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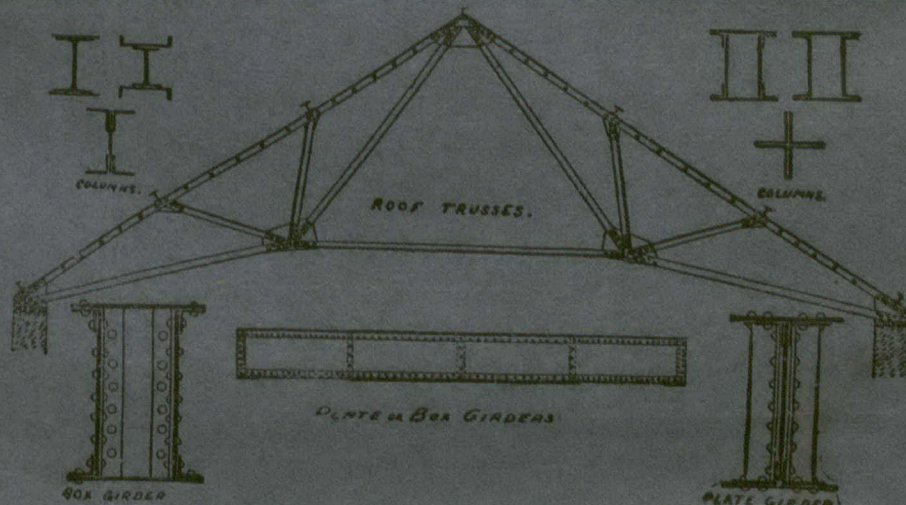
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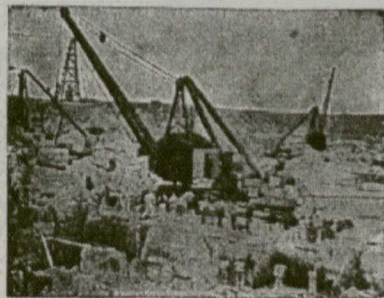
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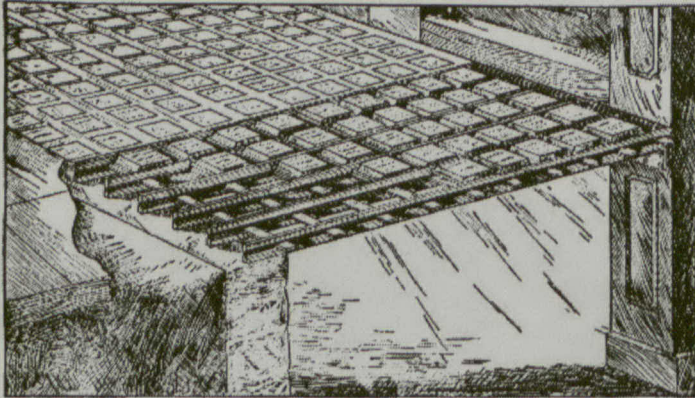
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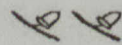
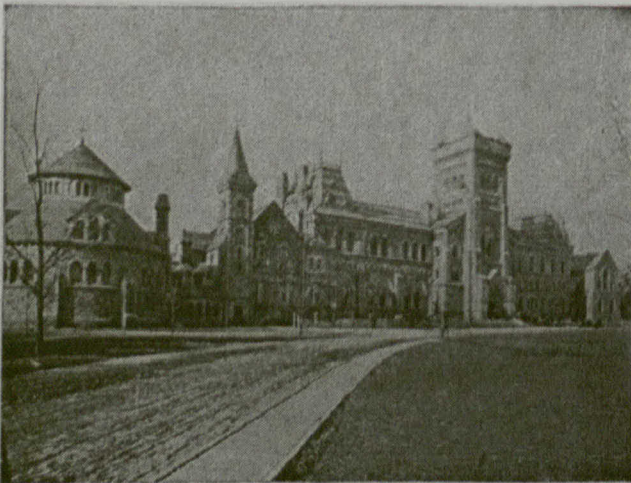
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## NOTES.

Simon Bros., Ltd. have decided to erect a modern flooring factory at Warton Ont.

The Toronto Architectural Eighteen Club will make application to the Ontario Legislature at its present session for a Charter of Incorporation.

The business of the Hardwood Fittings & Door Company, Dundas, Ont., has been purchased by Jones Bros. & Company, Ltd., Toronto, who will make extensive alterations and additions to the plant. They intend to manufacture show cases and interior woodwork on a large scale.

Letters patent dated December 27th, 1906, have been granted the Vancouver Portland Cement Company, Limited, Toronto, by the Dominion Government. The Company is capitalized at \$1,500,000 and the incorporators are J. S. Lovell, W. Bain, R.

Gowans, E. W. M. Neill, W. F. Ralph, H. Chambers and C. H. Black, all of Toronto.

The Metal Shingle and Siding Company Limited of Preston Ontario have opened up a warehouse and office at 132 Victoria st. Toronto, where they are represented by Messrs. Quackenbush Bros. who will at all times be pleased to make patrons of the Company welcome.

The Commercial Cement Company, Limited, recently organized by Winnipeg capitalists, have decided to locate their plant at Rose Isle, Man., about 75 miles from Winnipeg. The capital of the concern is \$200,000. W. P. Alsip, of Winnipeg, is president, and Otto Babcock, of Grand Forks, secretary-treasurer and general manager. Work will shortly be commenced on the buildings, and already, machinery valued at \$25,000 has been ordered.

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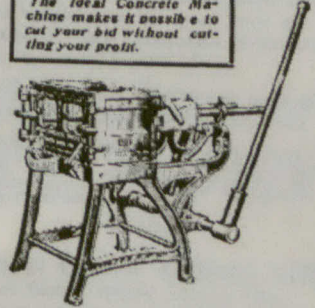
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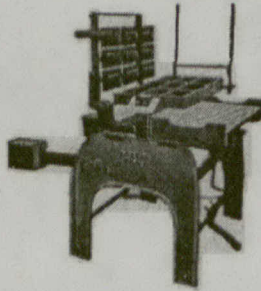
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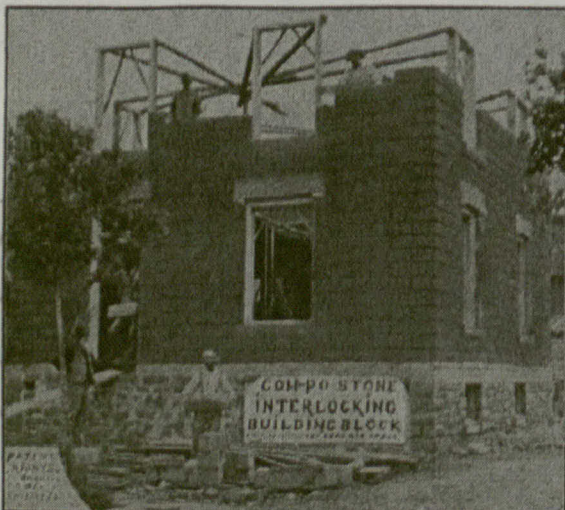
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## P. Q. A. A. SKETCHING CLUB

Members met on the 12th of December in the rooms of the Association when Mr. W. S. Maxwell and Prof. P. E. Nobbs were present to discuss and criticize the designs sent in for the first of the series of competitions. Class "A" problem was for a design for a series of five rooms to form an exhibit of Canadian Home Industries. For this \$25 was being offered in prizes by the Canadian Handicrafts Guild. As regards plan the first place was awarded to Mr. Brammell Daniel who had placed his rooms centrally in the gallery where they are to be exhibited thus effecting an economical arrangement of the partitions, good lighting and excellent opportunity for the public to circulate around the whole with good view of the exhibits. For this plan \$10 was awarded, but the treatment of the rooms themselves was considered to have missed the character specially to be aimed at, that of the employment of home-made fabrics and especially those of Canadian character. Of the drawings showing interior treatments three were selected as specially suited for the purpose. Two of these were submitted jointly under the names of Mr. Hutchings and Mr. J. Roxburgh Smith and for these two \$10 prizes were awarded. A third by Mr. Rankine, not so brilliantly drawn, came nearer than any of the others to the desired spirit of work aimed at and for this \$5 was accordingly awarded.

In the class "B" or junior problem the design for "An Outlook" making use of the Ionic Order, first place was awarded to Mr. Thos. Mace.

On the 19th Dec. a lecture was given before the Club by Mr. Outhet on the subject The House in Relation to the Landscape. The lecturer dealt with the different ideals possible in sites of different characters—the importance of considering good and convenient access as an element in fixing the position of a house and of observing all points of exposure and aspect. Though appreciating highly the value of trees, both as beautiful objects and as useful to a site in keeping the soil from being washed away, the lecturer believed that in many cases in order to make the best of a site in opening up good views of mountain and water it was often enough essential to sacrifice trees and one should not hesitate to do so. He strongly recommended a more extensive use of evergreen trees for picturesque and for shelter in winter. In the discussion which followed the lecture the general absence of evergreen trees from our city parks was much emphasized.

After the Christmas and New Year vacation the meetings of the Club were resumed on Jan. 9th, when announcement of the new subjects for competitions was made. In the senior division an organ case for a late Gothic church was the problem;—in the junior division,—an equestrian Monument for a square. Seven members took part in the equine problem.

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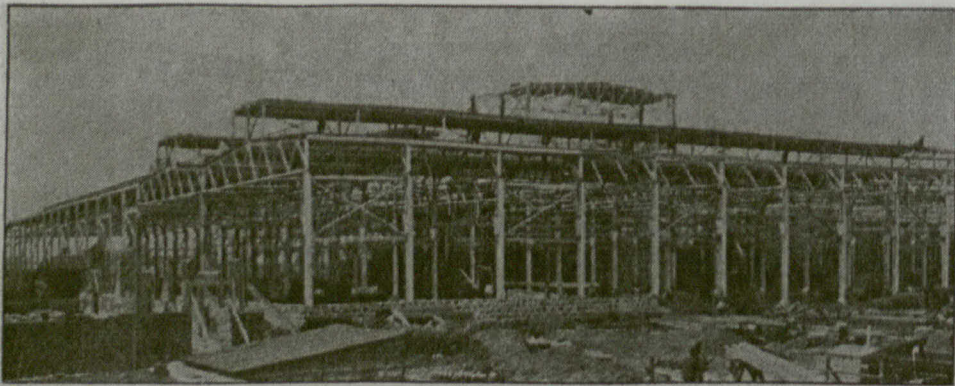
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# The Canadian Architect and Builder

C. H. MORTIMER PUBLISHING COMPANY PUBLISHERS.  
OFFICES: CONFEDERATION LIFE BUILDING, TORONTO, CANADA.

VOL. XX.—No. 229.

ILLUSTRATIONS.

JANUARY, 1907.

CANADIAN ARCHITECT AND BUILDER Students' Competition.—Design submitted by "Tekton."

## ADDITIONAL ILLUSTRATIONS IN ARCHITECTS' EDITION.

Imperial Bank, Winnipeg.—Messrs. Darling & Pearson, Architects.  
Ideal Furniture Company's Block, Portage la Prairie, Man.—Messrs. Darling & Pearson, Architects.

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**The Jamaica Disaster**  
Under the vigorous general-ship of Sir Alfred Jones immediate steps are being taken to rebuild the unfortunate City of Kingston. If Canadian architects and builders haven't enough work to do at home, Jamaica offers an inviting field for their services.

**The Strike Evil**  
The loss of time and money occasioned by strikes even in Canada with its comparatively small population, is strongly emphasized by statistics just issued by the Department of Labor at Ottawa. During the year ending June 30th last, there occurred 130 trade disputes, involving 518 firms and 18,513 work people. The loss of time due to these disputes was 343,800 working days, which, estimating the average wage at \$2.00 per day, means a loss in dollars and cents of three quarters of a million dollars. This tidy sum would go a long way towards providing the strikers' families with food, clothing and fuel throughout the present winter.

**London Keeps No Building Records**  
In collecting the data for the review of building operations for the year 1906, for our December issue, we were advised by the City Clerk of London, Ont., that no details of building operations in that city were available. The only information to be obtained was an approximate estimate of the total expenditure on buildings during the year, and nothing was given to show the basis for this estimate. Further enquiry shows that no record is kept of building operations for the city of London, a rather astonishing fact and one which is not creditable to a city of such importance. It is further learned that there is no system of inspection of buildings. Specifications for new buildings are, we understand, passed upon by the City Engineer, but there is no inspector to see that the specifications are lived up to. This is far from being a sat-

isfactory condition of affairs. It is time that the city should decide to be up-to-date and in line with other municipalities in this matter of keeping a records of its building operations and in establishing a system of inspection which should insure the use of proper methods of construction.

**Technical Training not a Substitute for Brains.**  
A prominent contractor writes the Canadian Architect and Builder as follows in response to a request for his opinion regarding the advantages of technical education in the building trades:—Technical training is only of use in such subjects as the pupil finds congenial to his tastes or adapted to his capabilities. I have in my employ one young man who graduated in several subjects in the London, Eng., schools. The man above referred to has benefited about as much from his special training as a hen would from swimming lessons; he is naturally dull, and only capable of earning minimum wages at rough work. A few days ago he was working at excavating; a waggon came one morning with a broken bottom board, leaving a hole about a foot long; this young fellow shoveled earth into the waggon and down through the hole; if I had not stopped him he probably would have kept on till the hole was full. I set him to work to sweep plasterers' rubbish out of a large hall, and told him to open the windows at both ends and take advantage of the strong wind. He opened the windows, but swept from the wrong end of the hall, against the wind. Technical training is a good thing, I believe, but when a man is looking for a job it does not help his case much by claiming that he has had a technical training.

**Toronto's Housing Problem.**  
Considerable discussion has taken place in the Toronto daily papers as to the means which should be adopted to remedy the condition of affairs existing in the locality formerly known as St. Johns



Ward. This locality has in recent years become the dwelling place of thousands of foreigners and is in such an overcrowded condition as to be a menace to health and morals. The city has been urged to go into the building business and provide apartment houses to replace the dilapidated buildings in which these foreigners now find shelter. On this point it may be said that there are many other directions in which the efforts of the City Government might with more profit be directed than in investing the money of the citizens in building houses for the poor. It is open to question if the erection of apartment houses in this locality is the best solution of the difficulty. The locality is even now almost in the heart of the business district and will very soon be required for business purposes. The proposed enlargement of the Armouries and the erection of the new hospital buildings will necessarily take the place of many of the old houses in with section, and, as stated, the remainder of the space will in time be required for business purposes. Toronto has become widely known and has attained an enviable position as a city of homes. In order that this position may be retained, it would seem to be desirable, instead of crowding this foreign element into the smallest possible space, to distribute it in the outlying districts by removing some of the restrictions which now prevent the building of moderate cost houses outside the central district. There is no reason why these restrictions should not be modified, and the poorer classes encouraged to build and own their individual homes.

New materials, which it is proposed to use for paving, flooring, and various building

#### Test of Materials.

purposes, generally require the test of time under actual conditions before they are regarded with any confidence, and this fact has been the greatest possible hindrance to manufacturers and inventors advocating such materials. Various schemes and devices have been put forward by means of which certain substances may be tested to show their wearing qualities, but none of these has ever been truly satisfactory. Each has its advantages, of course, but all have disadvantages, and hence an invention universally applicable in the testing of almost all such substances is a matter worthy of comment. There are in use to-day many methods for conducting abrasion tests, which generally consist either in grinding specimens of material on cast iron discs with carborundum, or in treating the materials in revolving cylinders known as rattlers, either with or without steel balls. The grinding process is most unsatisfactory, as it gives a perfectly smooth surface to the material under test, and the cutting grains are themselves changed in form and characteristics, and thus their effect is materially modified. The grains also, when used with a soft specimen, become embedded, and hence a grinding takes place between the surfaces of such grains and the new grinding medium. The use of rattlers has a similar disadvantage, for particles of the material which are ground off have a very serious effect in reducing the action through clogging. It is to Germany that we owe thanks for the introduction of a new sys-

tem of testing. The effect of a sand blast has been thoroughly appreciated for years, although no one seemed to consider the fact that if a sand blast were directed against a test piece, the peculiarities of the material would be fully shown. There is a machine now being used in the Royal Institute, at Lichterfelde, in which a sand blast is directed upwards against a test sample. This blast is operated by dry steam under a pressure of approximately thirty pounds to the square inch, and the sand used is a natural quartz sand of fine and nearly rounded grains. The standard test has been fixed upon as two minutes, and it has been estimated that a wear is produced in the test sample equivalent to at least one year. The test material is naturally held in a fixed position by means of clamps, and the surface which is subjected to the blast is protected by a cast iron disc, having a circular opening of fixed diameter. Thus, when the sample is removed from the machine, the depth of the abraded portion can be accurately measured, using the protected portions of the surface as a base. The beauty of this test is that an accurate comparison can be made between almost every class of material, as there is practically nothing which the sand will not cut. The surface of the test piece, after the operation is completed, presents an appearance in accord with the characteristics of the material; thus the disadvantage of the smooth surface obtained by the grinding process is eliminated. Also with the sand blast there is no interference in the grinding medium, the abrading and abraded particles falling clear of the sample. If a soft spot exists in the material under test, this spot will be cut out, and thus accurate information can be obtained as to homogeneity, coarseness of grain, and uniformity, as well as equal or unequal hardness. The value of this system will be thoroughly appreciated, and it will probably be but a short time before such testing devices are in universal use.

