. Weaver is Secretary of the Building Committee.

Auburn, Ont.—The contract for the new Baptist church to be erected here has been awarded to Mr. L. Hill, of Blyth, Ont.

Uxbridge, Ont.—Architect Chas. F. Wagner, 15 Toronto street, Toronto, has prepared plans for a $3,000 church building, to be erected at Uxbridge, Ont. The building will have foundation of concrete block to window sill, and will be equipped with a furnace. Rev. O. C. Grey is the pastor.

Montreal, Que.—The congregation of Our Lady of Lourdes propose to erect a new church building in the near future.

Montreal, Que.—The Salvation Army have taken out a permit for the erection of a new hall on Bourgeois street, at cost of $7,000. The building will be 70 feet deep, with frontage of 31 feet.

Brownsburg, Que.—The Presbyterian congregation propose to erect a new church building.

Ste. Luce, Que.—Architects Ouellet & Levesque, 115 St. John street, Quebec, Que., have prepared plans for general repairs to the Roman Catholic church at this place. The work consists of repairs to stone walls, shingle roof, general painting, and alterations to the entrance of the building.

Annapolis, N.S.—St. Luke's congregation at this place propose erecting a new church building.

Winnipeg, Man.—The contract for the erection of the new church building for the St. Matthew's Anglican congregation has been awarded to Messrs. Pattinson & Black. It is estimated that the building will cost $11,000, exclusive of furnishings. It will be of brick and stone construction. Architect Herbert Matthews prepared the plans for the structure.

Vancouver, B.C.—The contract for enlargement of Christ church has been awarded to E. Cook. It is estimated that the alterations will cost over $20,000.

Vancouver, B.C.—The congregation of the Sixth Avenue Methodist church has purchased a site on the south-east corner of Sixth avenue and Vine street, on which they will erect a new edifice. Plans for the building are being prepared, and it is estimated that the structure will cost $50,000.

Residences and Flats

Toronto.—Architects Simpson & Young have awarded the following contracts on an $8,000 brick and stone residence to be erected at the corner of Markham and Ulster streets, for Mr. R. I. Henderson. Carpenter work, W. Ainsley; brick work, cut stone and concrete work, Arthur W. Strickland & Son. The building will have slate roof, hardwood interior finish, electric and gas lighting, mantels and tile work.

Hamilton, Ont.—M. Webb has taken out a permit for the erection of six brick houses on McNeil street, between Queen and Hess streets, at cost of $12,000.

Toronto.—Architect E. G. Wilson has prepared plans for a two-storey brick residence to be seected on Geoffrey st., near Roncesvalles avenue, for Mr. J. S. Case, 148 Close avenue. The building will have slate roof, hardwood and pine interior finish, hot water heating, mantels, and will cost $3,500.

Toronto.—Architect J. H. Galloway has prepared plans for a pair of semi-detached dwellings to be erected on Beverley street, near Cecil street, for Mr. D. Lavine. The buildings will be of brick construction, with stone trimming, brick foundation, slate roof, electric and gas lighting, mantels, open plumbing, hot water heating, and will cost $7,500.

Toronto.—Architects Burke, Howard & White have completed plans for a large three-storey apartment house to be erected at the corner of Glen Road, overlooking Rosedale ravine.

Toronto.—J. H. Galloway has purchased a lot at the corner of Caroline avenue and Rosehill, on which he will erect a $7,000 residence.

Toronto.—Messrs. Love Bros. Ltd., 1,000 Gerrard street east, has been granted a permit for the erection of three pairs of two-storey semi-detached brick dwellings at 62-72 Wolfrey avenue, near Broadview avenue, at cost of $15,000. Architect P. H. Finney; builder, owner.

Toronto.—Architect E. G. Wilson, 77 Victoria street, Toronto, has prepared plans for a two-storey residence to be erected on Geoffrey street, near R. W. Fletcher & Co., 93 Pearson avenue, at cost of $3,500. The building will have shingle roof, hardwood and pine interior finish, open plumbing, electric lighting, hot air heating, hardwood floors, mantels. The building will be erected by the owner.

Toronto.—R. A. Graydon, 18 Toronto street, has been granted a permit for the erection of a two and one-half storey brick and stone dwelling on St. George street, near Bernard avenue, at cost of $12,000. Plans for the structure were prepared by architects Edwards & Saunders.

Toronto.—W. W. Hiltz, Toronto, has been awarded the general contract for a two-storey brick residence to be erected on the west side of Broadview avenue, near Hogarth avenue, for Mr. O. Warnough; cost $4,000. The building will have shingle roof, pine floors, hardwood and pine interior finish, electric and gas lighting, open plumbing and hot water heating. Architect E. G. Wilson prepared the plans for the structure.

Toronto.—Mr. Jacob Singer, 133 Queen street east, will erect a $30,000 apartment building on Queen's Park avenue, near Queen street. The building will be a four-storey structure, 68 x 70 ft., and will contain four apartments on each floor. It will be of brick and stone construction, with composition and slate or tile roof. All rooms will be finished in hardwood, with the exception of the bath-rooms, which will be finished in tile and hard plaster, the latter material also being used in the kitchens. The building will be provided with steam heating, open plumbing, mantels, and tile work. The entrances will be finished in enamelled brick. A private telephone system, connecting the different apartments with the main entrance, will be installed, as will electric door openers, to be operated from each flat.

Toronto.—Mrs. E. B. Williams, 323 Church street, has been granted a permit for the erection of a two-storey and attic brick dwelling and stable on Avenue road, near St. Clair avenue, at cost of $16,000. Architect, Geo. Curry, Builder, Mr. Hughes.

Toronto.—Architect E. R. Babington, 28 Toronto street, has prepared plans for a pair of semi-detached brick dwellings to be built on Parliament street, near Wellesley street, for Mr. R. F. Paterson, at cost of $4,500. The building will be two and a half storeys in height, and will have shingle roof, hardwood floors, pine interior finish, mantels, open plumbing, hot air heating, and electric and gas lighting. The contract for the work has been let to Mr. Leeder.

Toronto.—A. B. Coleman, 191 Dowling avenue, has been granted a permit for the erection of a two-storey and basement brick apartment house on Nanton Crescent, near Dale avenue., at cost of $35,000. C. J. Gibson, James Building, is the architect.

Toronto.—C. L. Warren, 95 Wellesley street, has been granted a permit for alterations to two-storey and attic brick dwelling at 95 Wellesley street, near Jarvis, at cost of $12,000. Architects, Symons & Rae; builders, Hultby Bros.

Toronto.—C. W. Chadwick, 6 Temperance street, Toronto, has taken out a permit for the erection of three pairs of two-storey semi-detached brick dwellings on the north side of Empress Crescent, near Dunn avenue, at cost of $12,000. Architect, J. H. Galloway. Builder, owner.

New Hamburg, Ont.—Mr. Theo. Franke has purchased a lot on Jacob street, on which he will erect a residence this fall.

Collingwood, Ont.—Dr. J. H. Irwin has awarded contracts as follows for the erection of a brick dwelling on Third street. Brick work, R. Patterson; carpentry, J. Peterman. Estimated cost of building, $10,000.

St. Thomas, Ont.—Mrs. J. Dorricott, has taken out a permit for the erection of a dwelling to cost $7,000.

Weston, Ont.—Architects Ellis & Connery, Manning Chambers, Toronto, have prepared plans for a two-storey and attic brick residence to be erected at this place for Mr. Lemaire. The building will have shingle roof, hardwood interior finish, open plumbing, and hot water heating. Construction work will be done by daywork, under supervision of owner.

Montreal, Que.—A. H. Fisk, Sovereign Bank Building, St. James street, has taken out a permit for the erection of a brick and stone residence to cost $10,000. The building will have concrete foundations and hot water heating. Architects, Saxe & Archibald, Beaver Hall Hill.

Montreal, Que.—A. Mackay, Dorchester street west, has taken out a permit for the erection of three houses of three dwellings each, at cost of $12,000.

Montreal, Que.—J. Pepin, 1278 Ontario street, east, has been granted a permit for the erection of seven houses of three dwellings each, at cost of $20,000. J. A. Riopelle, 3 ave. de l'Eglise, has been granted a permit for the erection

of two houses of three dwellings each at cost of $11,000. L. Dejoise, 371 St. Denis street, has taken out a permit for the erection of a dwelling, to cost $8,000.

Winnipeg, Man.—S. H. Foster, Sherbrooke street, has been granted a permit for the erection of a dwelling to cost $8,000.

Winnipeg, Man.—Architect Paul M. Clemens, 224 Notre Dame avenue, has prepared plans for an apartment building to be erected on Cumberland avenue for Mr. George Stirrett, cor. Maryland street and Portage avenue. The building will be of brick construction, with stone foundation, steam heating, electric lighting, hardwood interior finish, mantels, plate glass and art glass. Estimated cost of building, $35,000.

Vancouver, B.C.—H. E. Almond, Vancouver, has taken out a permit for the erection of two frame dwellings on Comox street, Vancouver, at cost of $7,000. A permit has also been granted to J. Walker for the erection of an apartment house on Seymour St., at cost of $7,500.

Vancouver, B.C.—Mr. T. Edwards, will erect a residence on Westminster ave., at a cost of $12,000.

Calgary, Alta.—Architects Dowler & Michie, Calgary, have prepared plans for a two-storey brick dwelling to be erected for Mr. Spence, manager of the Great West Permanent Loan Co. The building will have stone foundation, shingle roof, hot air heating, electric lighting, open plumbing, and fir interior finish, and plate glass and art glass.

Saskatoon, Sask.—Architect W. W. LaChance has prepared plans for a two-stone foundation, shingle roof, fir interJudge McLorge. The building will have stone foundation, shingle roof, fir interior finish, electric lighting, steam heating, plumbing, and will cost $4,500. Specifications include: cement work, mantels, ornamental columns or caps, plate glass and art glass.

Saskatoon, Sask.—Architect W. W. LaChance, Saskatoon, will receive tenders up to Sept. 15, for a two-storey brick and concrete apartment house to be erected for Mr. David Crowe. The building will have concrete foundation, galvanized iron roof, fir interior finish, electric lighting, steam heating and plumbing. Specifications include: cement work, metalic lath, structural iron, fire escapes, sheet metal work and plate glass. Estimated cost of building, $20,000.