#### OUR ILLUSTRATIONS.

DESCRIPTION OF HOUSE SUBMITTED BY "TEKTON"  
(MR. S. DOUGLAS RITCHIE) IN C. A. AND B.  
STUDENTS' COMPETITION.

- Foundations of rubble.
- Exterior walls to be of stucco stained cream white.
- House to be balloon framed.
- Roof to be shingled with cedar shingles, weathered.
- Exterior woodwork to be of cypress stained a dark brown. Front door of ash stained sap green.
- Interior woodwork in principal rooms, ground floor, to be cypress stained.
- Ground floors to be birch or maple. All other floors to be of B. C. fir. First floor woodwork of white wood painted. Walls papered.
- Living Room.—Fireplace to have quarry tile 6 in. square facings and outer hearth, red brick back and under fire. Walls to have 7 ft. high wood dado, ceiling and walls to dado to be of sand-finished plaster. Beamed ceiling, plaster between. Woodwork to be weathered.
- Dining room to be finished in delf blue and white. Wall to have 6 ft. high burlap dado, with plate rail. Ceiling and walls to plate rail of cream plaster.



## C. A. AND B. COMPETITION FOR A SMALL SUBURBAN TOWN HOUSE.

## JUDGES' REPORT.

Placed 1st., "TECKTON."—This design is placed first for excellence of drawing and for evidence of independent thought, less influenced by the customary. The living room is, we think judiciously, for this type of house, a fine large room, and the arrangement of pantry and stairway is good; but exception must be taken to the cloistered verandah, which, if good in itself, yet takes from the dining room the feeling of freshness by excluding south sun. If dining room were extended into this space, and verandah or stoop thrown to back, plan would be improved. Draughtsmanship clever, but just a suggestion that author may be led astray by desire for striking rendering. The house as a finished result should be the single aim, and this is only to be gained by studious working out of all its parts.

Placed 2nd, "PTAH."—Is a good design, well drawn, especially in plan and formal garden. On the exterior, we consider the front gable a discord in the style adopted, and that outline would be improved by hiping front break, and the available space still abundantly lighted by the three other doorners.

Placed 3rd, "CHRISTOPHER WREN."—This is a creditable design, the draughting well done, although free hand parts lack precision. The perspective of gable is untrue, and cast shadows, exaggerated, giving false impression. Although one may like the coped gable as giving more dignity, the prejudice that this mode is unsuitable to our latitude is endorsed by its general avoidance. Dining room is a cheerful room, living room a comfortable one, and the arrangement and use of large pantry good.

Placed 4th, "ARCHITECTURE."—Draughtsmanship of this design fairly good, but touching up overdone. The plan is crowded, although there is evidence of study. Too much importance given to pantry; may be necessary for bath room above, but the resultant meagreness to front entrance hall is to be condemned.

Placed 5th, "CRAFTSMAN."—A good design on customary lines. Dining room and parlor fine rooms, with effective bay window in each. The absence of vestibule and back stair is noted. Think staircase window should be omitted. In house this size enough light would be reflected from ground floor window to light upper hall. The exterior over gabled front might be dispensed with, and no harm done. Confining stucco to upper storey is judicious. Drawings are done in a style suitable to routine of office work, except that more definition on plans is desirable.

Placed 6th, "SRUCCO."—A design for frame and stucco house which does not shrink the making of all external angles in plaster, notwithstanding the havoc Jack Frost has made in numberless examples. The exterior has a plainness which is good. As to plan, nine-tenths of the precedents would condemn taking the area of both verandahs within the walls as extravagant, but those who have lived to see their adjunct verandahs going to decay might give other testimony.

Placed 7th, "TRI-ANGLE."—This design is placed 7th., although drawings and details show knowledge and ability that should have taken higher rank. The plan, however, is elementary and wanting in interest. The exterior is better, and would make quite a good storey and half cottage.

Placed 8th, "LINCOLNS IMP."—Is of English half timbered style but is restless and over featured; the verandah costly for area covered; plan shows rather comfortable house to live in; but cannot be said to have been skilfully worked out, the drawing is well done, but not improved by weak wash shadows.

Placed 9th, "MINERVA."—An American house of a democratic type. The gambrel gable is an effective feature when used with discretion but should not be emphasized by half timbering. Means should have been devised to light first floor without the multiplicity of gables. Plan is not bad; improvement is suggested by making stair start from elevated platform; of more utility than cramped space now at foot of stair. Drawing clean but showing inexperience.

Placed 10th, "PONTILO."—Pontilo has not put too much time either in study of plan or execution of drawings. All we can say is that if executed it would not by any means be the worst house sent in in this competition, as the massing and outline of whole with large centre chimney is distinctly good.

Placed 11th, "DOMINION."—Shows some novelty of plan which would give rather effective interior, especially in reception room and hall, but elevations show too many features and draughtsmanship is weak.

Placed 12th, "COSMOPOLITAN."—Much the same style of house as "Minerva". Plan is good entitling it to higher place, but drawing is poor more particularly the perspective.

Placed 13th, "RENE SAENS."—It is rather peculiar that for the prototype of this design coming from a young present day student one has to hark back 30 years or so.

Placed 14th, "SCRATTER."—You are placed last, but as consolation would say that your judges have not failed to note your logical manner of honestly trying to roof your plan naturally as developed by its outlines. You have however in the matter of execution and detail of drawings fourteen pretty tall steps to climb.

J. WILSON GRAY }  
JOHN GEMMELL } O. A. A.

(Signed by Committee)

C. H. ACTON BOND } Eighteen  
A. H. CHAPMAN } Club.

The names of the prize winners in this competition are: First, Mr. S. Douglas Ritchie, 74 Guardian Building, Montreal; second, Mr. W. L. Somerville, 182 Spadina avenue, Toronto; third, Mr. Cecil Burgess, 230 Wood avenue, Westmount, Montreal; fourth Mr. Charles Dolphin, 73 Park avenue, St. Henri, Montreal, Que.

The publishers are much gratified with the success of the competition and are under obligation to the Judges for their disinterested labors.

Sheet metal sheds for automobile storage—that is, sheet metal garages—are becoming a factor in the trade of some sheet metal workers. This material is not only cheap, but it makes a non-inflammable house that can be easily enlarged or removed.

Ordinary corrugated iron receives one coat of paint at the rolling mill, the paint usually employed being red oxide of iron thoroughly ground in pure linseed oil, with enough drier mixed in to give it proper drying quality. The first coat of paint is applied by machine, and likely to be imperfect, wherefore the sheets should be painted again after putting them on the building.





### PLANT OF THE DON VALLEY BRICK WORKS, TORONTO.

The subject of this article will need no introduction to our readers, as there is probably no company in Canada engaged in the manufacture of building material that is better known than the Don Valley Brick Works. Mr. Robt. Davies, the present owner, has been operating the plant since 1901, previous to which time it was conducted by Taylor Bros.

We will endeavor to give a clear and concise description of the plant of this company, which through many additions and improvements having been made, stands today, one of the largest and most complete brick factories in America.

The company are the owners of about 115 acres of rich clay land in the Don Valley and possess a fine deposit of shale which seems to be inexhaustible.

The method of mining the shale was changed some years ago tracks having been constructed to the

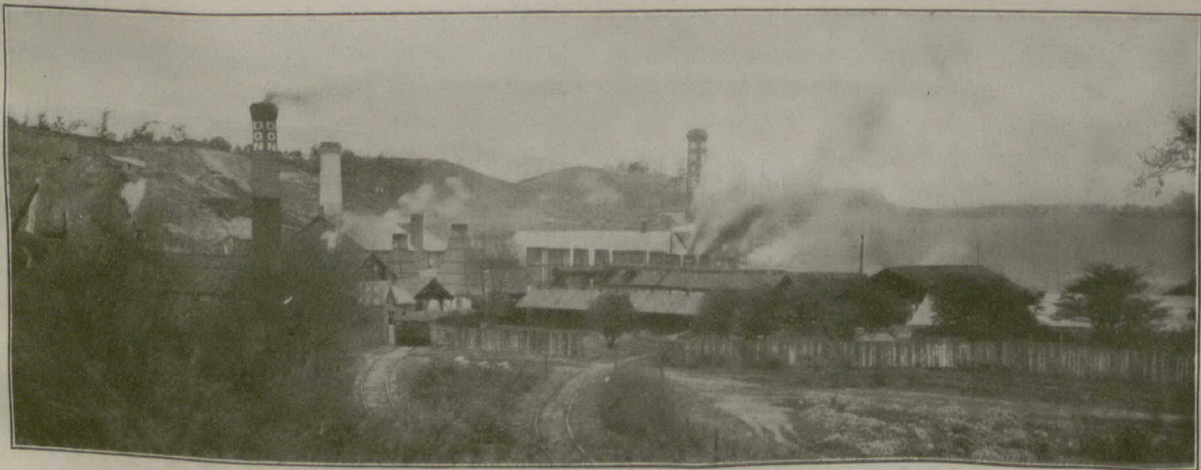
h. p. waterous engine and an 80 h. p. Leonard engine.

The shale from the main bank is used for the manufacture of the stiff-mud product. There are two driers used by this plant one using waste-heat and the other waste-heat and steam. The total capacity of the two driers is 288 cars at one time and it takes 24 hours to dry the product.

The material taken from the top of the bank is utilized for the dry-press brick. After being crushed the material is mixed at the dry pans, of which there are three, screened and delivered to the presses. The down draft kilns are used entirely for burning the products of this plant.

The demand for enamelled brick has greatly increased during the past two years and the fireproof brick department is also kept very busy.

We now come to the kiln department which is not only very interesting, but a very important section of the plant. The famous continuous kiln which is



GENERAL VIEW OF YARDS, DON VALLEY BRICK WORKS, TORONTO.

bottom of the pit and the cars hauled to the plant by a gravity arrangement.

The material for the red products is taken from the main bank and conveyed to a crusher which can handle material for 50,000 brick daily, while for the light-colored products the clay above the shale is used.

There are two soft-mud plants, having a total capacity of 41,000 brick per day, equipped with machinery supplied by Doig & Company, Toronto. The products of these two plants are dried on rock and pallet cars holding from 240 to 270 brick each, in two driers using waste heat and steam. One drier has eight tracks and uses both waste heat and steam drying the product in 24 hours, while the steam drier has 12 tracks and dries its products in 36 hours. The burning is done in down draft and continuous kilns but the former is preferred for soft-mud manufacture. The power equipment for these plants consists of a 50

a very popular topic of conversation in the trade, is probably the largest of its kind on the continent. It is 270 feet long and 150 feet wide, has 26 chambers each holding 50,000 brick and its daily capacity is from 85,000 to 100,000 brick, just about one-third more than all the other kilns combined. The other continuous kiln has 14 chambers which hold 122,000 brick each. The down-draft kilns are eight in number, there being from nine to twelve furnaces on each side. The average capacity is 175,000 brick each. There are also five enamel kilns with a weekly capacity of 10,000 brick each.

A 175 h. p. Wheelock engine, supplied by Goldie & McCulloch, Galt; a 225 h. p. high-speed engine, supplied by E. Leonard & Sons, London; a 125 h. p. Brown engine, supplied by Worswick, Guelph, and several fan engines of 40 h. p. each, complete the power plant.

There are also machine, carpenter and blacksmith



shops in connection with the works and a fire department.

The business of the Don Valley Brick Works has greatly increased during the past few years and the plant is kept in constant operation giving employment

It might be interesting to note that a contract for the supply of 600,000 white enamel brick was recently awarded this company by the Dominion Government, to be used in the erection of the Mint at Ottawa.

### CEMENT INDUSTRY AT OWEN SOUND ONT.

The season of 1906 was the most successful season in the history of the cement industry for the companies at Owen Sound, Ont. The demand and the price were both good. The season opened with the price at \$1.70 a barrel, and closed at about \$1.60 to \$1.65. Many improvements will be made at the different mills during the winter.

At the Imperial Cement Works the past season has been by far the most successful in the history of the company and the output was between 95,000 and 100,000 barrels. Before the mill opens up again about March 1st extensive improvements will be made that will give the works a capacity of from 800 to 1000 barrels a day. In the grinding plant two new separators and a ball mill will be installed. The drive on the rotary kilns will be rearranged and the boiler capacity will be increased by the installing of a new boiler and equipping each with Murphy automatic stokers. Besides the improvements at the works an additional dredging outfit will be installed at the marl beds at Williams Lake. During the past season the plant has been run at full capacity and with the enlarged plant even greater things may be expected next season.

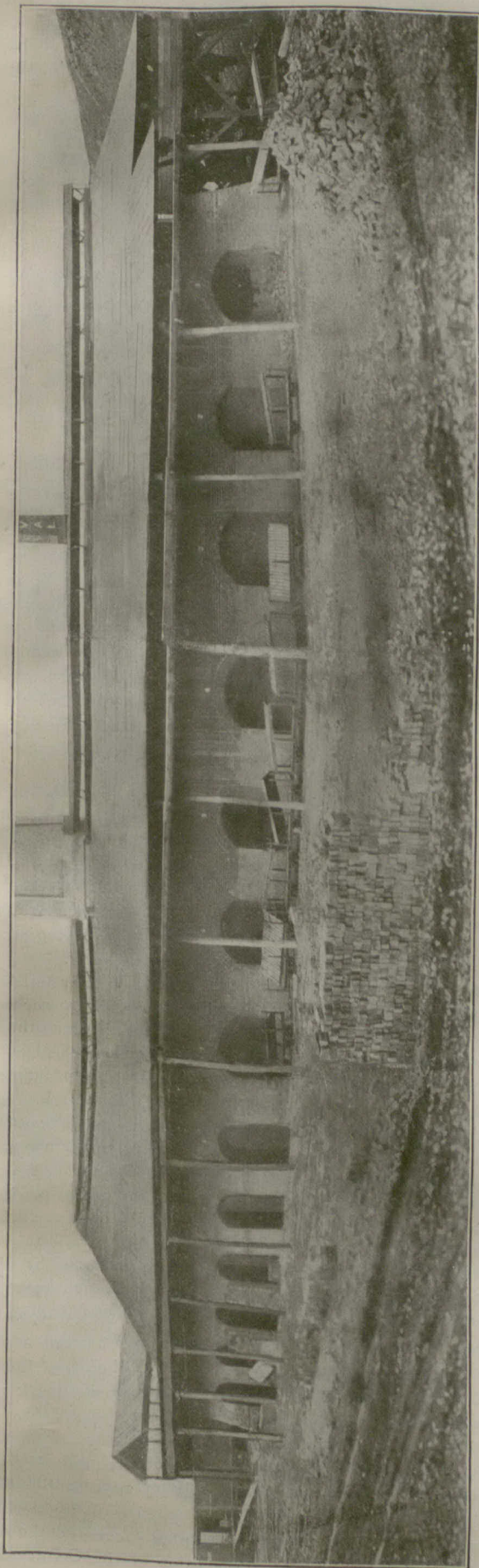
The Sun Cement Company report that they have had a most successful season. Demand has been steady, prices good, and consequently the plant has been kept running to its full capacity in order to fill its orders. During the season about \$7,000 was spent in improvements to the works, and it is the intention of the directors to further increase the capacity of the plant next season. The total output for the season was about 100,000 barrels.

The annual meeting of the Grey and Bruce Company brought forth most satisfactory reports for the season's work. Their full output was taken, and more might have been disposed of if it could have been turned out. No extension of the plant is contemplated at present.

Argentina as a source for the supply of linseed has not lately been doing well. The coming yield is put at 50,000 tons less than the quantity forecasted by the Government Agricultural Department. The exports up to now—about 350,000 tons—are 150,000 tons less than the quantity for the same period last year. Touching the next harvest, prospects happily were better, as the drought, which had lasted in the linseed areas almost six months, had come to an end with a copious rainfall.

Long before the San Francisco earthquake the Japanese had noted the marked advantages inherent in reinforced concrete, and it is understood that engineers from that progressive country have instituted a series of tests, in which small structures are mounted upon tables capable of being vibrated in the same way in which an earthquake would shake a similar structure, and the effect of various kinds and durations of shock carefully studied.

At one time there were no fewer than 700 timber churches in Norway, but only 24 now exist—fantastic relics of many centuries ago. The first impression suggests Chinese influence; but, in reality, there has been nothing of the kind, the churches being simply a Norwegian development of the Romanesque basilican plan.



MAMMOTH CONTINUOUS KILN, DON VALLEY BRICK WORKS, TORONTO.

to about 175 men. Spring creek was dammed by the company and there is consequently a good supply of pure water obtainable. The railway facilities are of the best, a siding being constructed in the yards over which all the lines can operate.



## ONTARIO ASSOCIATION OF ARCHITECTS

For the first time in its history, the Association held its annual Convention this year outside of Toronto. The meeting took place at Ottawa on the 15th and 16th inst., and so successful was it that what was regarded as a somewhat doubtful experiment, will probably become a regular procedure for the future. To the recently formed Ottawa Chapter, of which Mr. J. W. H. Watt is President and Alderman F. J. Alexander, Secretary, is due much of the credit for the success of the meeting.

An effort will be made to organize similar Chapters at Hamilton and London and to hold future conventions in those cities, thereby broadening the interest in the Association and perhaps assisting to bring about the formation of a Dominion Association—an object which lies near the hearts of some of the leading members of the O. A. A.

An exhibition of Architectural drawings and photographs, by members of the O. A. A. and P. Q. A. A. and an exhibit of Sculpture by Mr. Hamilton McCarthy, R.C.A., added to the interest of the sessions, which were held in the new Carnegie library building.

Much interest centered in the visits to the Geological Museum and other Government buildings, the work of the Ottawa Improvement Association and the site for the proposed new buildings for which the Government has invited Canadian architects to submit competitive designs. The possibilities of the site were admired, but the omission from the conditions of competition of a guarantee that the successful competitor would be associated with the execution of his design, as well as the inadequacy of the prizes offered, elicited adverse criticism and led to the passing of a resolution that an appeal be made to the acting Minister of Public Works to have the conditions amended in this important particular.

The papers by Prof. Nobbs, of Montreal, on the Influence of Revivals on English Architecture in the XIX Century, illustrated by lantern slides, and the address by Mr. Wm. L. Price, architect, of Philadelphia, on Modern Architecture, were in every way worthy of the authors and were listened to with marked interest and appreciation.

The annual dinner at the Laurentian Club was marked by good speeches, good music, and good fellowship.

Owing to the nearness of the Convention to our publication day we are unable to do more than present in this issue an outline of the proceedings.

### PRESIDENT'S ANNUAL ADDRESS.

The inauguration of the 19th Convention of the Ontario Association of Architects marks a new era in our history.

Hitherto every annual meeting has been held in the City of Toronto. To-day we are assembled in Ottawa, the capital city of our growing Dominion. Our members in Ottawa have long advocated this move. To-day sees the fruition of their desires, and to-day and to-morrow will doubtless reveal the wisdom or the unwisdom of the innovation.

I think I may say that it is the strong hope and desire of the Council that this Convention shall not only equal past ones in interest, but that it shall exceed all previous meetings in the quality of the papers under discussion and in the enthusiasm of those in attendance.

Another notable event in our history this year has been the formation of the Ottawa Chapter, an event looked forward to for years by the Executive of the Association.

It is confidently expected that good results will flow from this organization, that in bringing the architects of the Capital to-

gether for the reading of papers and fraternization the status of the profession in Ottawa may be raised, and that the Chapter will be a feeder and source of strength to the Association.

May we not hope that before long the architects of Hamilton and London will be similarly organized?

The advantages of contact and conference are so obvious that it is passing strange that architects do not make more use of their opportunities in this respect.

It may be opportune, if time permits, to give some thought to the question of the formation of a Dominion Association of Architects.

The formation of incorporated societies in Manitoba and Alberta, two provinces of the great West, and of a local society in Regina is a proof of rapid development in matters architectural. The Association in Alberta has sprung full fledged into existence, and the Legislature of that province has empowered it to hold the exclusive title of "Architect." The Act, however, makes provision for the entrance and permission to practise of members of sister societies on payment of the regular entrance and membership fees.

Quebec in the middle East and Alberta in the far West are, therefore, the pioneers in adopting this means of securing a better educated class of men for the profession. The Association in Manitoba has been formed on lines somewhat similar to our own, but lacking our provision for intermediate examinations.

If other provinces follow and obtain like legislation, some sort of Federal organization may become a necessity, as many architects now practise in or send plans to other provinces than their own.

In this connection it may be noted that a suggestion has been offered in a leading editorial in the London Building News that in the matter of the revision of the Charter and By-laws of the Royal Institute of British Architects, and the movement towards registration, this revision shall be laid down on broad lines, enabling its various allied societies to become integral parts of its constitution—branches and independent bodies—each of whose members would be a member of the Institute itself. It is also suggested that if it is done with the allied societies it should be done with the Society of Architects also.

This would raise the membership from two thousand at once to six thousand, a most influential body, with educational and other resources which would place the profession on a high plane and on a par with other professional bodies in the United Kingdom.

It may be of interest to state that the Society of Architects above referred to is proceeding to push its own Registration Bill in the Imperial Parliament to its second reading.

At the last general election in England a circular letter was sent to every parliamentary candidate asking him to record his opinion on the principle involved, and his intention or otherwise of supporting the Bill, if elected. Many promises of support were received, while only one declared against the principle.

At the recent International Congress of Architects in London the last morning was devoted to the reading and discussion of papers on the subject of a statutory qualification for architects, and a resolution was subsequently passed "That it is desirable in the interests of the public of all nations, and of the profession of architecture, that all practitioners should have a statutory qualification."

The papers presented (5 in number) were prepared by Mr. J. S. Archibald, of the Quebec Association, two French architects, an Austrian architect, and an architect from Great Britain.

In the discussion which followed delegates from the Association of Hungarian Architects and the Royal Victorian Institute of Architects, of Australia, reported that they were instructed to support the resolution. Architects from Cape Colony and from various parts of Great Britain also spoke in its support—Mr. G. A. T. Middleton remarking that there had not been a single dissentient voice from any country represented at the Congress.

Circumstances which were unavoidable prevented the official representation of the Ontario Association at the Congress, but our travelling member, Mr. D. B. Dick, attended in our behalf, and his brief report, published in the August number of the Canadian Architect and Builder, will be printed in the proceedings of this Convention.

COMPETITIONS.—I have to confess with pleasure that my prophecy of dissatisfaction in connection with the competition



for the Carnegie Library at Toronto in my address of a year ago has not been fulfilled.

I think I can safely say that the competition was honorably conducted and fairly judged, and that the best design was selected. Great credit is due the successful architects for the ability displayed in producing a thoroughly compact, economically planned and well-designed building. The city of Toronto will, without a doubt, obtain full value for every dollar expended on the structure.

The most notable competition, probably of a decade at least, is that which is now proceeding in connection with the new buildings for the Dominion Government, to be located on the east side of Major's Hill Park, in the City of Ottawa.

A Board of Assessors, or jury, consisting of the chief architect of the Public Works Department and the presidents of the Quebec and Ontario Associations of Architects, was appointed by the Government last summer to prepare conditions of competition and to act as assessors in awarding the various prizes offered. These prizes amount in all to \$15,000.00—\$8,000.00 for the first, \$4,000.00 for second, \$2,000.00 for third, and \$1,000.00 for the fourth.

None but Canadian architects practising in Canada are eligible, and it is the desire of the Government that Canadian building material shall be exclusively used in the structures wherever possible.

The clause in the conditions whereby the Government does not bind itself to entrust the preparation of the working drawings and the supervision of the work to the successful competitor has provoked unfavorable comment on the part of a considerable number of architects, and may be the means of keeping some good men, if not the best, out of the competition. It goes without saying that no man can satisfactorily interpret another man's ideas, especially when the scale of the drawings is too small to give more than a hint of the detail.

The successful competitor should be permitted the development of his ideas. A scheme of such importance will require a vast amount of later study, which can only be given by the author himself. If the work is taken up by other hands it cannot but lose its individuality, no matter how sincere the other man is in endeavoring to faithfully carry out the competitor's ideas.

It should be borne in mind, however, that a very unfortunate situation might arise if the Government should absolutely commit itself by undertaking to entrust the execution of the work to the author of the prize design.

The prize design might be the work of a man who would be incompetent, or utterly impossible, regarding either the preparation of the working drawings or the subsequent supervision of the work. This is a contingency which might easily arise in a competition open to the Dominion, and the Government, for its own protection, must necessarily guard against such a contingency.

While on the subject of competitions, I cannot refrain from noting the facility with which some members of the profession forget all their effusions and resolves when conferring together regarding the undesirability of competitions limited or otherwise where a committee of laymen are constituted sole judges. If four or five men are privately invited to enter such a competition the hope of obtaining the work is so strong that they are sorely tempted to pocket their objections and go in to win, in the hope that their design may be the one which will capture the imagination of the majority of the committee. It may be taken for granted that so long as even a small number of our reputable men are willing to accept such conditions the smaller competitions will not be conducted on the lines laid down in the model form adopted by the Association.

**DECORATION OF PUBLIC BUILDINGS.**—An organized movement was made this year by members of the Guild of Civic Art and local architects in favour of the decoration of the Legislative Buildings of Ontario. The suggestions include not only the mural decoration of the walls, but a remodelling of the entrance hall and corridors. It has been suggested that the entrance hall be first improved and the commission given for decorating two or three panels each year. The Government has been favorably impressed, and has promised a substantial initial grant, but as more comprehensive changes in the building are contemplated nothing definite has, so far, been the outcome.

A similar committee is maturing a scheme of mural decoration for the City Hall at Toronto, with the intention of securing a

grant from the Council for its execution, spreading the work over a series of years.

The walls of the Parliament Buildings at Ottawa offer a suitable field for similar treatment, and no better opportunity could be afforded for recording pictorially the history of our young and growing nation. Is not this an opportunity for our newly formed Chapter to signalize its inception by a movement which should greatly advance art in our capital city?

**TECHNICAL EVIDENCE.**—It appears to me that this body should consider the question of taking some definite action with a view to influencing the procedure of the courts in connection with technical evidence.

There is a saying among lawyers that there is no liar like the technical liar.

The technical expert in the present day is engaged by one party in a dispute, whose views alone he hears, and who pays him a fee for supporting his contention. It is quite natural, therefore, that he should look at the question at issue from one side only. In other words his judgment is biased from the very nature of the case. If he does not see the matter in a particular light his client has no use for him, and naturally so.

It is no wonder, therefore, that very conflicting evidence is heard on either side, and often from men of honor and responsibility. In other cases the expectation of a large fee is sufficient to induce men of lower moral standing to deliberately misstate facts. Men of the latter type, however, soon become known, and their words are largely discounted, while on the other hand the evidence of men of known probity and independence carries weight and conviction.

One great difficulty in connection with the taking of technical evidence is the fact that the witness is not permitted to say what he wants to and should say. An astute lawyer will frequently so word his question that the answer must be "yes" or "no," and yet neither would be the correct answer. The witness should, in such cases, insist on being permitted to give a full and succinct reply, with such explanations or remarks as may be necessary to make his meaning plain. If the judge sees that the witness is honestly endeavouring to make clear his point he will seldom refuse this permission.

If possible, legislation should be obtained by which the court would be empowered to appoint a committee or board of experts from men of experience in the question at issue, and men withal of probity and good repute. These men would be instructed by the court of the question at issue, they would listen to evidence on behalf of either side when necessary for the establishment of facts or other matters aside from technical which might affect the case, and would then present their report to the judge, dealing with the case entirely upon its merits. Their report should be no more biased than the decision of a judge, and there should be a very greater likelihood of an entirely just award than under existing conditions.

**CIVIC IMPROVEMENTS.**—If our cities are to be improved, not only as to buildings, but as to streets, avenues and squares, architects must take a leading part in movements to such ends. Public spirit must be cultivated, and we must lead by being willing to spend time and talent in the furtherance of schemes of improvement without thought of pecuniary reward.

Mr. Norman Shaw, to whom has been entrusted the great task of refashioning Piccadilly Circus, is one of London's enthusiasts in the matter of city planning and improvements. Referring to London's need (and the same will hold good in regard to our larger cities), he said recently in an interview, "What we want is a plan, a big comprehensive plan." He then goes on to say how the French do it.

"In the first place they consult the artists, the people who know. The broad idea of a boulevard or a great street is laid out. It may be a hundred years before it is finished, but the idea runs constantly on. In a dirty little street you come across three or four fine new houses, well set back from the road, and you wonder by what freak they came there. You return in a few years and find a few more, hundreds of yards away. And then you discover that they are all parts of a scheme for a great avenue of the future, an avenue, it may be, half a mile long. We never by any accident do that. That is the plan, the thing we have not got."

Mr. Shaw, in closing the interview, compressed his thoughts into a message, saying, "Plan, plan, plan," that is what I am for ever preaching. Lay out your designs and builders will



build to them. Look ahead and work on a clear scheme, even if it takes a hundred years to complete the scheme.'

As an evidence of the attention being given to the question of civic improvements, the case of two cities may be noted. In the old world, Vienna, which possesses a far larger proportion of open spaces than does London, Paris or Berlin, has set about a movement to preserve the forest and meadow land surrounding the town, increasing the parkways and open spaces five fold.

In the new world, Chicago is planning to surpass even Boston in planning for future needs. Believing that in fifty years it will be four times greater than at present, with a population of 8,000,000, a commission has been authorized to draw up an outer park system of commensurate scale. This commission has made its report, and advocates the acquisition of 37,000 acres, extending 25 miles into the country, and at an estimated cost of \$25,000,000.00. In addition to this there are many more smaller parks proposed—eighty-four in all. The total park system would then comprise 40,000 acres, or nearly three times the size of the island of Manhattan.

THE AMERICAN INSTITUTE OF ARCHITECTS.—The American Institute of Architects celebrated its Semi-Centennial in Wash. on January 7th, 8th and 9th, during the Annual Convention. The occasion was participated in by representatives of all the allied arts, and addresses were received from sister societies. Our Vice-President represented this Association at the celebration, and presented a brief address, which will be recorded in the volume of our proceedings for this year. A notable event in connection with the celebration was the conferring of the first Institute medal upon Sir Aston Webb, R.A., past president of the Royal Institute of British Architects.

Our treasurer is to be congratulated upon the greatly improved financial statement which is to be presented this year. Last year's deficit of \$140.00 has been changed to a surplus of \$350.00 this year. This good result has not been obtained merely by the raising of the annual dues, but by economy in expenditure and businesslike handling of our volume of proceedings.

Educational classes for the benefit of Toronto students have been conducted on the same lines as last year, with an enrolment of 17 students. The need of a class in design has been deeply felt by the Council, but difficulties in the way have, so far, prevented its establishment. A regrettable lack of educational facilities in other centres also prevails—a lack which militates seriously against the proper training of our students and the future progress of architecture in our country, and especially in the smaller cities.

We are brought face to face with the fact that our students, as a rule, are not receiving the thorough grounding and training which students in other professions obtain, and are compelled to obtain. Should we not take up this question in earnest and endeavour to improve the situation as far as it lies in our power?

Since writing this address one of our honorary members, Mr. Henry Langley, has passed away. Mr. Langley designed several important buildings of a generation ago, including the Lieutenant-Governor's residence, the Metropolitan Methodist Church, the Toronto General Post Office, some of the older office buildings and residences in Toronto, and numerous churches throughout the country, from St. John, N.B., in the east, to the St. Clair River in the west. Mr. Langley was a pupil of Mr. Wm. Hay, a Scotch architect, who practised in Toronto in the fifties, and from whom he obtained a good training in Gothic architecture. Among Mr. Langley's pupils were Messrs. Frank Darling, H. B. Gordon, A. A. Post, R. J. Edwards, Wesley Peters, Chas. E.; and Fred. Langley, C. H. Acton Bond, J. C. B. Horwood, the late J. H. Marling, of Marling & Burdette, Buffalo; Fred. Kelly, of N.Y.; Murray White, of Holabird & Roche, Chicago; Ernest Wilby, of Kahn and Co., Detroit; W. Ford Howland, and the writer. Mr. Langley was a man of great kindness of heart, upright in all his dealings with his fellow men, and one who from first to last upheld and practised honorably his chosen profession.