Saskatoon, Sask.—Architect W. W. LaChance, Saskatoon, has prepared plans for a two-storey brick residence to be erected for Mr. G. R. Finning. The building will have stone foundation, shingle roof, fir interior finish, electric lighting, hot air heating, plumbing, and will cost $3,500. Specifications include: cement work, cut stone, mantels, ornamental columns or caps, plastic relief work and plate glass.

Hotels

Kingston, Ont.—Mr. Henderson and Dr. Dupuis, hotel promoters, Chicago, are negotiating with the City Council for a site upon which to erect a large hotel building.

Sackville, N.B.—Mr. A. W. Dixon has decided to erect a new hotel building on the site of the Intercolonial hotel, which was recently destroyed by fire.

Vancouver, B.C.—Mr. P. Larsen, of North Vancouver, has commissioned Architect John S. Pearce, to prepare plans for a $30,000 hotel to be erected at the Capilano. It is expected that the hotel will be ready for next season's business.

Fort Francis, Ont.—The Provincial Government will erect a $12,000 jail building at this place.

Hamilton, Ont.—The Markets Committee has decided to have an estimate prepared of the cost of enlarging the jail building to accommodate forty more prisoners. A proposition is also before the Committee for the erection of a new jail to replace the present structure.

Montreal.—At a meeting of the City Council, it was decided to purchase a site on St. Lawrence st. north, on which to erect a new fire station.

Winnipeg, Man.—A permit has been issued for extensive repairs to Fire Hall No. 2, at the corner of Smith and York streets. The work will cost $12,000.

Winnipeg, Man.—The City Council is considering the erection of a police station in the north end, and the installation of a patrol system. The system complete it is estimated will cost $250,000, but the present requirements will call for an expenditure of only about $60,000.

Lethbridge, Alta.—The City Council has awarded the contract for the erection of the new fire hall, to Messrs. Smith Bros. & Wilson, at contract price of $30,225. The Hick Hardware Co. were given the contract for the heating and plumbing at $3,975.

Vancouver, B.C.—At a meeting of the Fire and Police Committee it was decided to call for competitive plans for the erection of fire halls on Fairview and Grandview avenues.

Civic Improvements

Toronto.—City Engineer Rust has recommended the construction of pavements as follows on the various streets throughout the city, viz: Brick pavements, Brown's avenue, from Paton road to south end; Brock avenue, from Middleton street to Dundas street, $11,548; Spadina road, from Dupont to north city limit, $1,196; Huron street, from Dupont to north city limit, $1,199. Bitulithic pavements, Clarendon avenue, from Poplar Plains road to Russell Hill road, $8,720; Lynde avenue, from College to Neepawa, $3,824. Vitrified block pavements, Van Horne street, from Dovercourt road to Bartlett, $8,562; Commercial street, from Jarvis to Francis, $903; Britain street, from George to Sherbourne street, $5,725; St. Patrick street, from Denison to near Hickory street, $1,184; Spadina avenue, from Adelaide to Queen street, $16,325. Asphalt pavements, Lapin avenue, from Dufferin to Lansdowne, $12,587; King street, from Berkeley street to Queen street, $26,402; Parliament street, from Queen street to Gerrard street, $20,593; Queen street, from G. T. R. tracks to Greenwood's avenue, $49,130; Wolfrey avenue, from Broadview to Bowden, $5,764; St. Paul street, from King to Queen streets, $2,876; Booth avenue, from Queen street to Eastern avenue, $4,852; Dovercourt road, from Dundas street to Churchill, $4,103; Melbourne avenue, from Dufferin to Cowan, $5,672; Gloucester street, from Yonge to Church street, $5,353; Jones avenue, from Gerrard street to the tracks, $6,129; Triller avenue, from King to Queen streets, $3,645; Ontario place, from Ontario street to West End, $1,790.

Toronto.—The Board of Control has accepted the following tenders for the laying of new water mains: 16-inch main, Dufferin street to west city limit, $5,143.25, J. H. McKnight & Co.; 20-inch main, St. George street to Dufferin street, $13,990.60, John Maguire; 20-inch main from Bathurst street to Earnbridge street, $10,662.30, A. W. Godson & Co.; 20-inch main, Earnbridge street to Roncesvalles avenue, $7,137.20, A. W. Godson & Co.

Toronto.—Tenders will be received by the undersigned, by registered post only, up to noon, Sept. 22, for the construction of asphalt pavements, bitulithic pavements, vitrified block pavements, brick pavement, concrete pavement, concrete curbing, concrete walks, and sewers on various streets throughout the city of Toronto, as per specifications on file at the office of the city Engineer.

Dundas, Ont.—The Board of Works has recommended the laying of cement sidewalks on a large number of streets throughout the town.

Walkerville, Ont.—The Board of Works has awarded to Thomas Chick, Windsor, the contract for the laying of concrete pavement on Assumption street.

Petrolia, Ont.—The Town Council has awarded to the Ontario Paving and Construction Company, of Sarnia, the contract for paving Front street.

Hamilton, Ont.—A by-law will be submitted to the ratepayers of Hamilton for the purpose of authorizing the expenditure of $300,000 for permanent roadways and repairs in this city. It is intended to use $125,000 of the amount this year.

Brantford, Ont.—The Brantford City Council has decided to proceed with the proposed paving operations, entailing an outlay of $150,000, but has not, as yet, decided what character of pavement shall be laid.

Quebec, Que.—Ald. Lemay has been commissioned to prepare plans for the technical school to be erected by the city of Quebec on the General Hospital property in St. Sauveur. The building will cost $100,000.

Hull, Que.—The Ottawa Construction Company, owned mainly by Messrs. Gleeson & Foley, has secured the work of paving Hull streets at a contract price $50,000.

Halifax, N.S.—The Finance Committee has passed a resolution recommending the council to borrow the sum of $10,000 for the construction of sidewalks, and $30,000 for new sewers.

Winnipeg, Man.—The City Council has decided to construct plank walks, cedar block pavement, macadam pavements, asphalt pavements, granolithic walks and sewers on various streets throughout the city.

Victoria, B.C.—Separate tenders will be received by the Hon. Chief Commissioner of Lands and Works up to and including Sept. 21, for the construction and completion of sections 1,6, 7 and 8, each section being about two miles in length, of the Vancouver Island Trunk Road. Plans, specifications, and forms of tender may be seen at the office of the undersigned, and at the office of the Government Agent, Duncan, B.C. F. C. Gamble, Public Works Engineer, Lands and Works Department, Victoria, B.C.

Pincher Creek, Alta.—A by-law has been passed authorizing the issue of debentures to the extent of $20,000 for local improvements.

Miscellaneous

Toronto.—The following companies have received Provincial charters: The Lorne Power Co., Limited, with head office at Victoria Mines, Algoma District, capital, $300,000; the Last Chance Mining Co., Limited, head office Toronto, capital, $40,000; the St. Clair Oil Co., Limited, head office Toronto, capital, $100,000; the London and Western Counties Pipe Line Co., Limited, head office London, capital $1,000,000; Canadian Behrend Dry Concentrator Co., Limited, head office Ottawa, capital, $1,000,000; the New Dundee Rural Telephone Co., Limited, head office New Dundee, Waterloo County, capital, $10,000.

Toronto.—Charters have been granted to the following companies in Ontario: The Toronto-Brazilian Diamond and Gold Dredging Company, Limited, capital, $1,000,000, head office Toronto; Ontario Brass Rolling Mills, Limited, capital, $200,000, head office Toronto; Electrical Fittings Company, Limited, capital $40,000, head office Toronto; Morlock & Cline, Limited, capital $150,000, head office, Guelph; Ontario Silica Co., Limited, Windsor, $100,000; the C. R. Willmott Co., Limited, Milton, agricultural implements, etc., $200,000; Grey's Siding Development Co., Limited, Toronto, $100,000; The Canadian Lead Mining and Smelting Co., Limited, Kingston, $400,000; The Oxford Oil and Glass Co., Limited, Brantford, $250,000; The Renfrew Knitting Co., Limited, Renfrew, $50,000; The Montreal River Development Co., Limited, North Bay, $40,000; The Halton Oil and Glass Co., Limited, Milton, $40,000.

Ottawa, Ont.—The Dominion Express Company has been granted a permit for the erection of stables on Albert street at cost of $35,000.

Sayabec, Que.—The Grand Central Hotel and the Hotel Sayabec, at this place, have been destroyed by fire.

Gore Bay, Ont.—The principal losses sustained in the recent fire at Gore Bay, Ont., are as follows: John Mutchmore, general store, loss $25,000, insurance $10,000; James Fisher, harness shop and building, loss $15,000, partly insured.

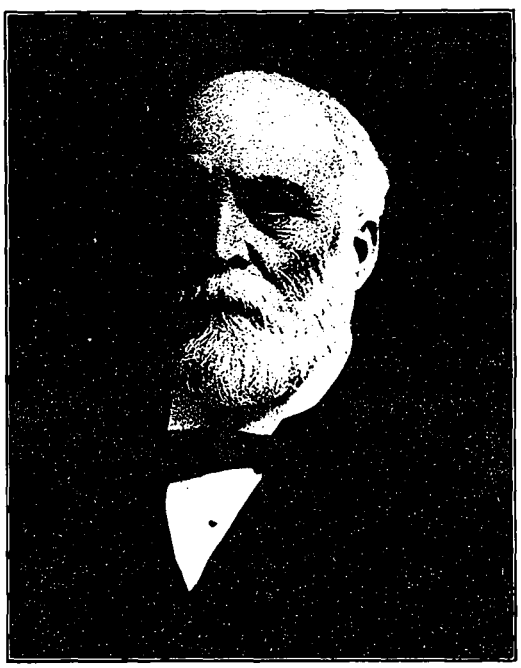
Stirling, Ont.—The principal losses in the recent fire at Sterling, Ont.: Bank of Montreal, loss $9,000, partly insured; F. T. Ward, loss on stock and fixtures between $14,000 and $15,000; on double store, $5,000, insurance on stock and store $6,700; James Ralph, loss on buildings, stock and household effects, $9,000. Insurance $3,500; C. F. Stickle, loss on building, $3,500, insurance $2,500; Dr. Zwick, loss on buildings about $5,000.