And now, as I am to-morrow to vacate the office of President, I have to thank the Council for the honor placed upon me in electing me to serve a second term.

If I have failed to rise at all times to the measure of my duty, it has been because of physical inability or the pressure of insistent business, and not for lack of heartfelt interest in the work and progress of the Association.

TREASURER'S REPORT FOR YEAR ENDING JANUARY, 1907.

RECEIPTS.	
Cash in bank, January 5, 1906.....	\$324.55
Membership fees.....	314.00
Admission fees.....	60.00
Students registration.....	33.00
Examination fees.....	161.00
Advertisements in "Proceedings".....	955.00
Final dividend Guild Fund.....	11.22
Rent of rooms Guild Civic Art.....	15.00
Bank interest.....	4.45
DISBURSEMENTS.	
Convention Expenses—	
Reporting.....	\$67.60
General.....	95.90
	\$163.50
Registrar, salary.....	200.00
„ petty cash.....	32.42
Stationary, printing and sundries.....	34.50
Educational classes, net.....	43.20
Examinations.....	66.85
Library and insurance of books.....	50.80
Legal expenses.....	34.90
Rooms, rent etc.....	152.80
Expenses to Council meetings and deputation to Ottawa.....	57.70
Printing and publishing proceedings.....	360.60
Balance in bank, January 5, 1907.....	680.95
	\$1,878.22
	\$1,878.22

A discussion took place led by Mr. H. B. Gordon, upon the desirability of making another effort to secure legislation on similar lines to that granted to the Province of Quebec Association of Architects.

The following are the officers elect for the ensuing year: President, Edmund Burke, Toronto; First Vice-President, Geo. W. Gouinlock, Toronto; Second Vice-President, J. W. H. Watt, Ottawa; Treasurer, H. B. Gordon, Toronto; Registrar, W. R. Gregg, Toronto; Council, A. H. Gregg, J. W. Gray, W. A. Langton, W. E. Moore, Toronto; E. L. Horwood, Ottawa.

### MONTREAL NOTES.

A general meeting of the Province of Quebec Association of Architects was held on the evening of Dec. 3rd at which Mr. Archibald, past-president, brought forward a revised form for the election of officers. After a general discussion and the inclusion of a number of minor amendments, the new system of election, which forms an amendment to the Association by-laws, was adopted. The chief new feature is the establishment of a Nominating Committee, consisting of the President and the four preceding qualified past-presidents, who are to draw up an official list of officers willing to accept election. Provision is also made for the nomination of further candidates by any five members of the Association. It is hoped that the new system will do away with difficulties that sometimes arose under the old by-law according to which the same member might be elected to several offices, and members might receive election who were not prepared to accept. The large number of proxies registered, especially when the annual meeting took place at Quebec, sometimes made it difficult to straighten out these anomalies. It will also be easier to ensure to the Quebec branch of the Association a definite amount of representation amongst the officers. The Nominating Committee at present consists of Mr. Alcide Chausse, President; Mr. J. S. Archibald, Mr. J. P. Ouellet and Mr. W. E. Doran.

A special meeting of the P.Q.A.A. was held in the rooms of the Association on the 4th of January to consider the Programme of Competition for the proposed new department buildings at Ottawa. Mr.



Chausse, the President, asked to be allowed to vacate the chair to facilitate the particular business in hand, and Mr. A. C. Hutchison, past-president, took the chair at the request of the meeting.

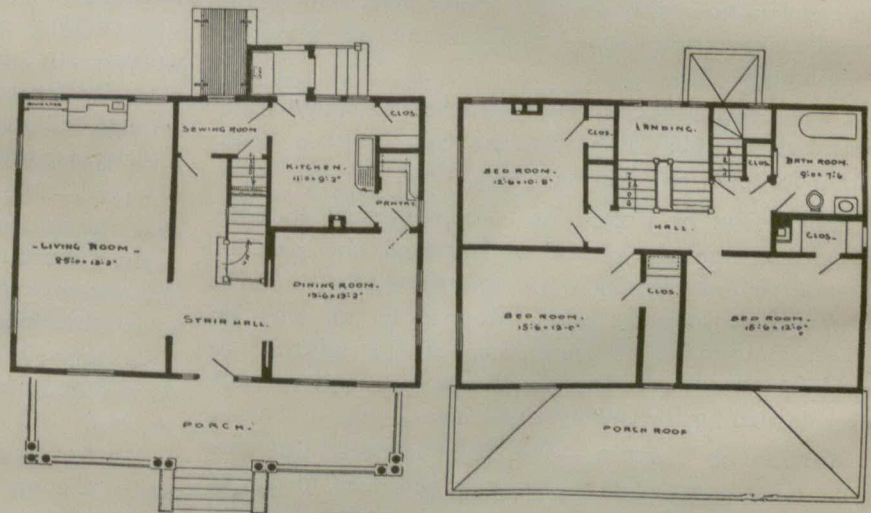
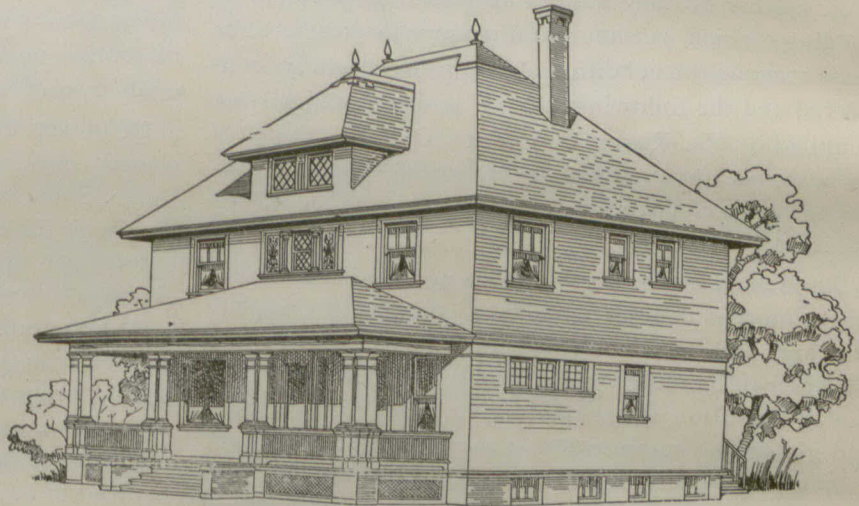
Mr. Chausse then explained the circumstances of his appointment to act along with Mr. Ewart, of Ottawa, and Mr. Burke, of Toronto, on a committee of management and adjudication. In the course of making the necessary arrangements he had taken occasion to consult with his confreres, the members of Council of the P.Q.A.A., placing before them a tentative set of conditions. At that time the Council unanimously recommended that the conditions should guarantee to the author of the design which should be placed first the joint employment with the government architect in the carrying out of the work. A letter to this effect had been sent to the Minister of Public Works but had not received the courtesy of a reply, and Mr. Chausse's own representations had also failed of success. Receiving no support in this matter from the other members of the committee of adjudication, Mr. Chausse had signed the conditions in their present form, but as he realized that these conditions did not give entire satisfaction he had called this meeting in order that the Association might discuss the question as a body and express its views officially.

Mr. Gardiner, seconded by Prof. Nobbs, asked for the resolution on this matter which had been drawn up by the Council of the P. Q. A. A. on the 5th of October, and copies of which were forwarded to the Minister of Public Works and to the members of the Board of Assessors, and to which no replies had been received. The secretary read the resolution.

In the general discussion which followed, Mr. Chausse was asked if he could state any particular objections that had been made to ensuring the author of the best design a share in carrying out the work. Mr. Chausse replied that the objection was the idea that some one might be given first place who had no other qualities but smart draughtsmanship to recommend him.

Prof. Nobbs said he regretted there appeared to be such imminent risk of another being added to the long list of mismanaged competitions. The action taken by the Council of the P.Q.A.A. in this matter had been unanimous, but, as it appeared, ineffectual. As a member of Council he would like to call for an expression of the opinion of the Association on the conduct of the Council, to let them know whether they had the backing of the Association on the question. He therefore proposed a resolution which after some adjustment at the suggestion of Mr. Jos. Perrault, Mr. Archibald and others, was moved by Prof. Nobbs, and seconded by Mr. D. N. MacVicar. This resolution was to the effect that the meeting endorses the

efforts of the President and Council to obtain better conditions in the forthcoming competition for the New Departmental Buildings in Ottawa, on the lines of the resolution of the Council of October 5th, and regrets their non-success, and moves that with a view to remedying the difficulty a deputation of three members of the P.Q.A.A. be appointed to confer with the Ontario Association of Architects at their annual meeting in Ottawa on January 15th, and if the two Associations agree on the matter, that a joint deputation should wait on the government authorities with a view to altering Clause 12 of the published conditions on the lines of the said resolution of the Council, and should then report to the Annual General Meeting of the P.Q.A.A. This resolution was carried on a division. Prof. P. E. Nobbs, Mr. A. C.



FIRST FLOOR SECOND FLOOR  
DESIGN FOR A MODERATE COST HOUSE.

Hutchison and Mr. Jos. Perrault were then appointed to act as the deputation in the matter.

#### DESCRIPTION OF DESIGN FOR MODERATE COST HOUSE.

Frame house of seven rooms, of the "center hall" type. Living room is extra large, being 13 ft. wide and 25 ft. long. Birch is to be used for the finish of first storey, except in kitchen and bath room, and Georgia pine for balance of house. Plain oak floors are provided for first floor, except in kitchen and pantry, where maple is to be used. Second storey floors are of quarter sawed Georgia pine. There is an attic, with stairway leading to same. Basement walls are of brick. Main body of house is 26 ft. by 36 ft. 2 inches. Hot water heating plant is provided. Estimated cost \$3,200.00.



# CEMENT AND CONCRETE

## BY-LAWS GOVERNING REINFORCED CONCRETE CONSTRUCTION IN TORONTO.

Considerable difficulty has been experienced by City Architects and Building Inspectors in framing a set of by-laws governing the erection of reinforced concrete buildings. The officials do not wish to be too stringent, neither do they wish to authorize the erection of buildings which will not stand reasonable tests. For these reasons the conditions have been carefully considered and the following set of by-laws which was compiled by Mr. Robert McCallum, City Architect of Toronto, are about as reasonable for all persons concerned in the construction of a building as could be expected.

**PERMISSION TO ERECT.**—Before permission to erect any reinforced concrete structure is issued, complete drawings and specifications must be filed with the inspector of buildings, showing all the details and the size and position of the reinforcing rods, stirrups, etc., and giving the composition of the concrete; provided, however, that permission to erect any reinforced concrete does not in any manner imply the acceptance of the construction until after tests have been made of the actual construction to the satisfaction of the inspector of buildings.

The execution of concrete work shall be confided to workmen who shall be under the control of a competent foreman or superintendent.

**PROPORTION OF CONCRETE.**—The concrete shall be mixed in the proportions of not less than one part of cement, two parts of sand and four parts of clean stone or gravel, or in such other proportions as may be necessary to make the resistance of the mixture to crushing not less than 2,000 pounds per square inch after hardening for twenty-eight days.

**METHOD OF TESTING.**—The tests to determine this value must be made by a competent engineer, furnished by the owner of the building, or by the contractor, and such tests, as well as the preparing of the mixture for the same, shall be made in the presence of and under the direction of the inspector of buildings or his regularly authorized assistants. All concrete work entering into the construction of any building shall be made of like material and proportioned in the same manner as the concrete in the accepted tests.

**MIXING OF CONCRETE.**—The concrete used in reinforced concrete construction must be what is usually known as a "wet" mixture, and all concrete shall be thoroughly mixed by machine to an even, uniform consistency.

When a section or panel of reinforced concrete or any trussed concrete member is started, it must be finished in its entirety before shutting down for any purpose which will make a necessary delay of more than thirty minutes' duration, and any batch or remnant of concrete which has been allowed to stand until

it begins to set must be at once removed and shall not be mixed and used in any portion of the work.

**PUTTING CONCRETE IN PLACE, ETC.**—All concrete must be placed in the forms in its final position as quickly as possible after being properly mixed, and particular attention must be given to the thorough puddling of concrete around all reinforcement, and under the lower flanges of all beams, so as to make the entire mass a monolithic body entirely free from voids or unfilled portions.

**QUANTITY OF CEMENT.**—Only high grade Portland cement shall be used in reinforced concrete construction. Such cement when tested neat shall after one day in air develop a tensile strength of at least 200 pounds per square inch, and after one day in air and six days in water shall develop a tensile strength of at least 500 pounds per square inch, and after one day in air and twenty-seven days in water shall develop a tensile strength of at least 600 pounds per square inch.

Provided always that a copy of a duly certified statement of the result of each such test of the cement to be used in any concrete construction shall be filed with the city architect before the said cement is used in said construction. Other tests as to fineness, constancy of volume, etc., made in accordance with the method prescribed in recognized "standard specifications for cement," shall be furnished when deemed necessary by the city architect.

**SAND.**—The sand to be used must be clean, sharp and coarse, perfectly free from loam or dirt.

**CRUSHED STONE OR GRAVEL.**—The stone used in the concrete shall be clean crushed stone or gravel of a size that will pass through a three-quarter inch ring. The stone shall be fresh broken and screened, free from dust, and if gravel is used it shall be thoroughly washed.

**METHOD OF REINFORCING.**—All reinforcing steel shall be completely inclosed by the concrete; the thickness of concrete on the bottom or exposed side of any reinforcing steel member of a lintel, beam, girder or column shall not be less than two inches, and there shall not be a less thickness than one inch on the bottom of the steel in a floor slab.

**THICKNESS OF CONCRETE BETWEEN REINFORCEMENT RODS.**—The steel in lintels, beams or girders shall be disposed so that there shall not be less than one and a half times the thickness of the steel, in concrete, between the different pieces of steel of which the reinforcement is composed.

**STRESSES.**—Reinforced concrete shall be so designed that the stresses in the concrete and the steel shall not exceed the following limits:

Extreme fire stress on concrete in compression.....	500 lbs. per sq. inch,
Concrete in direct compression.....	350 lbs. per sq. inch.
Shearing stress in concrete.....	50 lbs. per sq. inch.
Tensile stress in steel.....	16,000 lbs. per sq. inch.
Compression in steel.....	12,000 lbs. per sq. inch.
Shearing stress in steel.....	10,000 lbs. per sq. inch.



**ADHESION OF CONCRETE TO STEEL.**—The adhesion of concrete to steel shall be assumed to be not greater than the shearing strength of the concrete.

**MODULI OF ELASTICITY.**—The ratio of the moduli of elasticity of concrete and steel shall be taken as 1 to 12.

**BENDING MOMENTS.**—The following assumption shall guide in the determination of the bending moments due to the external forces:—Lintels, beams and girders shall be considered as simply supported at the ends, no allowance being made for continuous construction over supports, and the bending moment for a uniformly distributed load on such a member shall be taken at  $\frac{WL}{8}$ , where W is the uniformly distributed load in pounds and L is the span in inches.

Floor plates, when constructed continuous, and when provided with reinforcement at top of plate over the supports, may be treated as continuous beams, and the bending moment for a uniformly distributed load taken at not less than  $\frac{WL}{10}$ . But in the case of square

floor plates which are reinforced in both directions and supported on all sides the bending moment may be taken at  $\frac{WL}{20}$ .

The floor plate to the extent of not more than five times the width of any beam or girder may be taken as part of that beam or girder in computing its moment of resistance.

**MOMENT OF RESISTANCE.**—The moment of resistance of any reinforced concrete construction under transverse loads shall be determined by formulas based on the following assumptions:—

(a) The bond between the concrete and steel is sufficient to make the two materials act together as a homogeneous solid.

(b) The strain in any fiber is directly proportionate to the distance of that fiber from the neutral axis.

(c) The modulus of elasticity of the concrete remains constant within the limits of the working stresses fixed in this by-law.

(d) The tensile strength of the concrete shall not be considered.

**SHEARING STRESS AND ADHESION.**—When the shearing stresses, developed in any part of a reinforced concrete construction, exceed the safe working strength of concrete as fixed in this by-law, a sufficient amount of steel shall be introduced in such a position that the deficiency in the resistance to shear is overcome.

When the safe limit of adhesion between the concrete and steel is exceeded, provision must be made for transmitting the strength of the steel to the concrete to at least such an extent as will bring the adhesion to within the safe limit fixed in this by-law.

**REINFORCED CONCRETE COLUMNS.**—Reinforced concrete may be used for columns when the ratio of length to least side or diameter does not exceed twelve. The reinforcing rods shall be rigidly tied or latticed together at intervals of not more than the least side or diameter of the column.

In all cases where reinforced concrete columns rest upon girders, walls or foundations or other piers either wrought or cast iron or steel bearing plates or bases must be provided. The plates or bases to be of

sufficient size to distribute the load which the column supports to such an extent that the compressive stress per square inch on the girder, wall or foundation or other pier will not be in excess of that allowed in this by-law for masonry, brick-work or the different kinds of concrete, or if the girder, wall or foundation or other pier is constructed of material the strength of which is not specially referred to in this by-law, the plates of bases must be of a sufficient size to distribute the load to such an extent that the safe compressive stress per square inch allowed by standard engineering authorities on such material will not be exceeded. The plates or bases must also be either of sufficient thickness or be braced or webbed so as to resist within the limit of stress allowed in this by-law; the bending and shearing stresses to which they will be subjected by the columns and the ends of all reinforcing rods must be milled or sawed off normal to the perpendicular axis and each must have a full and perfect bearing on the plate or base.

**TESTS. TO BE MADE BY CONTRACTOR ON DEMAND.**—The contractor shall be prepared to make and shall make load tests on any portion of a reinforced concrete construction within a reasonable time after erection, as often as may be required by the inspector of buildings. Such tests shall show that the construction will sustain a load of three times that for which it is designed without any sign of failure.

No concrete work shall be done in freezing weather except where the influence of frost can be and is entirely excluded.

**HOLLOW CONCRETE OR CEMENT BLOCKS.**—The exterior walls of buildings not exceeding thirty-five (35) feet in height to the highest point of the roof, from the finished ground line adjoining the walls or surface of sidewalk, if built on the street line, may be constructed from the ground floor joist up with hollow concrete or cement blocks, provided the blocks meet the requirements hereinafter specified, and that the walls are made of the same thickness as hereinbefore called for in the tables for brick walls.

The blocks upon which joist rest are to be solid, and if special blocks are not used and blocks have to be cut to allow joists to enter the walls, the spaces in the blocks between the joists to be filled in solid with concrete of a similar description to that of which the blocks are made and all portions of the wall, also piers or buttresses which support beams or girders causing concentrated loads shall be solid blocks and of sufficient strength to sustain within the limit hereinafter specified the full load for which support is intended.

The hollow space in a block shall not exceed one-third ( $\frac{1}{3}$ ) of the superficial area and no block shall be used which will at the age of twenty-eight (28) days crush at less than one thousand (1,000) pounds per square inch of solid area, and no block in a wall, pier or buttress shall be subjected to a greater stress than one hundred and fifty (150) pounds to the square inch of available effective section.

No concrete or cement blocks shall be used in the construction of any building until they shall have attained the age of at least three (3) weeks, and all blocks shall be made from Portland cement of a similar quality in all respects to that hereinbefore specified for under the title of "Reinforced Concrete Construction."

The manufacturer or user of any such blocks, shall before commencing the erection of a structure with them submit a sample to the inspector of buildings for approval, and at their own expense and under the supervision of the said inspector or his representative have, at any and all times, such tests made as may be required,

No concrete or cement blocks shall be used in the construction of any structure until they shall have been approved of and accepted by the inspector of buildings.



**TORONTO BUILDERS' EXCHANGE.**

The annual meeting of the Toronto Builders' Exchange was held January 21st, when the report of the Board of Directors was received and showed the Exchange to have had a very prosperous year. The officers elected for the ensuing year are as follows: President, T. W. Self; First Vice-President, C. W. Batt; Second Vice-President, A. Dennis; Treasurer, Jas. Crang; Secretary, F. E. Phillips; Directors, R. G. Kirby, Wm. Clark, Wm. Smallwood, F. Saunders and G. Duthie. W. Davidson and F. Holmes were appointed auditors.

**LONDON BUILDERS' EXCHANGE**

Several important matters were discussed at the ninth annual meeting of the London Builders' Exchange which was held January 21st.

The Exchange is strongly in favor of having proper record kept of all buildings erected in the city and the incoming Board of Directors were instructed to confer with the City Engineer on this matter.

Another question of the utmost importance that was taken up is the formation of a Provincial Association of Builders' Exchanges. Representatives were appointed to meet at any time or place, delegates from the other Exchanges or Contractors' Associations who may convene to discuss the matter. This is a very important step and it is hoped that the other associations throughout the province will give serious consideration to this question.

The officers for 1906 were re-elected. They are: President, G. C. Young; First Vice-President, J. Whittaker; Second Vice-President, G. Hyatt; Secretary-Treasurer, G. S. Gould. The Board of Directors is composed of E. Martyn, A. Nobbs, T. Beer, J. Jones and E. A. Payne.

**MONTREAL BUILDERS' EXCHANGE.**

The ninth annual meeting of the Montreal Builders' Exchange was held January 14th, when the annual report of the Board of Directors was presented and other important business transacted. In the course of his presidential address Mr. R. George Hood remarked on the success of the Exchange, and in reference to other matters said:—

"I would like to put before you the many ways in which a Builders' Exchange may benefit its members and the building business in general. To fully picture the Montreal Builders' Exchange as I hope to see it some day, would make this preface to our report too lengthy, so I will only touch briefly on a few important matters requiring early attention.

"It is felt that a new and larger home for the Exchange is required. This is an important problem, and cannot be solved in a day, so we propose taking these premises for another year, as we believe this will not involve financial loss, even though we should move to other quarters within that time. We have looked at several places, none of which fill our requirements exactly.

"We are considering the advisability of forming a joint stock company for the purpose of erecting a building to be known as the Builders' Exchange Building, and the offers to take stock, coming from some of our members, indicate that this plan is within the range of possibility.

"As soon as a building proposition can be got

into proper shape, your directors, whoever they may be at that time, will doubtless lay it before us, and I am of opinion that this matter will come before you at an early date.

"Some of our contractors occasionally complain that our architects are unpatriotic in letting some of the largest contracts to foreigners. On the other hand, the architects justify their actions in this respect on the ground that a number of our contractors are not in a position to carry out these large buildings as expeditiously as they require, and afford insufficient competition. If this is true, it is for us to overcome the difficulty by keeping abreast of the times in our different branches, or if necessary, forming such combinations as may be required to take the large contracts.

"I believe that obtaining a preference for Canadian contractors and Canadian materials is largely in our own hands, and by showing that we have first-class materials, first-class contractors, and doing what we can to educate our youth to be first-class tradesmen, we can rely on our architects and fellow-countrymen to deal with us, and in these various ways aid in the prosperity of our country.

"As has been said, the twentieth century is Canada's century, and we must keep pace with its advance in order to reap our share of the benefits."

In presenting their Ninth Annual report, the Directors state that they are greatly encouraged in testifying to the ever-widening scope and consequently increasing usefulness of the Builders' Exchange.

After referring to the prosperous conditions which marks the year 1906, the report says:—

"From the view-point of supply, building operations have been greatly hampered for want of structural steel, deliveries being everywhere many months in arrears. There is a good opening here for a concern capable of carrying a million dollars' worth of spot stock. Brick supplies have been, and are on the slow side, and the universal shortage of transportation facilities has also added a deterring factor in the pushing forward of construction work.

The current year starts with large unfinished balances under way from 1906. In addition, large and substantial erections are projected, especially on St. James street, where new bank premises alone will run into millions, viz.: The Eastern Townships, the Canadian Bank of Commerce, the Bank of Toronto, the Royal, and the Credit Foncier. The Royal will also build an up town branch at the corner of St. Catherine and Drummond. Opposite is to be erected a \$100,000 10-story block for Willis & Co. A new \$50,000 Concert and Music Hall is projected for Berthelet street. The present Victoria Rink is also to be converted into a Concert Hall. Then there is under contemplation the new P. O. Pneumatic Station near Bonaventure, and a large Turkish Bath establishment on Dorchester st., West. The Hervey Institute is to remove from Mountain st., to new quarters at Claremont and Western avenue; and a new school building for Westmount is to arise on the upper level between Grosvenor and Lansdowne avenue. The new gaol at the Back River and the first Baptist church on Sherbrooke and Union avenue round out the list of principal buildings within the preliminary horizon of construction.

Coming now to the work of the Builders' Exchange in particular, your Directors are glad to be able to testify to the enlarged scope of its operations, and the efforts put forth on behalf of the rights and interests of the Master Builders and Employers of Montreal. The Board proposes to shortly review this work and these unremitting efforts, in their legislative, industrial and social aspects:

LEGISLATIVE.—During 1906 several measures touching the rights of employers as well as employees have been brought forward both in the Federal and Provincial Parliaments;

(1) Early in June an "Act respecting Immigration" was introduced at Ottawa by Hon. Frank Oliver, which in the first instance contained an objectionable clause permitting the im-



position of a poll-tax upon any immigrant at the will and pleasure of the Governor-in-Council. As this clause might have led to a perverted misuse in the exclusion, for instance, of skilled labor by interested parties, your Directors brought all legitimate pressure to bear upon your representatives in Ottawa to amend the bill by omitting said clause. The bill was read a third time and passed by the House of Commons June 16th, 1906, without the clause complained of.

(2). Early in December, following the Lethbridge coal strike, the Hon. R. Lemieux introduced a bill to enforce compulsory arbitration in certain labor disputes involving public utilities. It was proposed to compel the interested parties to come together to state their case, but by a curious paradox, reversing all experience, the award when given was not to be enforced, but left simply to "moral persuasion." The Builders' Exchange has ever been averse to strikes and their counter-strokes—lockouts, as being an unreasoning and irritating survival of the dark ages; and since October, 1905, has frequently appealed to our legislators in Ottawa to extend the principle of compulsory arbitration, not only to disputes ament public utilities, but to all trade disturbances of the industrial peace. The national waste in strikes is only too sadly evident from the following significant sentence in the 1906 report of the Government Labor Department recently issued: "During 1906 there were 130 trade disputes in Canada, involving 518 firms and 10,513 workers. The loss of time was approximately 343,800 working days!" The secretary, with the approval of the board wrote at once to the Hon. Minister of Labor, setting forth the futility of compulsory arbitration unless the award of the tribunal were legally binding upon both parties; and as there could be no enforcement of such award unless both contracting parties were equally responsible, morally and financially, that all parties to compulsory arbitration should be compelled to register under a general law of associations, making them liable to carry out all contracts entered into by their officers *pro tem*, or their predecessors in office. It was pointed out that we were a law-abiding people; that if we had disputes with our neighbor on any other subject we referred the case to law and the judge decided; such decision being binding on both parties; but that directly it was a labor question, we relapsed into a state of anarchy; associations did things collectively which individually would be illegal, if not criminal; hence the need to bring all associations of whatever kind under the jurisdiction of the law. There never would be enduring peace in the labor world until labor unions had been compelled to assume complete financial responsibility for their acts; their persistent refusal hitherto to do so certainly laid their motives open to grave suspicion.

It is worthy of comment that the three most prominent strikes of the year, namely the Western coal strike, the Hamilton car strike, and the lamentable affair at Buckingham, were the outcome of "International-Unionist" instigation. For the good name of Canada surely the time has arrived when Canadian brains should be fully competent to manage their labor affairs without "going to Washington," as more august politicians were wont to do in the old days. It is a trifle humiliating to feel our industrial associations are still the humble "tail" wagged by the American "dog."

(3) SECTION 520, CRIMINAL CODE.—Your directors desire your personal efforts to have this dangerous and unfair piece of legislation amended. This is the obnoxious "anti-combine" clause, which makes every employer a criminal, liable to the heaviest penalties, if he enters into reciprocal trade arrangements with others, while expressly exonerating all "combinations of workmen or employees" for doing the self-same thing. Your executive have respectfully and urgently protested against this species of pernicious class-legislation, both to our representatives at Ottawa and also by participating in an influential deputation to the Premier last summer, at which one of your Directors, Mr. Alex. Bremner, represented this Association. We ask for only one law for the community by amending section 520, either by omitting the excepted class, or else by making the act apply to all classes, without any exceptions whatever. Only a year ago, certain Toronto plumbers were held up to reprobation and heavily fined by the court for "fixing" prices; yet the Plumber's Union, part and parcel of the "combine" took refuge behind the exemption clause of section 520, and escaped without even a magisterial scolding! As a matter of fact, the authorities have hitherto assailed every sort of "trust" except the labor trust, the most unscrupulous of all. If an ice trust or a coal trust finds some outsider trying to get along without it, it immediately silences his guns by underselling him. But the labor trust, where it finds some fellow-laborer working for less than its schedule price, waylays him as he is returning to his family in the evening and gives him a convincing lesson in "the manly art of self-defence." It never entered into the mind of the coal or ice trust to prevent others learning the coal or ice business; but the labor trust takes active steps to prevent the young man learning his trade, so that the supply of labor may become deficient and the price of labor thereby raised far above normal.

(4). EMPLOYERS' LIABILITY.—Your Board recommends your

careful consideration of an "Act respecting Accidents to Workmen," first introduced by Hon. H. Archambault, in the Quebec House on June 1st, 1904, and rejected at the time owing to the strong representations from the large manufacturing interests, but now to be again introduced. The House meets on the 15th inst., and Col. G. W. Stephenson, M. L. A., has publicly announced his intention of putting this measure through. You are earnestly requested to lose no time in putting yourselves in touch with the Canadian Manufacturers' Association, the Board of Trade, Chambre de Commerce and Master Plumbers' Association, if you have any regard for your vital interests as employers of labor. Your secretary has been advised by leading Employers' Liability Insurance Co.s that the passage of this measure would mean an increase of 25 to 100% over present insurance rates. As you are aware, the damages accorded to workmen by the Courts are in most cases excessive; their "contributory negligence" is ignored by "sympathetic" juries, and the awards are out of all reasonable proportion to earning capacity. We have also unfortunately to deal with a certain section of parasitical lawyers who make a practice of following up such victims of accidents to their homes and inducing them to sue for heavy damages on the basis of "no results, no costs," and such cases only a fraction of the compensation reaches the victim.

(5). TRADE SCHOOLS.—The Directors desire to place on record their appreciation of the Hon. W. A. Weir's efforts in this direction. Skilled labor is all too scarce, not because of the lack of young men who would willingly learn a useful trade, but because of the attitude of trade-unions, for the reasons above stated. Our lads debarred from acquiring a good mechanical trade, where they are so much needed, are driven to swell the already overcrowded ranks of clerks; and to-day there is scarcely a skilled mechanic here who has learnt his trade in Montreal. The problem of the unemployed has usually been stated—to find work for the man. Many whose duties bring them in constant touch with the unemployed would state it—to find men who will work! We are fast approaching the unenviable problem of—The Man-less Job. So important is technical training for the future of our city, that your Directors will recommend an annual contribution from this Exchange to such schools, so soon as they are established in running order, without discrimination against any class of students, and free from any trades union conditions or restrictions. Such large sums are spent annually by our local students for technical tuition in American correspondence schools, that it would be folly to pauperize any proposed trade schools by offering free tuition (unless exceptionally), because what is obtained gratis is valued at the same low figure.

INDUSTRIALLY.—Your Directors are only confirmed more strongly than ever by current events in advocating most earnestly the ideal of the open shop to all employers. It has already obtained in most trades; it is becoming more and more adopted in the States; and although not practicable in all trades, it should be steadily aimed for. Public opinion will demand that the whole trade and progress of this Dominion shall no longer be retarded for want of skilled labor, and for the selfish benefit of certain narrow labor-organizations who will vainly continue to try to stem the oncoming tide.

In again wishing all the members of the Builders' Exchange a prosperous New Year, your Directors are glad to report a remarkably successful year in 1906, as will be seen subsequently by the financial report. As already brought to your attention in the personal circular letter addressed to you by the secretary under date of 26th December, a record membership has been established, rising steadily from 61 in March, 1905 (when your present secretary was engaged) to 96 on December 31st, 1905, and nearly 200 at the present moment. But we must not rest on our oars. The Board of Directors and the Committee on admissions have hitherto borne the lion's share of the "missionary work" of obtaining new members; but it is scarcely fair that all the burden should fall on merely a few shoulders, and the Board hopes that each member of the Exchange will personally secure at least one new member before the close of January, so that we may be able to shortly announce the desired membership of 350.