Calgary, Alta.—The ratepayers of Calgary have voted the sum of $110,000 for the construction of sewers and $20,000 for the erection of a library building at this place.

THE LATE MR. JOHN FENSOM.—One of Canada's Industrial Pioneers.

THE death of John Fensom, which recently occurred after a brief illness at the family residence, 540 Sherbourne street, Toronto, marks the passing away of the pioneer of the elevator business in Canada and one of the most conspicuous figures in the industrial circles of the Dominion for many years. During his extended career along the lines of useful endeavor and accomplishment, Mr. Fensom was closely identified with the progress of the country and he won for himself an enviable position among the nation's manufacturers.

Mr. Fensom was born in England nearly eighty years ago. Early in his life his family migrated to America,



THE LATE MR. JOHN FENSOM,
FOUNDER OF FENSOM ELEVATOR WORKS.

where they located in Providence, Rhode Island, afterwards going to Pawtucket and then to Massachusetts, where he learned the machinist trade. Subsequently the family came to Canada and established the Fensom Mills in Grey county. Later Mr. Fensom located in Toronto, at which place he married in 1854. Afterward he engaged in saw-mill building and general machine work at Collingwood, but, meeting with reverses from fire, he returned to Toronto, where, by dint of energetic application, he built up a large machine manufacturing business known as the Central Iron Works, which specialize in cotton mills and factory equipment.

About thirty-five years ago he took up the manufacture of elevators and founded the Fensom Elevator Works, continuing actively in the business until about three years ago, when the company was amalgamated with the Otis Elevator Company, under the name of the Otis-Fensom Company.

Mr. Fensom was one of the early manufacturers who interested themselves in Canadian Industrial Exhibition, and to whose efforts much of its success to-day is due.

CANADA'S PROJECTED INLAND WATERWAY IMPROVEMENT.—The Routes Proposed and Their Relative Importance to the Nation's Commerce.

THE PROPOSAL of the Canadian Government to construct a new 25-foot Welland Canal at a cost of $25,000,000 to $30,000,000, we understand, meets with strong indorsement in the Kingston district, at which port the new canal would effect a vast increase in transshipping. With the larger locks and the deeper channel of the new canal many of the large vessels on the upper lakes which now tranship at Buffalo would come on through to the foot of the lakes at Kingston. The draft of these vessels would be too great to permit them going down the St. Lawrence to Montreal, so that most of them would tranship at Kingston, the end of the lakes. With this increase to its local trade, the expansion would be marked and Kingston would soon resume its place as one of the commercial centres of Canada, for which it was selected by Frontenac when he first landed in 1632.

The present Welland Canal will not allow a steamer to carry more than 60,000 to 75,000 bushels of wheat, the result being that the steamers going through the Welland Canal now are only about one-fifth the size of the big steamers that carry grain to Buffalo from the West and North-West.

It taken about seven days to make the trip from Chicago and Fort William to Buffalo and return, exclusive of the time taken to discharge the cargo. Twenty-four hours longer would take this steamer from the foot of Lake Erie to Kingston via the Welland Canal. It is claimed the deepening of the Welland Canal and bringing the grain to Kingston for transhipment would mean a saving of not less than 2½ cents per bushel, making the total cost of the grain delivered to Montreal 2½ cents per bushel, a total saving of about 3 cents a bushel from Fort William.

On the other hand, the advocates of the new Georgian Bay and Ottawa River Canal claim that this route would open up a distinctly larger field for Canadian development, besides being a shorter route to Montreal. This route from the mouth of the French River on Georgian Bay to Montreal via the Ottawa, Mattawa, and French rivers is 440 miles. Of this about 400 miles is river and lake waterways, with but 30 miles of actual canal to be built. The estimated cost by the St. Louis and Saint Anne de Bellevue entrance for a 22 foot channel is $100,000,000. The Reviere des Prairies entrance would cost $6,000,000 less. The engineers estimate that the canal would be open for traffic for 200 days in the year.

Yet from the Kingston viewpoint the building of the deeper Welland Canal would compare favorably with the more northern Georgian Bay route. The St. Lawrence route would be longer, but there is more open deep water to Kingston and much less canal digging and cost. Based on a crop of 10,000,000 bushels of grain the Welland route would mean a reduction in grain rates of $6,000,000.

We are not alone, however, in projected canal work, with the direct object of securing the supremacy in lake transportation. The United States has three great projects under consideration that will tend to overcome any advantage we might have gained over their old waterways, in the construction of either a new Welland Canal or the Georgian Bay route.

The enlargement of the Erie Canal from Buffalo through New York State, or the building of the new canal from Montreal through the Lake Champlain district to the Atlantic, or the larger project for the deepening of the Mississippi and connecting waterways from the north-

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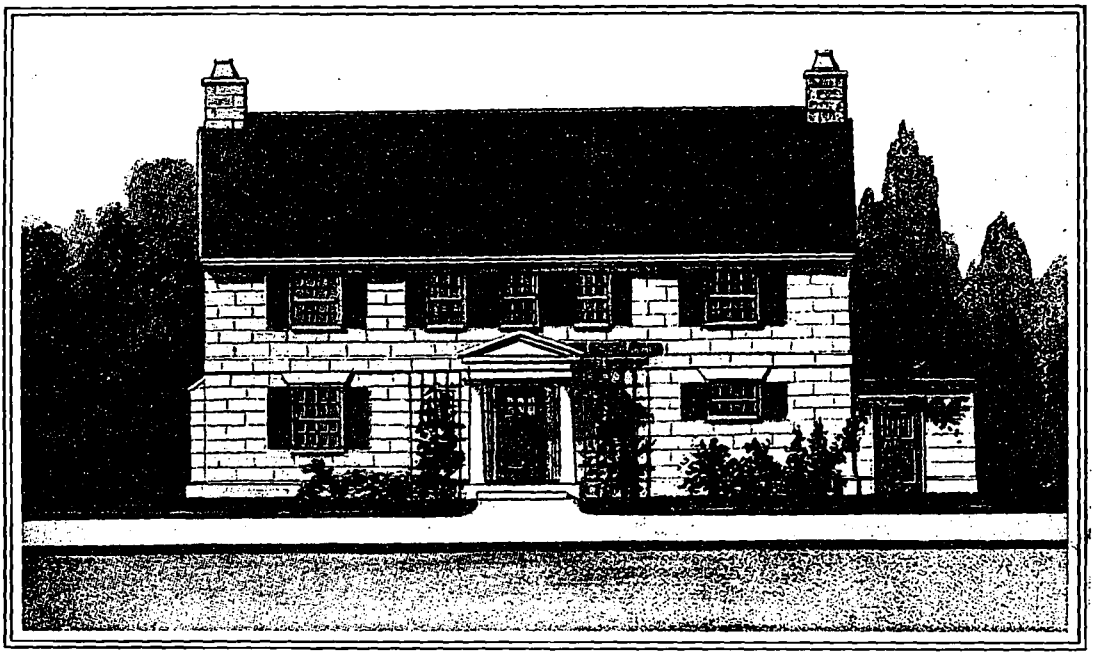
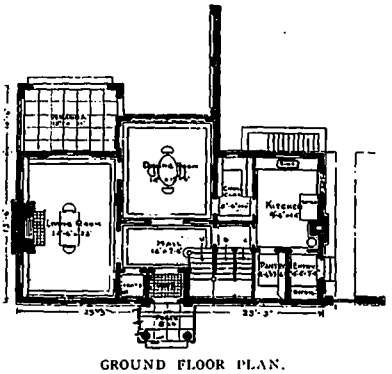


COLONIAL DESIGN IN CONCRETE BLOCKS.---Competitive Design for a $4,500 Concrete Block Dwelling.---The Use of Blocks Well Understood.---General Plan Good---Noteworthy Suggestion for Rear Garden.

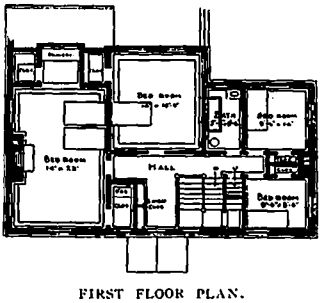
MANY ARCHITECTS AND BUILDERS have not been favorably inclined toward concrete building blocks, as a desirable substitute for brick or stone in residence construction, and the unpopularity of concrete blocks with architects of good taste has been due to two causes: one, that of the striving of manufacturers to produce whimsical effects such as rock face, broken ash'er, etc.; and the other, that many architects have condemned the material as inartistic without having studied its possibilities. They have been unable to produce the desired effects because they did not intelligently take into consideration their material, in designing their building. However, block manufacturers have relegated the fancy face effects and have substituted a perfectly plain surface, so far as design is concerned, and are merely seeking to produce a pleasing texture and color.

In other words, it has been found that the most simple, direct economical methods in block manufacture and building processes produce the best results.

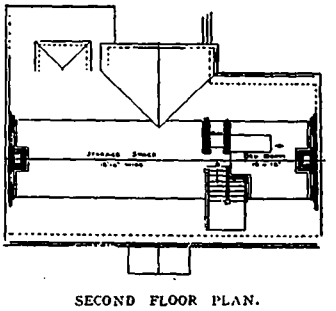
Architects are beginning to see the possibility in concrete blocks, intelligently made, and have set out to design their structures for the material to be used. The result has been that through this intelligent co-operation between the architect and the block manufacturer, many artistic residences of the better class have been constructed of concrete blocks, some costing as much as a quarter of a million dollars, and the new material is rapidly gaining favor with the architects who design both popular priced and expensive dwellings. The cement manufacturers of the United States have done much in developing an architecture suited to concrete blocks and with this end in view, conduct architectural competitions, in which many creditable designs are submitted. We reproduce herewith a design submitted in a competition conducted by the Association of American



GROUND FLOOR PLAN.