There is no entrance fee and the annual dues of \$15 are so small that we must of necessity either largely increase our membership, or else raise the dues, to enable us to occupy such premises in the near future as will be a credit instead of a disgrace of the prosperous and influential contractors of this city.

On behalf of the Board,

JOHN HERBERT LAUER,  
Secretary-Treasurer.

R. GEORGE HOOD,  
President.

The report and statement were adopted, and the new directors elected were: Messrs. Andrew McArthur (brick and stone); D. W. Ross (Phoenix Bridge Company, architectural iron and steel); David McGill (builders' supplies). The following representative members of the old board were re-elected: Messrs. J. N. Arcand (master painters); Alex. Bremner (cement); John Duthie (granite and marble); J. Lefebvre (master plasterers); E. Ramsay (expanded metal); Joseph Thibeault (master plumbers); with Mr. E. W. Sayer, representative director of the Electrical Contractors' Association.

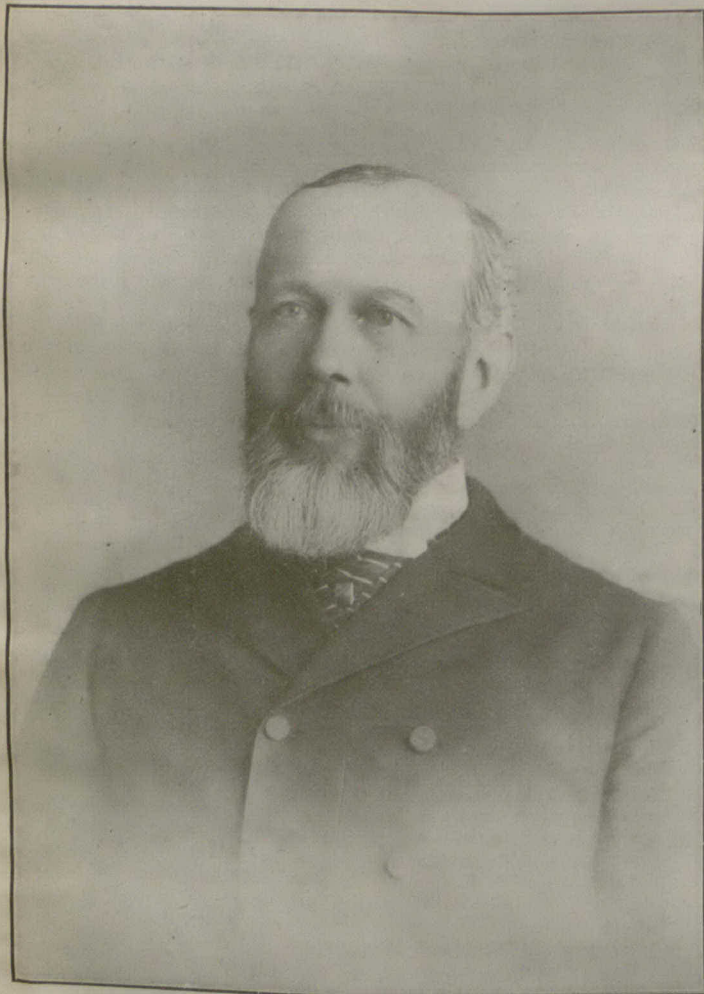
The work of Mr. J. H. Lauer was very favorably commented on, and he was re-elected by acclamation.



### THE LATE MR. HENRY LANGLEY.

Mr. Henry Langley, Architect, who died on the 9th day of January, was one of the oldest practitioners in the City of Toronto and was identified with its development and progress for many decades.

He indentured while quite a young man to Mr. Wm. Hay, an architect from Scotland who located in Toronto in the early fifties, but who returned to his native country at the expiration of a few years, not finding sufficient encouragement for another architect, the field being occupied by Messrs. Thomas, Sheard, Howard and one or two others. Mr. Hay's principal work was the main building of the present Toronto General Hospital. Mr. Langley obtained a good training in



THE LATE MR. HENRY LANGLEY.

Gothic architecture with Mr. Hay, and became the leading church architect of his day.

After Mr. Hay's return to Scotland Mr. Langley formed a partnership with Mr. Thomas Gundry, an English architect who came to this country a short time previously.

Mr. Langley had charge of the draughting and designing in the new firm, Mr. Gundry's old country training fitting him for the other branches of an architect's practice. He made a specialty of valuations and estimates, and was employed for several months in measuring and valuing extra work at the new Parliament Buildings in Ottawa. It was thought by some that the worry incident to this work was the cause of his illness and death which took place about the year 1867.

Mr. Langley continued to practice alone until 1872, designing, during those and the previous years, the Lieutenant-Governor's Residence, the Toronto Post Office, the John Macdonald warehouse, St. Michael's

Tower, Spire and Sacristy, St. Peter's Church Carlton St., St. Patrick's Church William St., Catholic Apostolic Church corner Gould and Victoria Sts., St. James Cathedral Tower, Spire, Porches and Reredos and the Agnes St. and Metropolitan Methodist Churches, the latter being won in a competition, the late Mr. Storm being his closest competitor.

The office buildings Nos. 15 and 28 Toronto St. were secured in limited competitions. He also designed the buildings at Nos. 21-23 Toronto St., the Imperial Chambers 32-34 Adelaide St. E., No. 54 Adelaide St. E., the Excelsior Life Building Nos. 59-61 Victoria St., the Stovel Building (now occupied by Bilton Bros.) King St. West, Dufferin Public School, the Bank of B. N. A. and the Imperial Bank, residences for Thos. Thompson, Blaikie and Alexander, Edgar Jarvis, Judge Harrison, Wm. Davies and others, as well as churches in various parts of the country from Chatham, Ont., in the west to St. John, N. B. in the east.

In 1872 Mr. Langley, took into partnership his brother, Mr. Edward Langley, a builder of practical experience, to whom was given the supervision of outside work, and his nephew and pupil, Mr. Edmund Burke, who practised under the firm name of Langley, Langley & Burke. The new firm was formed at a very prosperous period of Toronto's history and carried out a large amount of work, among which may be mentioned the Jarvis St., College St., Walmer Road and Dovercourt Road Baptist Church, Old St. Andrews Presbyterian Church, Sherbourne, Trinity, Dunn Ave. and Central Methodist Churches, McMaster University, First Baptist Church, Winnipeg, several warehouses in the burned district, now destroyed, Residences for Robert Simpson, Jas. Carruthers, Mrs. A. R. McMaster, J. L. Blaikie, J. Pugsley, H. S. Mara, J. H. McKinnon and others.

On the retirement of Mr. Edward Langley about the year 1889, the firm was continued as Langley & Burke until the year 1892 when Mr. Edmund Burke retired to assume the practice of the late W. G. Storm, who died that year. On the retirement of his nephew, Mr. Langley took into partnership his son and pupil Mr. Chas. E. Langley, under the firm name of Langley & Langley, which continued until his death. Mr. Langley began to fail in health some eight or nine years ago and has not for several years taken any active part in his profession.

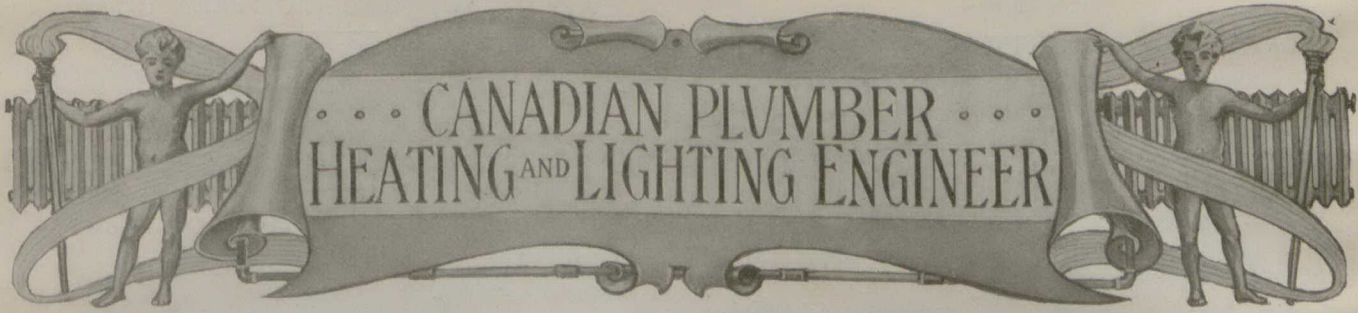
Mr. Langley was a man of great kindness of heart, upright in all his dealings with his fellow men, and one who from first to last upheld and practised honorably his chosen profession.

He was a charter member of the Ontario Association of Architects during the period of his active life and was made an honorary member when compelled to cease practice through advancing infirmity. He was also a member of the Royal Canadian Academy, member of its Council for a time, and a retired honorary Academician since 1905.

Among his pupils were Messrs. Edmund Burke, Frank Darling, H. B. Gordon, A. A. Post, R. J. Edwards, Wesley Peters, Chas. E. and Fred Langley, C. H. Acton Bond, J. C. B. Horwood, the late J. H. Marling, Fred Kelley, Murray White, Ernest Wilby and W. Ford Howland.

The Annual Convention of the National Association of Cement Users was held in Chicago, from the 7th to the 12th inst. There was a large attendance from all parts of the United States, Canada being also represented. A number of instructive papers were read treating of the methods of using cement for various constructional purposes.





**HEAT UNIT AND ITS APPLICATION TO BUILDINGS.\***

BY GEO. G. BENNETT.

When estimating the heat required for the warming of buildings, the following methods may be used. Determine the loss in heat units through the walls and windows, and make some allowance for the loss of heat by the leakage of cold air, due to the faulty construction of the room or building. The total loss in heat units for the entire building is found by the following method, which will be found to give a very close approximation. It has been determined by practical experiment that the loss in heat units through the change of air in the room or building, caused by bad construction when not otherwise ventilated, is about 1.439 heat units per square foot of surface per hour. It will require 0.238 heat units to raise 1 cubic foot of air 1 degree from absolute zero, but we are only figuring on zero on the Fahrenheit scale, and the specific heat of air at this temperature is 0.0864, therefore, to find the loss in heat units, we must multiply 0.236 by 0.0864, which equals 0.0205. Now, this is equal to the loss of heat in 1 cubic foot for 1 hour for each degree difference of temperature, and the room or building must be heated to 70 degrees, with an outside temperature of zero. To find the total loss we must multiply 0.0205 by 70 degrees, which equal 1.439 heat units for 1 hour.

Outside walls will require 0.223 heat units per hour per degree difference of temperature between the inside and outside temperatures. The difference is 70 degrees, which, multiplied by 0.223, equals 15.61 heat units, which gives the loss for 1 square foot for 1 hour. The next operation is to find the loss in heat units through 1 square foot of glass. The glass being the coldest part of the building, it requires a greater number of heat units to counteract the cooling effect of the outside temperature. The glass will lose 0.543 heat units per hour per degree of difference of temperature. Now, as in the former example, the difference between the inside and outside temperatures is 70 degrees, and 0.543 multiplied by 70 degrees equals 38.01 heat units, which is the loss for 1 square foot of glass. The total loss per hour will be about as follows:

Loss for 1 cubic foot of air.....	14.39 heat units
Loss for 1 square foot of outside wall.....	15.61 heat units
Loss for 1 square foot of glass.....	38.01 heat units
<b>Total .....</b>	<b>55.059 heat units</b>

I will now give a practical example of the above methods of determining the amount of radiation for a given sized room. The room is 16 ft. square by 10 ft. high, and has four windows containing 32 square feet of glass each. The total number of heat units neces-

ary to counteract the cooling effect of glass, outside walls and cubical contents is as follows:

For the cubical contents we have 16 x 16 x 10—2,560 cubic feet, which is the cubical contents. This, multiplied by 1.439 equals 3,683.84, the heat units. The square feet of outside wall equals 16 x 10 x 2—320, and this multiplied by 15.61 equals 4,995.20 heat units lost through the outside walls. The square feet of glass equals 32 x 4—128, and this multiplied by 38.01—4,864 heat units lost through the glass.

The total amount is equal to:

Cubical contents.....	3,683.840 heat units
Outside wall.....	4,995.20 heat units
Glass.....	4,864 heat units
<b>Total .....</b>	<b>13,542 heat units</b>

The total loss in heat units for the above room is now represented by 13,542.04.

The number of square feet of pipe or other radiating surface that will be needed to counteract this loss is determined by the aid of the difference between the temperature of the steam pipe and the temperature at which the room is to be kept. We will assume the temperature of the steam to be 228 degrees—5 pounds gage pressure. The difference between the temperature of the steam pipe and the temperature of the room will be the number of heat units given off in the room. The room is to be kept at 70 degrees, then 228—70—158 heat units—i. e., each square foot of heating surface will give off to the air in the room 158 heat units, so if we divide 13,542 by 158 the quotient will be the square feet of pipe or radiating surface, which is equal to 85.7.

If it is desired to heat the same room by hot water the process is somewhat similar, with the exception that the temperature of the water will be considerably less than that of the steam, so that the square feet of heating surface will be increased that much. In hot water heating the temperature of the water very rarely gets above 180 degrees, and it will be found safer to estimate the temperature of the water at about 140 degrees. If the outside temperature should get below zero the temperature of the water could be raised to 180 or 200 degrees.

**PLUMBING GOODS.**

A Toronto architect expressed to the writer his opinion that there exists a favorable opportunity for a competent firm to establish an agency in Canada for British plumbing goods. The preferential tariff offers an advantage in this direction. In order that such an undertaking might be successful, however, a complete stock, including parts required for repairs, would have to be carried. The difficulty and delay incident to securing parts is given as one of the chief causes for the increasing use of American as against British goods in this line. Doubtless another reason is the fact that goods of this description are now being manufactured on a considerable scale in Canada.

\* Paper presented at meeting of Ohio Society Mechanical, Electric and Steam Engineers.