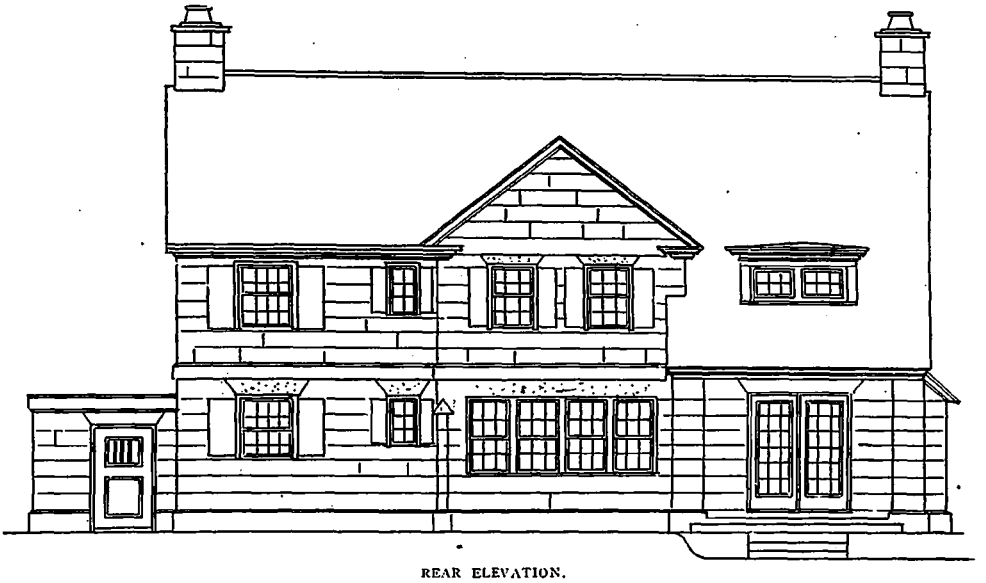
FIRST FLOOR PLAN.



SECOND FLOOR PLAN.

Portland Cement Manufacturers, for a $4,500 concrete block house.

The design is simple and is especially well adapted to concrete blocks. The colonial quaintness is admirably expressed and the use of blocks well understood. The general plan is also good; the large stair hall on both floors is noteworthy, especially in a house of this cost; the dining room opens directly from the front entrance hall for privacy, and the suggestions for the garden in the rear are admirable.



REAR ELEVATION.

Hollow concrete blocks, 8 inches thick, 12 inches high, in length varying from 12 inches to 30 inches, with plain or bush-hammered face, are to be used in the construction of this house, including the chimneys. The front porch and lintels over doors and windows are to be made in special forms of reinforced concrete and to be of lighter color than rest of house. These lintels and cellar walls are to be waterproofed. Wooden floor joists and rafters are to be used.

Owing to the present high cost of building it has been considered necessary, in order to keep within the limit of cost, to shingle the roof rather than use tile or slate. This consideration was instrumental in the decision to use wooden partitions throughout the house, though a secondary consideration, based on this, is that in a house of this size every inch of floor space is of great advantage and a considerable amount of this would be lost by the use of concrete partitions. In smaller towns and cities, where building is cheaper, and the house could be spread out to gain the room taken up by the concrete partitions, they would certainly be favored.

The interior finish is to be cypress stained on first floor and hallways of the main house; hard pine finished natural in service portion; and white wood or bass wood, painted, in chambers and bath rooms.

The walls are to be finished with a rough-floated surface, tinted with water color paints. The kitchen part and bath room walls are to be painted with lead and oil paints.

The ground floor in the main house is to be the best quartered oak and in the upper storey and service portion hard pine rift floors are to be used.

The house is arranged in such a way as to make it available on a lot which may face other than due south. The growing tendency to get away from the too often seen arrangement, whereby the rear of the lot offers no attractions to the householder, has also been considered and the house has been so arranged that the development of the lot in some such way as suggested is possible. At the same time no unpleasant features are placed on the street side of the house. The third floor plan has not been fully developed, on account of the limit of cost, but the fact has been taken into consider-

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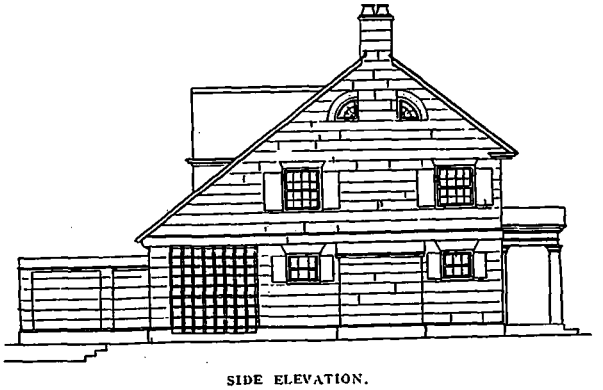
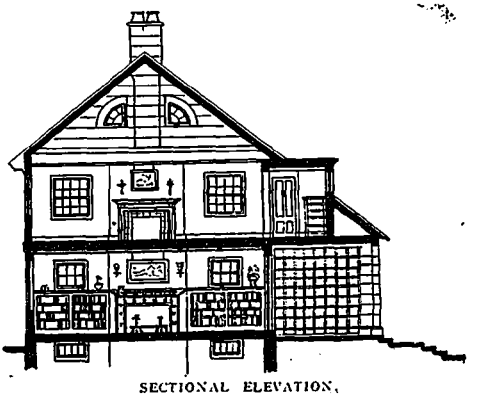


SIDE ELEVATION.



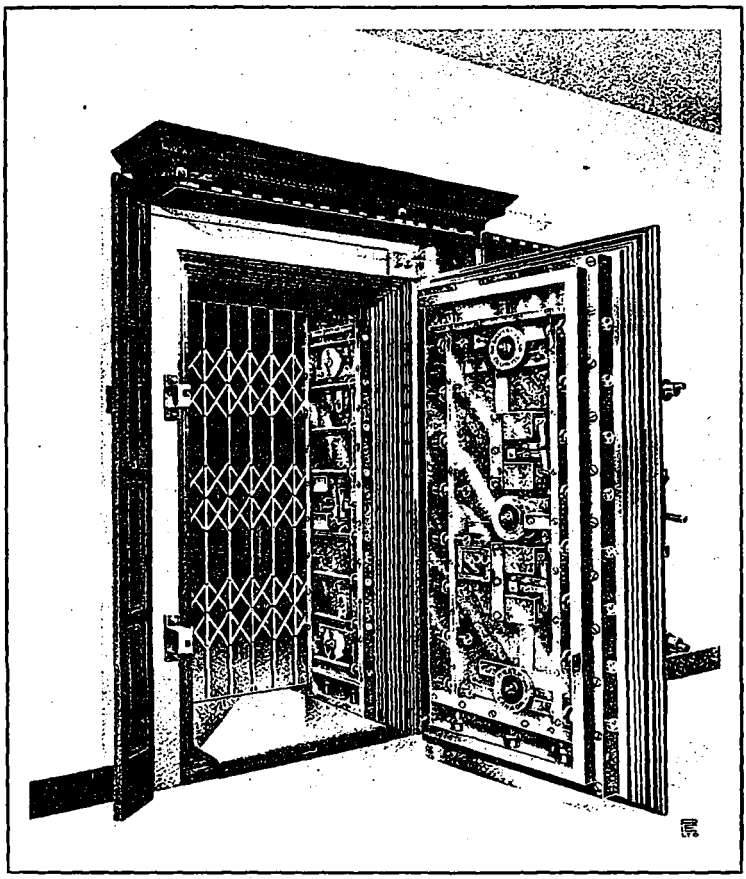
SECTIONAL ELEVATION.

MACHINERY AND TRADE

VAULT EQUIPMENT OF MONTREAL BANK.

THE ILLUSTRATION on this page shows a portion of the vaults and vault doors recently installed in the head office of the City and District Savings Bank at Montreal. They were built and set in place by the Goldie & McCulloch Co., Limited, of Galt, Canada.

The complete equipment consists of three vaults, each measuring 26 feet by 10 feet by 10 feet high, one above the other, making a three-story vault, one of which is in the basement and the remaining two on the main floor.



ONE OF THE VAULTS INSTALLED IN THE CITY AND DISTRICT SAVING BANK, MONTREAL.

The vaults are fitted with a chrome steel lining. The two lower vaults are equipped with the latest improved burglar proof doors fitted with four combination locks each, working conjointly with triple movement time lock. The outer and inner doors of the two lower vaults are also made of chrome steel. The two lower vaults are fitted with nickel plated folding day gate and each of the outer doors are fitted with heavy plate glass doors covering the lock work and making the same dust proof. The two upper stories of the vault, with door closed, is illustrated in the advertisement on page 12 of this issue.

This is only one of several large vaults similar to the above which the Goldie & McCulloch Co. have recently installed.

This firm, who have had over forty years' experience in the building of high grade safes and vaults of all descriptions, have gained for themselves a reputation of supplying nothing but the best material and workmanship which it is possible to obtain.

The fact that the recent severe and extremely hot fires which have occurred all over the Dominion have failed to do any damage to the contents of safes and vaults supplied by them is perhaps the best proof of the excellent quality of their product.

SAND-LIME BRICK.

DURING the last few years articles have appeared in the scientific journals describing an important industry which is beginning to be a big factor in the brick business. This industry is the manufacture of brick for all ordinary building purposes, including face brick, from sand and lime, and particular stress has been placed on the economy of production and the popularity they have attained owing to their durable and uniform quality.

The manufacture of building brick from sand and lime is already extensively carried on in Germany and America. The bricks are used in every class of building, and in every respect are highly satisfactory.

The Government of Germany and the United States have shown their preference for this class of brick on a number of occasions. They have been the subject of numerous government and scientific tests and reports, and of papers read before scientific bodies, as well as consular reports.

In every case their solidity, uniformity, hardness, perfect shape, freedom from distortion, their pressure and weather-resisting qualities have been especially dwelt upon. The German Government, as the outcome of long-continued experience with these bricks, adopted them for the construction of a sea-wall at Elbing on the Baltic Sea, which has since proved satisfactory in every way.

Although the sand-lime brick has reached such an enviable position in the market, and such eminent success commercially, they were nevertheless, until the introduction of Mr. William Schwarz's improved process, manufactured under great difficulties. This simple invention was instantly recognized and welcomed by the European sand-lime brick manufacturers as going directly to the root of all their troubles, and its general adoption

has placed the industry on a really staple footing, enabling it to be conducted in an uninterrupted manner at all seasons of the year.

Each "Schwarz System" sand-lime brick is a "pressed" brick, and since they are steamed, hardened and not "burned," each brick is absolutely free from defects of every kind, including warping or swelling. They are made in all shapes and sizes, in any color the fancy may suggest, and make an immeasurably better appearance than common brick.

The Schwarz System bricks have been subject to many different kinds of tests, including alternate wetting and drying, freezing and thawing, etc. One official test, included keeping the bricks in water for six days, followed by subjecting them, first, for four hours to a temperature of 53 1-2 degrees below zero Fahr., then to three hours in water at a mild temperature. This was continued twenty-five successive times without any apparent change in the bricks. In official fire test they have demonstrated their efficiency as a fire-resisting material. Official tests for resistance to compression showed 4507 lbs. per sq. in. Time merely serves to improve their quality. They are described in U. S. Consular reports No. 729, as "extremely hard, water-tight, impervious to frost or weather and unaffected by all acids."

The Scientific System Brick Company, 79 Adelaide street east, Toronto, will be pleaesd at any time to give information regarding this system or sand-lime brick in general.

EATON'S MODEL HOME.

HOW effectively the law of harmony can be applied to the interior of a residence was seen by thousands who visited the T. Eaton Company's "Model Home" in the east end of the Manufacturers' Building, during the Exhibition. Here the hand of the decorator revealed itself at every turn, elegance and comfort being the keynote throughout.

The dining-room was done in the Colonial style with Circassian walnut extension table, sideboard, china cabinet and diners. On the floor was a rich green Kassaba rug, while the drapings were of linen taffeta in simple design. Over the table, which was covered by a fine twilled linen cloth and set with dishes of hand-painted Wedgewood china, an art glass droplight hung from the ceiling by a heavy brass chain. Articles of virtu, products of the ceramist's art, were tastily arranged on a cornice or plate rail which extended around the room at the lower border of the hand-decorated freize. An imported Italian pedestal of hand-carved walnut stood at the right side of the door, while on the left, in keeping with the other appointments, was a large colonial mantel of tile, with hammered brass hood and dogs to match.

In the drawing room the color scheme was effectively carried out in a beautiful combination of old blue and champagne, the wall panels of moire silk, bordered with old blue rep, being richly enhanced with the delicate tints of the circular pennelled hand-painted ceiling. A particularly striking feature of the room was a three-piece suit of Chippendale mahogany, the original design of which is in the South Kensington Museum, London. The curtains and lambrequin, in accord with the predominant tones, were of champagne with old blue festoons and bullion fringe trimmings, while the carpet was a luxurious old blue in an Axminster weave. A mantel of rich onyx, harmonizing with the general scheme, further added to the refined and inviting appearance of the room.

The bedroom was furnished in a six-piece suit of solid mahogany, designed in Louis XVI. style. The walls were finished in English chintz with drapings to match and the floor was covered with a Wilton velvet carpet having a plain centre. A white enamelled window cornice in French design—something entirely new, being an original conception of the decorator—having side curtains hanging over the hand-shirred valance, effectively suggested the quiet and repose of the entire scheme.

In the reception hall was a large painting representing a scene in Holland, together with a grandfather clock

THE DRAWING ROOM, EATON'S FURNITURE EXHIBIT, MANUFACTURERS' BUILDING, TORONTO EXHIBITION, 1908.

in solid mahogany and hall rack to correspond, so arranged to make this part of the house attractive and inviting.

Another feature in connection with this unique domicile was the kitchen equipped with every conceivable sanitary appliance known in culinary work. The floor of this room was of Terrano, a highly impervious sanitary flooring, with sufficient resiliency to effectively do away with any shock in traversing it.

The T. Eaton Company have in their employ a highly competent decorating staff, whose co-operation is at the disposal of the architect in working out problems of harmonizing the interior decorative scheme and furnishings with the general design and arrangement of a building.

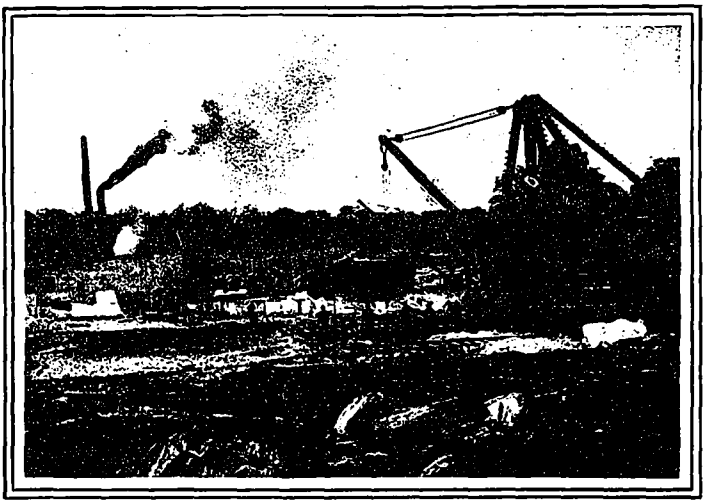
CANADIAN MARBLE.

AMONG the new industries which have sprung from the natural resources of Canada within the last few years is the production of marble. Few of the people to-day, who traverse the principal streets of our cities and see the heavy slabs and columns of richly veined marble that are being used in either interior or exterior construction work, are aware of the fact that this material is purely a domestic product and that it is quarried at Philipsburg, on the shores of Missisquoi Bay, a distance of 56 miles from Montreal.

While marble was, in a limited way, quarried there over thirty years ago and can be seen in a number of buildings in and about Montreal, where, both in color and durability, it has withstood the elements for a quarter of a century, yet its highly commercial value and excellent quality were little known and little appreciated these many years. Nearly twenty years ago a company known as the Philipsburg Railway & Quarry Company was formed for the purpose of exploiting this deposit. The company had just completed building a railway from Philipsburg to a connecting point with the main lines of the other railways, six miles distant, when the death of its promoter, Mr. Henry Benjamins, caused the enterprise to fall through.

The property remained dormant up to about two years ago, when some of the principal stockholders of the old company, after obtaining the opinion of a number of the most experienced marble men on the continent, incorporated under the name of the Missisquoi Marble Company, Limited, with a capital stock of $5,00,000. This company consists of Messrs. S. Carsley, President; R. J. Dale, Vice-President; Henry Timmis, Secretary-Treasurer; Jas. Playfair, H. W. Richardson, S. H. Ewing, and Wm. Mann, all of whom are well known in Montreal business circles. Following incorporation, immediate steps were taken to develop the property, and up to the present time a large quantity of marble has been produced.

ONE OF THE QUARRIES OF THE MISSISSQUOI MARBLE COMPANY.



MILL AND FINISHING SHOP OF THE MISSISSQUOI MARBLE COMPANY WITH HUGE DERRICK FOR HANDLING THE LARGE BLOCKS IN THE FOREGROUND.

The company owns 317 acres of land at Philipsburg and exploration have shown that fully one-half of it contains rich deposits of this valuable material. The marble has been found to be in stratas of from three to five feet in thickness and from each stratum a different variety is obtained, there being six well defined varieties in all. These are light gray, dark gray, cream colored with green veins, cream colored with mottled green cloud effect and a handsome mixture of cloudy green and white. All varieties produce a remarkably fine and delicate effect when polished and there is practically an unlimited quantity of each kind on the property. At the present time the core, sixty feet below the lowest working, shows a beautiful sound quality free from flint and splendidly marked.

The company has erected on the quarry grounds a large substantial workshop equipped with all modern appliances for the sawing, shaping and polishing of marble. Modern appliances are also used in quarrying the product itself, and five channelling machines, which have superceded the old method of blasting, are kept busy in cutting out the blocks, some of which weigh as much as twenty tons. After the blocks are cut they are lifted from the bed by derricks and put on a small car which transfers them to the mill where

they are cut and finished. In addition to six gang-saws, the mill and finishing shop contains two rubbing beds, a planer, a lathe, two polishing machines, pneumatic tools, circular saw, swing cranes, an air compressor, and so on.

About one hundred and twenty hands are now employed by the company, but it is expected this number will be greatly increased in the near future.

Although it is only two years since the work on the property was first commenced, the marble, owing to its rich and durable quality, has already won for itself an enviable reputation, being used in some of the finest buildings from Montreal to Vancouver.

A PART OF THE WORKING FORCE OF THE MISSISSQUOI MARBLE COMPANY.

The marble has been specified for the interior of the post office at Winnipeg; the post office at Owen Sound; and the Montreal post office; for the Windsor Hotel, Montreal; Canadian Express building, Montreal; the Y.M.C.A. building, Ottawa; the Birkbeck building, Toronto, and a great number of smaller contracts.

The company has also recently shipped a large amount of its materials to be used in the St. Joseph's Hospital, Victoria; Bank of Commerce, Vancouver, and the post office building, Vancouver. The excellent quality of Missisquoi marble has also won for it recognition on the other side of the border. Among recent contracts secured in the United States, are the First National Bank, Cincinatti, and the Hudson County Court House, Jersey City. The company secured the latter contract, an exceedingly big interior job, in competition with marble from all parts of the world, the architect and building committee selecting Missisquoi for its superior quality. In the vestibule of the Royal Bank, Toronto, which has recently been completed, is a good example of the company's material and workmanship.

CANADA'S PROJECTED INLAND WATERWAY IMPROVEMENT ---Continued from Page 69

west to New Orleans, would greatly improve the inland waterways of the United States..

These American waterways, when completed, it is claimed will for some time to come more than offset the advantages of the longer St. Lawrence route.

If, however, either the Welland Canal is enlarged or the Georgian Bay route becomes a certainty, it means a very large addition to Canadian carrying trade through our own territory to Montreal and a considerable increase in the trade through the lower St. Lawrence and will give us an inland waterway that will bring our western provinces closer to the European market, and give us a strong advantage over the United States with its present system waterways.