—THE—

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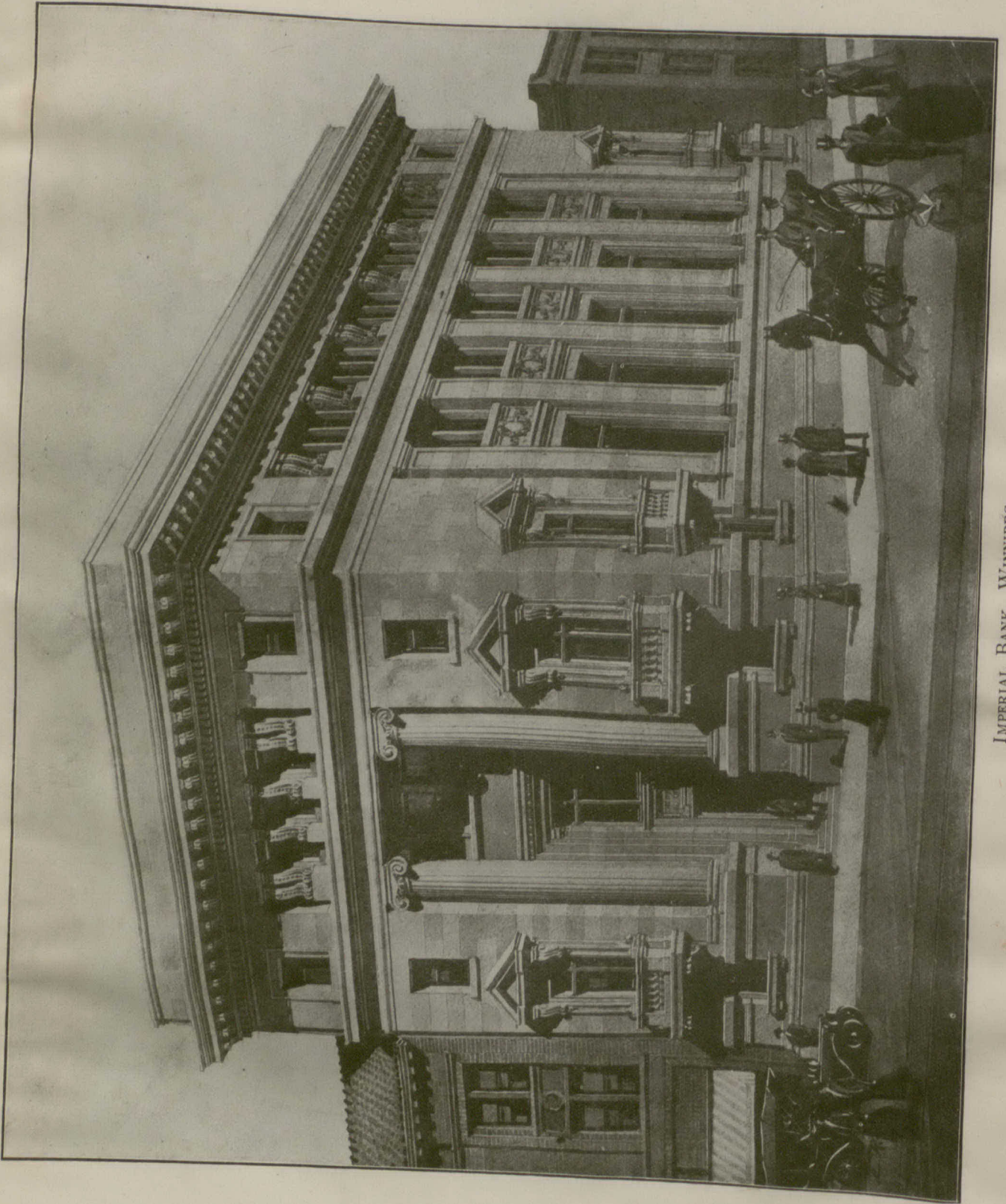
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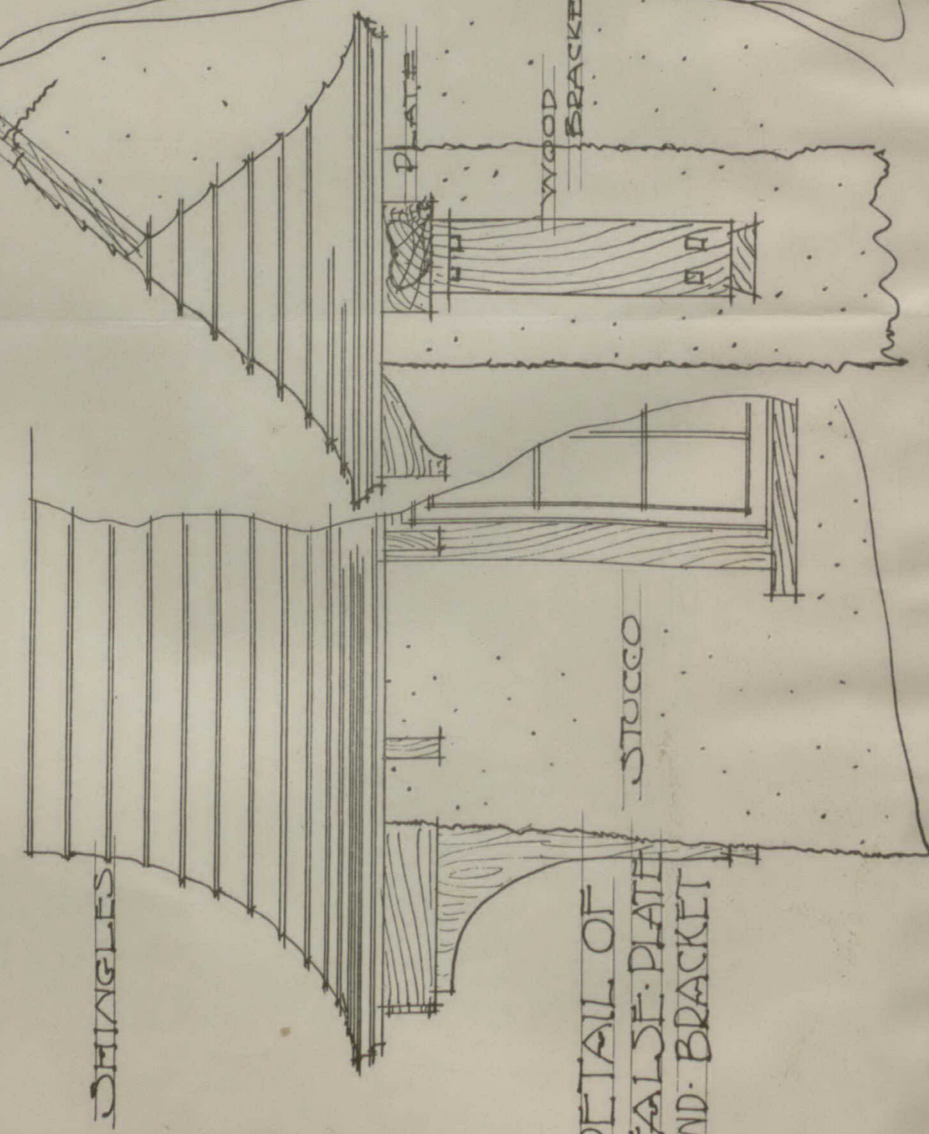
12' 9" 3 1/4' 12' 3" 4' FEET

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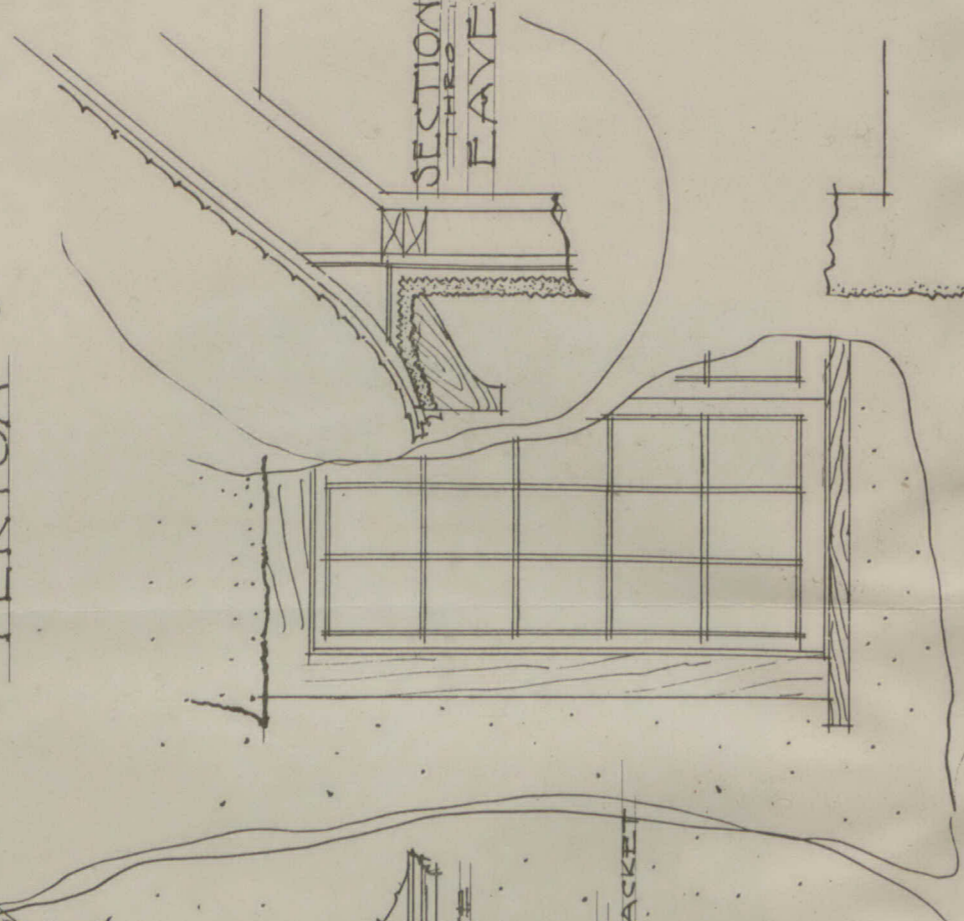
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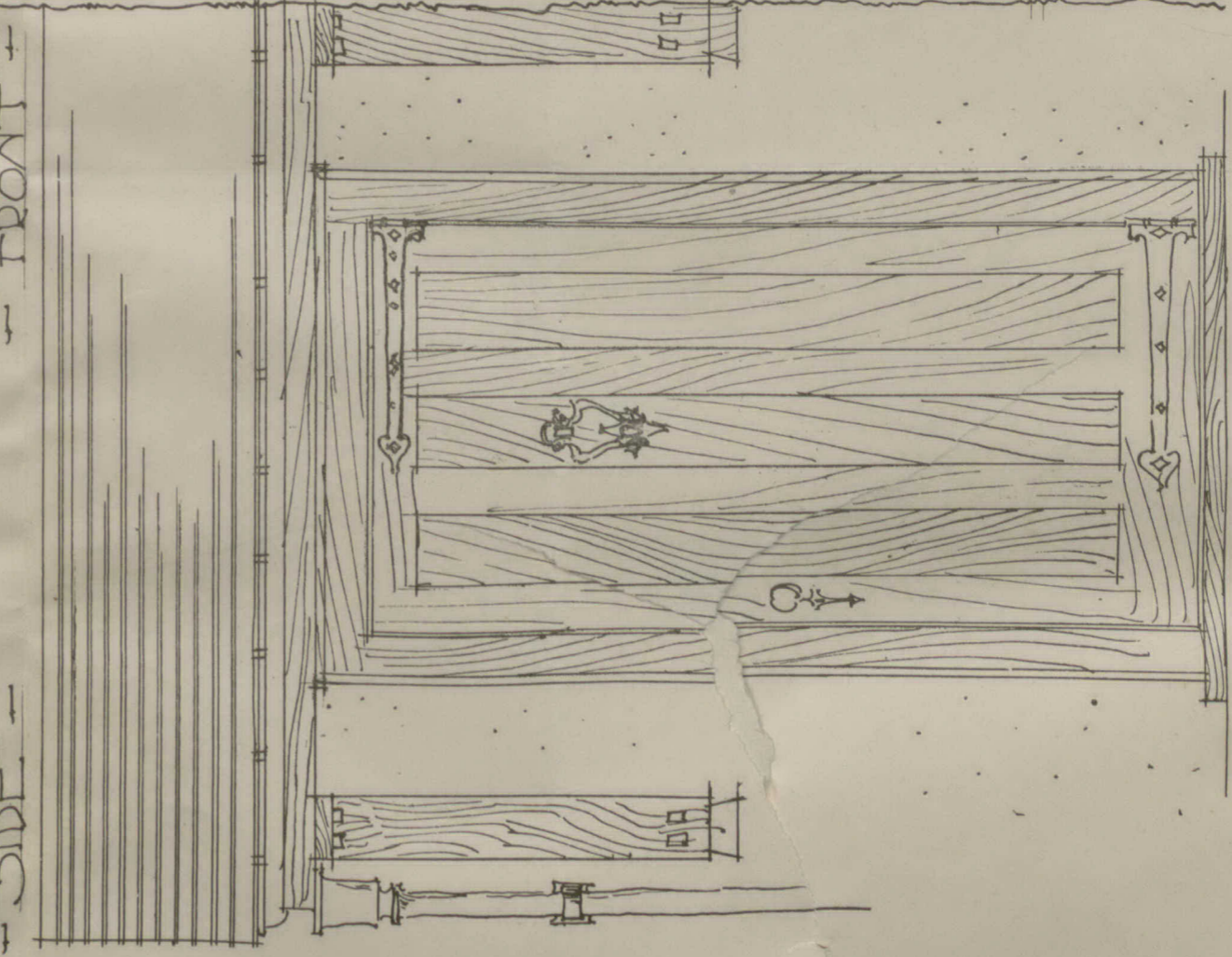


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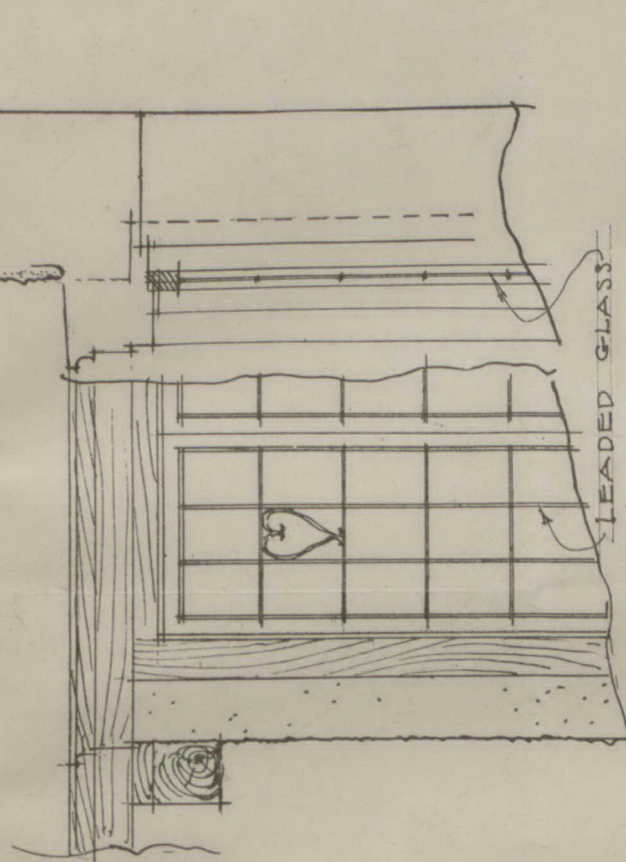
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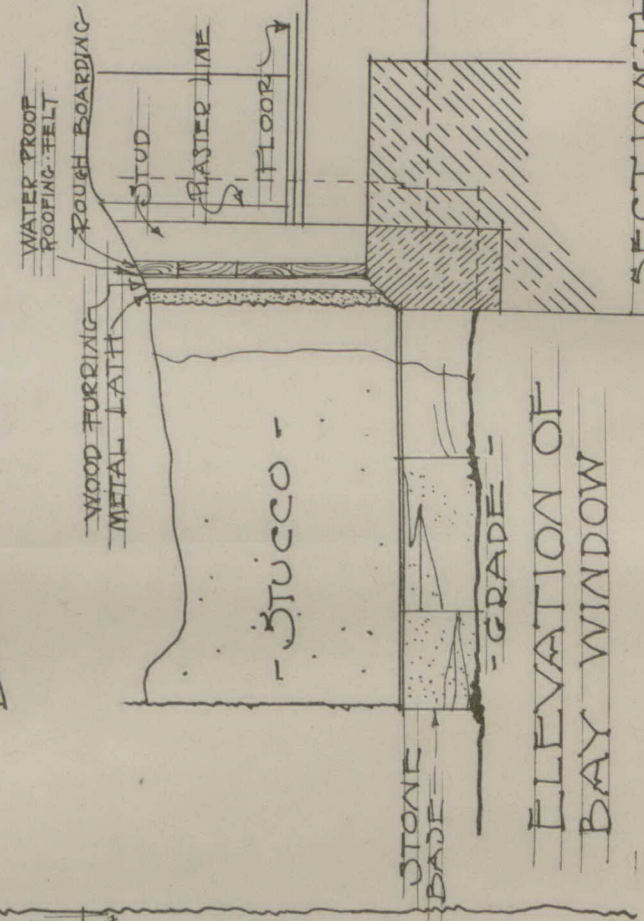
SECTION THROUGH EAVE