CEMENT SIDEWALK MACHINE. ∴ ∴

One of the latest labor-saving devices is a machine that lays and finishes cement sidewalks with remarkable rapidity. It consists of a travelling mold and a winch for pulling the mold ahead. The concrete for the base of the sidewalk is shoveled or dumped into the front part of the mold, and the finishing mortar is shovelled or dumped into the hopper at the middle of the mold. This hopper is so designed that it feeds a thin layer of mortar on to the concrete base as the mold travels forward. Thus a complete and perfect sidewalk is delivered at the rear end of the machine. No skilful finishers are required. No labor is needed to build forms. No men are needed to tamp the concrete. In brief, the process is simply one of mixing the ingredients and depositing them into the proper part of the travelling mold. The mold does the rest. With a properly organized gang, the mold is kept travelling continuously at the rate of two feet per minute. The shape of the mold is such that the concrete is squeezed both laterally and vertically into a dense block, which needs no ramming.—*Cement Age.*

COLONIAL DESIGN IN CONCRETE BLOCKS.---Continued from Page 71. ∴ ∴

ation that, by the building of two dormers, at least two good rooms could be added to the house.

ESTIMATE OF COST.

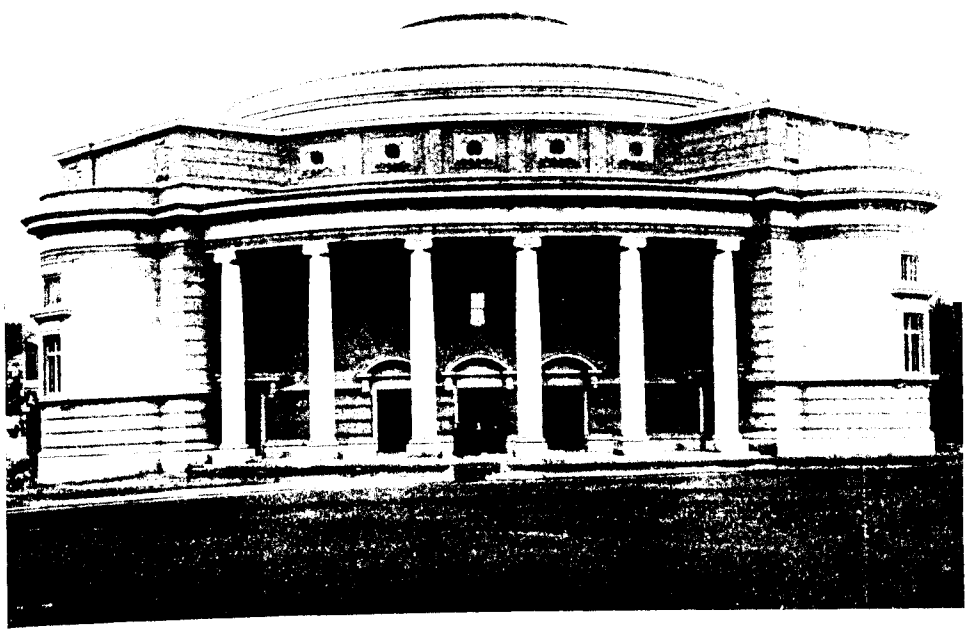
(Based on the prices of labor and material generally prevalent in larger cities throughout the country, not including plumbing and heating, the following is considered to be a liberal estimate of the cost of the various branches of work.)

Excavation	$100.00
Concrete Footings, Piers and Cellar Walls	340.00
Concrete Blocks (erected)	594.00
Cranolithic Floors for Porches	193.00
Concrete Front Porch	150.00
Flue Linings and Chimney Caps	40.00
Inside Plastering	360.00
Stock and Shingles	410.00
Outside and Inside Finish and Stairs	575.00
Finished Floors, Oak and Hard Pine	150.00
Window and Door Frames and Windows, Doors and Blinds	280.00
Rough and Finished Hardware	103.00
Fireplaces and Mantels	90.00
Gutters and Conductors	20.00
Carpenter Labor	725.00
Painting	370.00
	$4,500.00

Cubical contents, 35,700 cubic feet.

Expanded Metal

The Standard Concrete Reinforcement for 15 years. Universally endorsed by Architects and Engineers. It is the original metallic mesh concrete reinforcement, and will give a greater degree of tensile strength to the amount of metal employed than any other type of reinforcement.



Convocation Hall, Toronto University. Darling & Pearson, Architects.

This building was plastered throughout with cement plaster on **Expanded Metal Lath**, and its domed ceiling, gallery alcove, and arches, were all formed by a steel frame-work, covered with cement plaster on **Expanded Metal Lath.**

Expanded Metal System of construction used in the concrete ground and gallery floors, main staircases and dressing rooms.

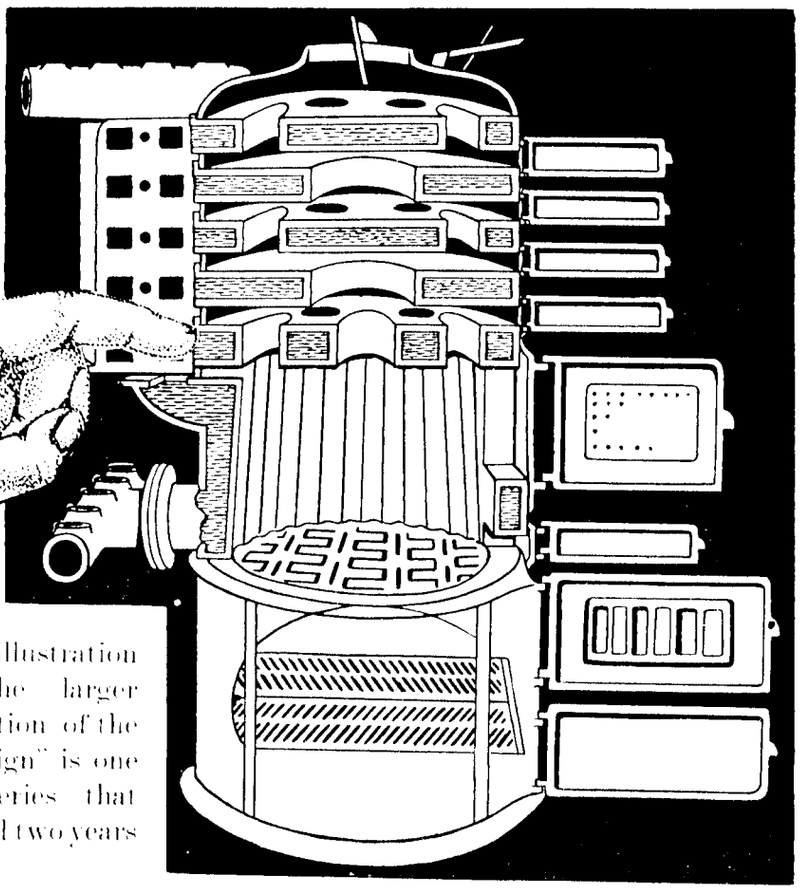
ESTIMATES FURNISHED ON WORK IN ALL PARTS OF CANADA

Expanded Metal and Fireproofing Co., Ltd.

100 King Street West, Toronto

To Get All the "Sovereign" Improvements You Must Get a Genuine "Sovereign."

See that Larger "First Section"?



This illustration of the larger first section of the "Sovereign" is one of a series that was used two years ago.

Historically, it is the first "larger first section" advertisement ever published. It is the band wagon, so to speak, that leads the procession of imitators in the boiler parade of to day.

The imitators attempt nothing beyond the "Larger First Section," because to imitate the Nineteen Other Improvements contained in the "Sovereign" would necessitate the casting aside of old patterns in their entirety.

When you hear them say something that sounds like "Larger First Section," you think "Sovereign"

If you want facts regarding efficient and economical heating, write us.

Sovereign

HOT WATER BOILER

TAYLOR-FORBES COMPANY, LIMITED, GUELPH, Canada

Branches and Agencies:

TAYLOR-FORBES CO. - 1088 King St. W., Toronto
TAYLOR-FORBES CO. - 122 Craig St. W. Montreal
TAYLOR-FORBES CO. - - - Vancouver
MECHANICS' SUPPLY CO. - - Quebec
H. G. ROGERS - 53 1-2 Dock St., St. John, N.B.
THE BARNES CO. - - - Calgary, Alta.
VULCAN IRON WORKS, Limited - Winnipeg, Man.

•A• DIRECTORY •FOR• •ARCHITECTURAL• SPECIFICATIONS•

AIR COMPRESSOR.
Canadian Farirbanks Co., Limited, Montreal, Toronto, Winnipeg and Vancouver.

ARCHITECTURAL STUCCO RELIEF.
W. J. Hynes, 16 Gould St. Toronto.

ARTIFICIAL STONE.
Canadian Concrete Machinery Co., Limited, 510 Board of Trade Building, Toronto.

ARCHITECTURAL IRON.
Canadian Ornamental Iron Co., 35 Yonge Street Arcade, Toronto.
Dennis Wire and Iron Works Co., London, Ont.
Gaudry & Co., L. H., Coristine Building, Montreal; 76 Peter Street, Quebec; Roy Building, Halifax.
Geo. B. Meadows Co., Limited, 479 Wellington St. West, Toronto.

ARCHITECTS' SUPPLIES.
Eugene Dietzgen Co., Limited, 10 Shuter St., Toronto.

ASBESTOS PRODUCTS.
A. B. Ormsby, Limited, Queen and George Sts., Toronto, and 677 Notre Dame Ave. West, Winnipeg.

BELTING.
Canadian Fairbanks, Co., Montreal, Toronto, St. John, Winnipeg, Calgary, Vancouver.
Dunlop Tire and Rubber Co., Limited, Head Office, Booth Ave.; City Office, 13 Temperance St., Toronto.
Gutta Percha & Rubber Mfg. Co., Limited, 47 Yonge St., Toronto.

BLOW AND VENT PIPING.
Galt Art Metal Co., Galt, Ont.
Metal Roofing Co., Limited, Toronto.
Metal Shingle & Siding Co., Preston, Ont.
A. B. Ormsby, Limited, Queen and George Sts., Toronto, and 677 Notre Dame Ave. West, Winnipeg.

BOILERS.
Cluff Bros., Toronto, 21-27 Lombard Street.
Warden King, Limited, Montreal.
Dominion Radiator Co., Limited, Toronto, Montreal, Winnipeg.
Taylor-Forbes, Guelph, Ont.

BRASS WORKS.
Somerville Limited, 59 Richmond St., E., Toronto.
James Robertson, Limited, Toronto and Montreal.

BRICK AND TERRA COTTA.
E. F. Dartnell, 157 St. James St., Montreal.
Don Valley Brick Works, 36 Toronto St., Toronto.
Eadie-Douglas Co., 22 St. John St., Montreal.
David McGill, Merchants, Bank Chambers, Montreal.
The Milton Pressed Brick Co., Milton, Ont.; 75 Yonge St., Toronto; 204 St. James St., Montreal.
Port Credit Brick Co., Home Bank Building, Toronto.

BRICK MACHINERY.
A. Berg & Sons, Manning Chambers, Toronto.
Wettlaufer Bros., Stratford and Mitchell, Ont.
Scientific Brick Co., Toronto

BUILDERS.
Metcalf Engineering, Limited, 80 St. Francois Xavier St., Montreal.
Pitt & Robinson, Manning Chambers, Toronto.

BUILDING PAPER.
F. W. Bird & Son, Hamilton.
Canadian Fairbanks, Co., Montreal, Toronto, St. John, Winnipeg, Calgary, Vancouver.
Lockerby & McCoomb, 65 Shannon St., Montreal.
The Paterson Manufacturing Co., Limited, Toronto, Montreal and Winnipeg.

BUILDERS' HARDWARE.
Brooks, Sanford Hardware, Limited, Toronto and Hamilton.

BUILDING SUPPLIES.
E. F. Dartnell, 157 St. James St., Montreal.
Eadie-Douglas Co., 22 St. John St., Montreal.
Lockerby & McCoomb, 65 Shannon St., Montreal.
David McGill, Merchants Bank Chambers, Montreal.
The Paterson Manufacturing Co., Limited, Toronto, Montreal and Winnipeg.

CABLE.
Drummond McCall & Co., Montreal and Toronto.

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

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

CELLAR DOORS.
Drummond McCall, Montreal and Toronto.

CEMENT.
Canadian Portland Cement Co., Limited, 502 Temple Building, Toronto; 203 Board of Trade Building, Montreal.
E. F. Dartnell, 157 St. James St., Montreal.
Wm. Hartrauft Cement Co., Bank of Ottawa Building, Montreal.
Imperial Cement Co., Owen Sound.
The Lakefield Portland Cement Co., Limited, Bank of Ottawa Building, Montreal.
Owen Sound Portland Cement Co., Owen Sound.
David McGill, Merchants Bank Chambers, Montreal.

CEMENT BLOCK MACHINERY.
Canadian Concrete Machinery Co., Limited, 510 Board of Trade Building, Toronto.
Canadian Fairbanks Co., Montreal, Toronto, Winnipeg and Vancouver.
Ideal Concrete Machinery Co., Limited, 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.

CHIMNEY CONSTRUCTION.
H. Gearing, 15 Toronto St., Toronto.

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

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

CONCRETE CONSTRUCTION (Reinforced).
Expanded Metal & Fire Proofing Co., 100 King St. W., Toronto.
Metcalf Engineering, Limited, 80 St. Francois Xavier St., Montreal.
Pitt & Robinson, Manning Chambers, Toronto.
Trussed Concrete Steel Co., 23 Jordan St., Toronto.

CONCRETE MIXERS.
Canadian Fairbanks Co., Limited, Montreal, Toronto, Winnipeg and Vancouver.
E. F. Dartnell, 157 St. James St., Montreal.
Wettlaufer Bros., Stratford and Mitchell, Ont.

CONCRETE STEEL.
Dennis Wire & Iron Co., London, Ont.
B. Greening Wire Co., Limited, Hamilton and Montreal.
Expanded Metal & Fireproofing Co., 100 King St. W., Toronto.
Pitt & Robinson, Manning Chambers, Toronto.
Trussed Concrete Steel Co., 23 Jordan St., Toronto.

CONDUITS.
Conduits Co., Limited, Toronto and Montreal.
Drummond McCall & Co., Montreal and Toronto.

CONTRACTORS (General).
Metcalf Engineering, Limited, 80 St. Francois Xavier St., Montreal.
Pitt & Robinson, Manning Chambers, Toronto.

CONTRACTORS' MACHINERY.
Canadian Concrete Machinery Co., Limited, 510 Board of Trade Building, Toronto.
Canadian Fairbanks Co., Limited., Montreal, Toronto, Winnipeg and Vancouver.
Drummond McCall & Co., Montreal.

CONTRACTORS' SUPPLIES.
Canadian Fairbanks Co., Limited. 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.
David McGill, Merchants Bank Chambers, Montreal.

CORK BOARD.
Amstrong Cork Co., 521 Coristine Building, Montreal.

CUT STONE CONTRACTORS.
Stanstead Quarrie Co., Stanstead Junction, Quebec.
Roman Stone Co., Limited, 100 Marlborough Ave., Toronto.

DECORATORS.
Deecker & Carlyle, 26 Yonge Street Arcade, Toronto.

DRAWING MATERIALS.
Eugene Dietzgen Co., Limited, 10 Shuter St., Toronto.

DOORS.
L. A. De Laplante, East Toronto.

DRILLS (Brick and Stone).
Canadian Fairbanks Co., Montreal, Toronto, Winnipeg and Vancouver.
Drummond McCall, & Co., Montreal.

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Otis-Fensom Elevator Co., Limited, Traders Bank Building, Toronto.

ELECTRO-PLATING.
Somerville, Limited, 59 Richmond St. E., Toronto.

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Otis-Fensom Elevator Co., Limited, Traders Bank Building, Toronto.

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Canadian Fairbanks Co., Montreal, Toronto, St. John, Winnipeg, Calgary, Vancouver.
Eugene Dietzgen Co., Limited, 10 Shuter St., Toronto.
Somerville, Limited, 59 Richmond St. E., Toronto.
Mussens, Ltd., Montreal.

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.
Trussed Concrete Steel Co., 23 Jordan St., Toronto.

ELECTRIC WIRE AND CABLES.
B. Greening Wire Co., Limited, Hamilton and Montreal.
James Robertson Co., Limited, Toronto and Montreal.

FIRE BRICK.
E. F. Dartnell, 157 St. James St., Montreal.
David McGill, Merchants Bank Chambers, Montreal.

FIREPROOFING.
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 and Fireproofing Co., 100 King St. W., Toronto.
David McGill, Merchants Bank Chambers, Montreal.
The Milton Pressed Brick Co., Milton, Ont.; 75 Yonge St., Toronto; 204 St. James St., Montreal.
Pitt & Robinson, Manning Chambers, Toronto.
Port Credit Brick Co., 8 West King St., Toronto.
Trussed Concrete Steel Co., 23 Jordan St., Toronto.

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Gaudry & Co., L. H., Coristine Building, Montreal; 76 Peter Street, Quebec; Roy Building, Halifax.
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Brooks-Sanford C., Limited, Bay St., Toronto.

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Canada Plate & Window Glass Co., Limited, 49 Richmond St. East, Toronto.
John Kay Co., Toronto.

FIREPROOF STEEL DOORS.
A. B. Ormsby, Limited, Queen and George Sts., Toronto, and 677 Notre Dame Ave. West, Winnipeg.
Gaudry & Co., L. H., Coristine Building, Montreal; 76 Peter Street, Quebec; Roy Building, Halifax.

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Taylor-Forbes Co., Limited, Guelph, Ont.

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Globe Furniture Co., Walkerville
John Kay Co., Toronto.

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Metal Shingle & Siding Co., Preston, Ont.

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Warden King, Limited, Montreal.
Dominion Radiator Co., Limited, Toronto, Montreal, Winnipeg.
Taylor-Forbes Co., Limited, Guelph, Ont.

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Armstrong Cork Co., 521 Coristine Building, Montreal.

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

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Geo. B. Meadows, Co., Limited, 479 Wellington St. West, Toronto.

JOIST HANGERS.
David McGill, Merchants Bank Chambers, Montreal.

LATH (Metal).
Concrete Engineering and Construction Co., 123 Bay St., Toronto.
Expanded Metal & 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.
B. Greening Wire Co., Limited, Hamilton and Montreal.
Metal Shingle & Siding Co., Preston, Ont.
Trussed Concrete Steel Co., 23 Jordan St., Toronto.

LEADED GLASS.
David McGill, Merchants Bank Chambers, Montreal.

LIGHTING AND POWER PLANTS.
Canadian Fairbanks Co., Montreal, Toronto, St. John, Winnipeg, Calgary, Vancouver.

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Canadian Fairbanks Co., Montreal, Toronto, St. John, Winnipeg, Calgary, Vancouver.
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Canada Plate & Window Glass Co., Limited, 49 Richmond St. E., Toronto.
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David McGill, Merchants Bank Chambers, Montreal.

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E. F. Dartnell, 157 St. James St., Montreal.
Hoidge Marble Co., Toronto.
Missisquoi Marble Co., Montreal.

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Canadian Fairbanks Co., Montreal, Toronto, St. John, Winnipeg, Calgary, Vancouver.
Somerville, Limited, 59 Richmond St. E., Toronto.

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Galt Art Metal Co., Galt, Ont.

METAL WALLS AND CEILINGS.
Galt Art Metal Co., Galt, Ont.
Metal Shingle & Siding Co., Preston, Ont.
A. B. Ormsby, Limited, Queen and George Sts., Toronto, and 677 Notre Dame Ave. West, Winnipeg.

METAL WEATHER STRIPS.
Chamberlain Metal Weather Strip Co., 319 Yonge St., Toronto, and Kingsville, Ont.

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Canadian Fairbanks Co.

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Canadian Ornamental Iron Co., 35 Yonge Street Arcade Toronto.
Gaudry & Co., L. H., Coristine Building, Montreal; 76 Peter Street, Quebec; Roy Building, Halifax.
Geo. B. Meadows Co., Limited, 479 Wellington St. West, Toronto.

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Dunlop Tire & Rubber Co., Limited, Head Office, Booth Ave.; City Office, 13 Temperance St., Toronto.
Gutta Percha & Rubber Mfg. Co., Limited, 47 Yonge St., Toronto.

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Canadian Fairbanks Co., Montreal, Toronto, St. John, Winnipeg, Calgary, Vancouver.
Drummond McCall & Co., Montreal, Toronto.
Gaudry & Co., L. H., Coristine Building, Montreal; 76 Peter Street, Quebec; Roy Building, Halifax.

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Canada Plate & Window Glass Co., Limited, 49 Richmond St. E., Toronto.
Hobbs Mfg. Co., London, Ont.

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Standard Ideal Co., Limited, Port Hope, Ont.
Kerr Engine Co., Walkerville.

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PNEUMATIC TOOLS.
Canadian Fairbanks Co., Montreal, Toronto, Winnipeg and Vancouver.

PORCELAIN ENAMEL BATHS.
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Standard Ideal Co., Limited, Port Hope, Ontario.

POWER PLANTS.
Canadian Fairbanks Co., Montreal, Toronto, Winnipeg and Vancouver.

PUMPING MACHINERY.
Canadian Fairbanks Co., Montreal, Toronto, Winnipeg and Vancouver.

RADIATORS.
Cluff Bros., 21-27 Lombard St.
King Radiator Co., St. Helens Ave., Toronto.
Dominion Radiator Co., Limited, Toronto, Montreal, Winnipeg.
Warden King, Limited, Montreal.
Taylor-Forbes Co., Limited, Guelph, Ont.

RAILWAY SUPPLIES.
Canadian Fairbanks Co., Montreal, Toronto, Winnipeg and Vancouver.
Drummond McCall & Co., Montreal.

REINFORCED CONCRETE.
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.

REFRIGERATING MACHINERY.
Linde British Refrigeration Co., Limited, Coristine Building, Montreal.

REFRIGERATOR INSOLATION.
Armstrong Cork Co., 521 Coristine Building, Montreal.

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

ROOFING PAPER.
F. W. Bird & Son, Hamilton.
Canadian Fairbanks Co., Montreal, Toronto, St. John, Winnipeg, Calgary, Vancouver.
Lockerby & McCoomb, 65 Shannon St., Montreal.
The Paterson Manufacturing Co., Limited, Toronto, Montreal and Winnipeg.

ROOFING TILE.
David McGill, Merchants Bank Chambers, Montreal.

RUBBER TILING.
Dunlop Tire & Rubber Co. Head Office, Booth Ave.; City Office, 13 Temperance St., Toronto.
Gutta Percha & Rubber Mfg. Co., Limited, 47 Yonge St., Toronto.

SANITARY PLUMBING APPLIANCES.
Somerville Limited, 59 Richmond St. E., Toronto.
Standard Ideal Co., Limited, Port Hope, Ont.

SHEET METAL WORKERS.
Galt Art Metal Co., Galt, Ont.
Metal Shingle & Siding Co., Preston, Ont.
A. B. Ormsby, Limited, Queen and George Sts., Toronto, and 677 Notre Dame Ave. West, Winnipeg.

SIDEWALK LIFTS.
Otis-Fensom Elevator Co., Limited, Traders Bank Building, Toronto.

SPRINKLER SYSTEMS.
General Fire Equipment Co., 72 Queen St. East, Toronto.

STAFF AND STUCCO WORK.
W. J. Hynes, 16 Gould St. Toronto.

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A. B. Ormsby, Limited, Queen and George Sts., Toronto, and 677 Notre Dame Ave. West, Winnipeg.

STEAM AND HOT WATER HEATING.
Cluff Bros., 21-27 Lombard St., Toronto.
Warden King, Limited, Monrteal.
Dominion Radiator Co., Limited, Toronto.
Taylor-Forbes Co., Limited, Guelph, Ont.

STEEL CONCRETE CONSTRUCTION.
Expanded Metal & Fireproofing Co., 100 King St. W., Toronto.
Metcalf Engineering, Limited, 80 St. Francois Xavier St., Montreal.
Pitt & Robinson, Manning Chambers, Toronto.
Trussed Concrete Steel Co., 23 Jordan St. Toronto.

STEEL CASEMENTS.
L. H. Gaudry & Co., Limited, Coristine Building, Montreal.
David McGill, Merchants Bank Chambers, Montreal.

STRUCTURAL IRON CONTRACTORS.
Hamilton Bridge Co., Hamilton.
Reid & Brown, 63 Esplanade E., Toronto.

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

TERRA COTTA FIREPROOFING.
Eadie-Douglas Co., 22 St. John St., Montreal.
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.
National Fireproofing Co., Traders Bank, Toronto.

TILE (Floor and Wall).
Brooks-Sanford Co., Limited, Bay St., Toronto.
Canada Plate & Window Glass Co., Limited, 49 Richmond St., East, Toronto.
David McGill, Merchants Bank Chambers, Montreal.

VENTILATORS.
Wm. Stewart & Co., Saturday Night Building, Toronto, Board of Trade, Montreal.

WALL HANGINGS.
Deecker & Carlyle, 26 Yonge St. Arcade, Toronto.

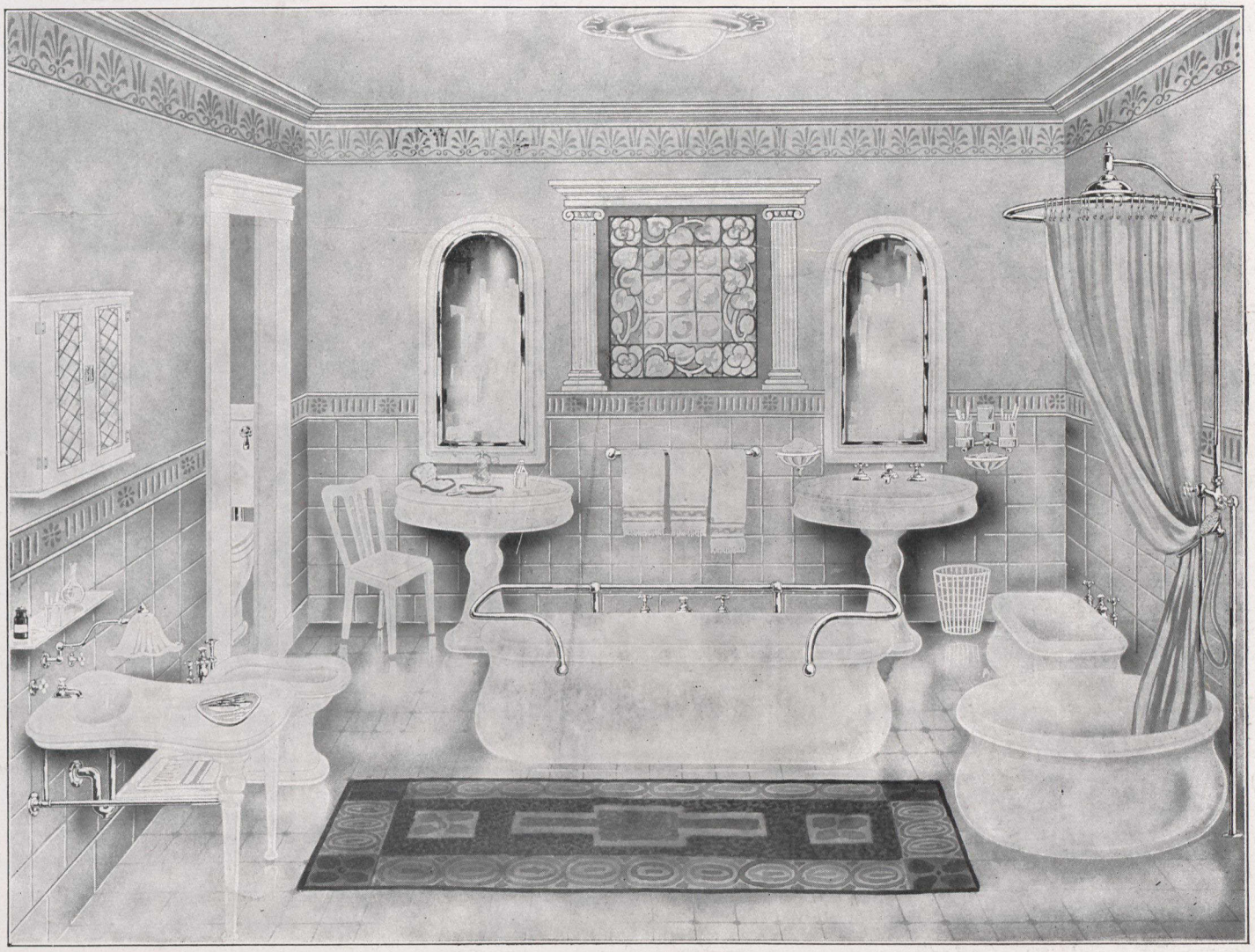
WATER HEATERS.
Canadian Fairbanks Co., Montreal, Toronto, St. John, Winnipeg, Calgary, Vancouver.
Somerville, Limited, 59 Richmond St. E., Toronto.
Drummond McCall Co., Montreal, Toronto.

WATERWORKS SUPPLIES.
Somerville, Limited, 59 Richmond St. E., Toronto.
Canadian Fairbanks Co., Montreal, Toronto, Winnipeg and Vancouver.
Mussens, Ltd., Montreal.

WINDOW SCREENS.
Wm. Stewart & Co., Toronto and Montreal.

An Index to the Advertisements

"ALEXANDRA" PORCELAIN WARE



BATH ROOM F—A

Approximate Cost of Bath, Shower, Foot Bath, Lavatory, Bidet, Toilet and Manicure Tables **$899.00**

Standard IDEAL Company, Limited

Head Office and Factories: PORT HOPE, ONT.

SALES OFFICES AND SAMPLE ROOMS:

TORONTO,	MONTREAL,	WINNIPEG,
50 Colborne Street.	128 West Craig Street.	156 Lombard Street.

Metropolitan Syphon Jet Closet

WITH

Somerville Flush Valve

SILENT AND POSITIVE IN ACTION

504 E, Push Button Action

SOMERVILLE LIMITED

Manufacturers of

"GOODS OF QUALITY"

Head Office:—59 Richmond St. E. Brass Plant:—Bloor St. and St. Helen's Ave.

TORONTO ▫ ▫ CANADA