DETAIL OF FRONT ENTRANCE



ELEVATION OF BAY WINDOW



SECTION THROUGH BAY WINDOW

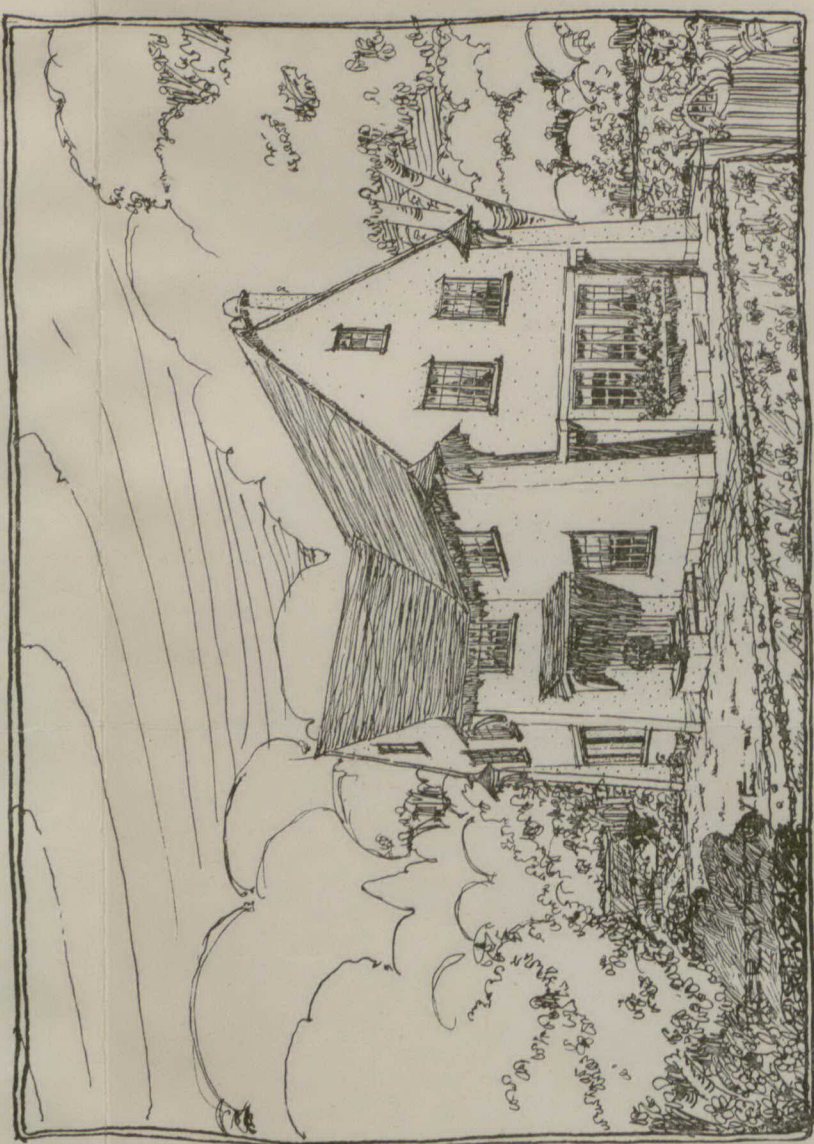
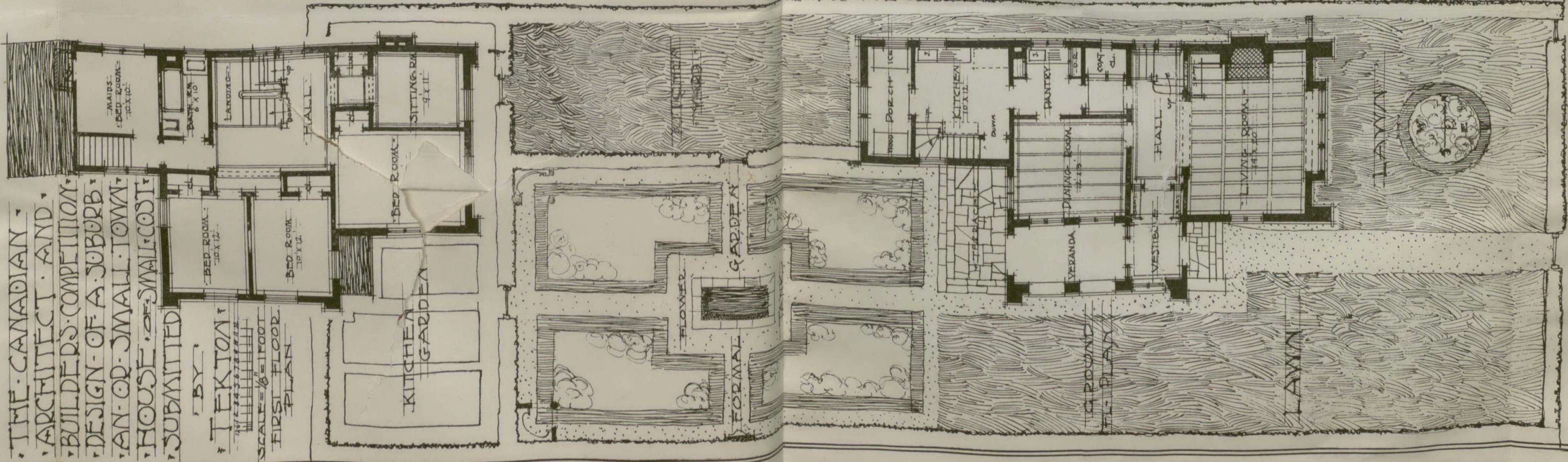


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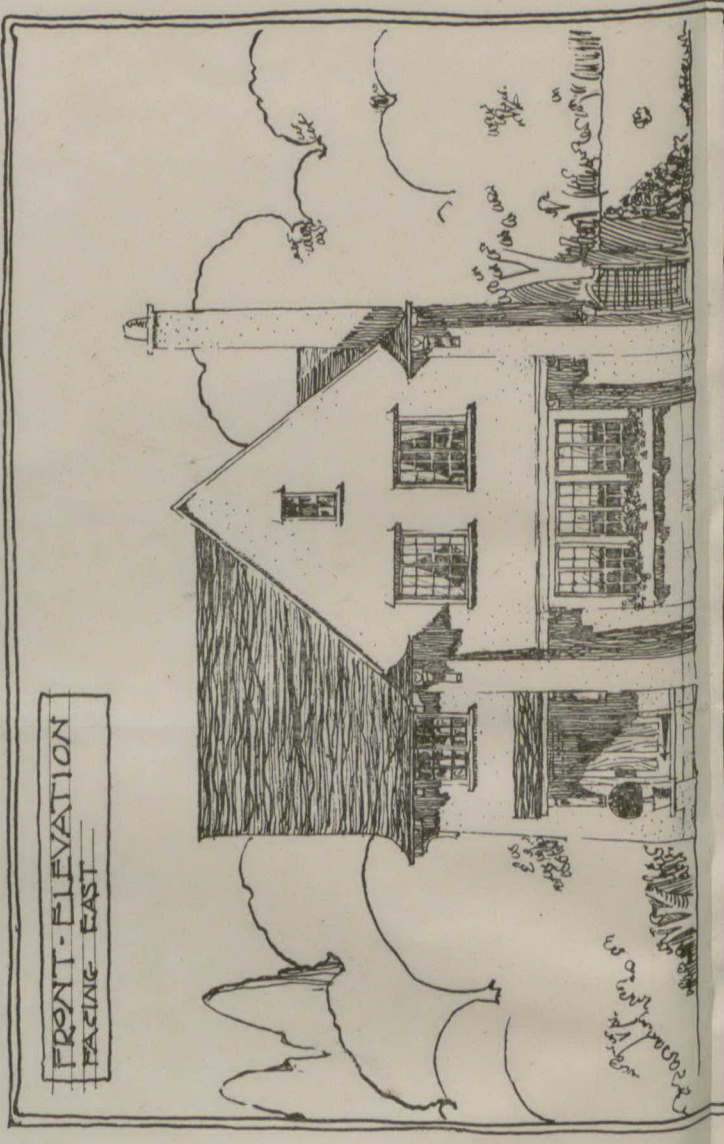
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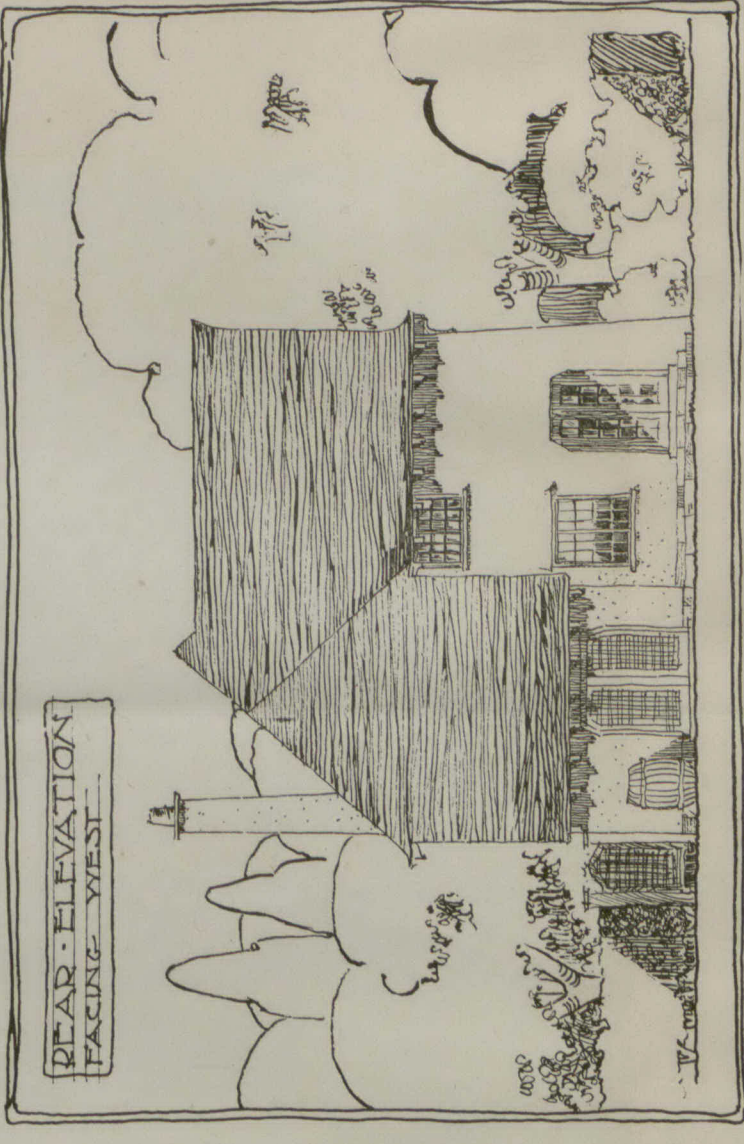
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closets, urinals, baths, sinks, etc., increased from 30 to 35 per cent; plate glass 7 to 25 square feet, increased from 25 to 27½ per cent.; manufactures of lead, shot, bullets, lead pipe etc., reduced from 35 to 30 per cent.; babbitt metal increased from 10 to 15 per cent.; copper wire reduced from 15 to 12½ per cent.

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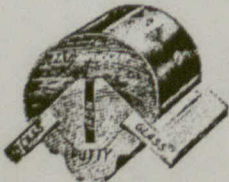
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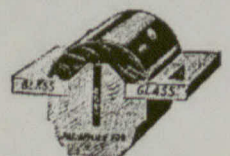
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LEGAL.

Dominion Paving & Construction Co. v. City of Toronto.— Judgment by Chief Justice Falconbridge in the Divisional Court on appeal by defendants MacKeigan, from judgment of Meredith, C. J., dated 26th October, 1906. The plaintiffs did certain work on the St. Lawrence Market building, and claimed for extras the sum of \$430.58. The defendants set up that, even if the work was done on the order of the architects, they were not bound by their orders. At the trial the plaintiffs recovered \$387.48. The two architects were brought before the court and examined. Held, that the evidence of the architects made abundantly clear what it is said was admitted on the trial, namely, that the work sued for was not within the plans and specifications, not caused by any alteration in the same, but was a mere addition in no wise affecting or relating to anything contained in the contract of plaintiffs or the plans and specifications thereof. Meagre as was the evidence at the trial, even without the evidence given before the court, the judgment of the trial Judge should be sustained. If there is any real dispute as to the proper value, defendants may, at their own expense, take a reference to determine the value, in which case further directions and costs will be reserved. If not, the appeal will be dismissed with costs.

PERSONAL.

Mr. J. G. Proctor, of Tacoma, Wash., was a recent visitor to his home at Ingersoll, Ont. Mr. Proctor has attained much prominence in the West, and is now Chief Architect for the State of Washington.

Mr. Melville P. White, who served his studentship in the office of Messrs. Langley & Burke, Architects, has recently returned to Toronto from Chicago, having accepted the management of the Architectural Iron Department of the Canada Foundry Company.

Mr. W. B. Van Egmond who has had the management of W. W. La Chance's architectural office in Regina for the past year, has severed his connection with that office and has entered into

partnership with Mr. E. M. Storey who has been in practise there for some time. Business in future will be conducted under the firm name of E. M. Storey and Van Egmond. This firm have already a large amount of work on the boards for next season among which is the new Albert school at Regina for which tenders will shortly be called.

For the first time in many years the five Taylor brothers, all of whom are well known in the building trade throughout Canada, met in Toronto and celebrated their reunion by a dinner at the King Edward Hotel. The five brothers are: Joseph W. Taylor, heating engineer, Johannesburg, South Africa; W. W. Taylor, with Pierce, Butler & Pierce, of Syracuse, N.Y.; John M. Taylor and Adam Taylor, president and secretary respectively of the Taylor, Forbes Company, of Guelph, and James F. Taylor, Toronto, a director of the Taylor, Forbes Company.

Sir Aston Webb, R. A., former president of the Royal Institute of British Architects and architect for many prominent buildings in England, arrived in New York on December 30th, 1906. He comes to America at the invitation of the American Institute of Architects, who celebrated their fiftieth anniversary at Washington, on January 7th, 8th and 9th. The occasion was marked by the presentation to Sir Aston Webb of the "President's" medal, the first of a series to be awarded, one every year, for distinguished services in the profession. Mr. H. V. Manchester, of London, a well known English architect, also attended the Washington convention as the second English delegate.

A company recently incorporated by the Vancouver Government is the Silicia Brick & Lime Company, Limited, of Victoria, B.C. The authorized capital of the concern is fixed at \$150,000, and among the promoters are some of British Columbia's most prominent men. The machinery for the plant has already been ordered, and it is expected that the works will be in operation next month. The capacity of the plant will be 20,000 bricks per day of 10 hours.

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**OBITUARY.**

It is with much regret that we record the sudden death, of Mr. James C. Dumaresq, the well-known architect of Halifax, Nova Scotia. Mr. Dumaresq had been in poor health for some weeks, but his death was totally unexpected.

He was born in Sydney, C.B., sixty-six years ago, received his education at Horton Academy, and lived his entire life in the Maritime Provinces.

For thirty-six years he practised his profession in Halifax, and for ten years in St John. Many important buildings throughout the Maritime Provinces, including the Legislative Buildings at Fredericton, and a number of banks were designed by him and built under his supervision.

He was gifted with social and moral qualities of a high order, and was actively interested in religious movements in connection with the North Baptist Church, of which he was for many years a deacon.

He is survived by his wife, one son, Mr. Sidney P. Dumaresq, who was associated with his father professionally, and four daughters.

**NOTES.**

The Calgary Plumbing & Heating Co., Calgary, Alta., have dissolved.

Honeyman, Haultain & Co., have commenced a builders' supply business at Regina, Sask.

J. Dechene and Jette, stonemasons, of Montreal, Que., have registered their business as Dechene & Jette.

The Imperial Coal Company, Beersville, N. B., have announced their intention of establishing a brick plant with a capacity for 20,000 brick per day.

Mr. A. J. Bennett, architect, of Winnipeg, Man., and formerly of London, Ont., will probably open a branch office at Port Arthur in the near future.

A branch of the Structural Building Trades Alliance of America, has been organized in Toronto which is composed of all branches of the building trades. An executive committee composed of a representative of each affiliated local union will

act as a managing board, before which all propositions to strike must be placed.

The Toronto Plastering & Supply Company, Toronto, which was incorporated about a year ago, have gone into liquidation. Mr. Osler Wade was appointed assignee.

The last services that will ever be held in Knox church Toronto, were conducted on January 19th. The building which was erected 85 years ago will be demolished to make way for the erection of additions to the premises of the Robt. Simpson Company. The corner stone of the Sunday school building of the new Knox Church, which is being erected on Spadina avenue, will be laid on January 26th, by his Honor Lieutenant-Governor Mortimer Clark, and the church services will be held in that building pending the completion of the church.

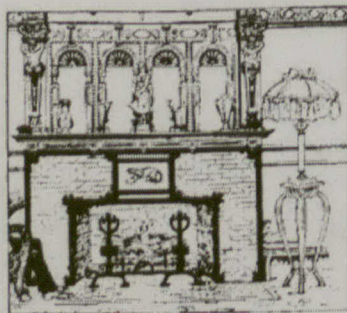
Mr. Frank W. Macey, who has within the past year opened up an architectural office in Vancouver, has introduced into that city a style of exterior house finish and decoration which is new in Vancouver. He has just completed a house for Mr. J. R. Waghorn, finished outside in old English half timber work, the lower part being roughcast stucco work, and the upper storey half timber, filled in between with stucco. For himself Mr. Macey has also built a handsome roughcast stucco work house of old English design. Both houses are added to in beauty and effect by overhanging gables, the verandahs being kept under the main roof. This design is exceedingly attractive and suited to Vancouver.

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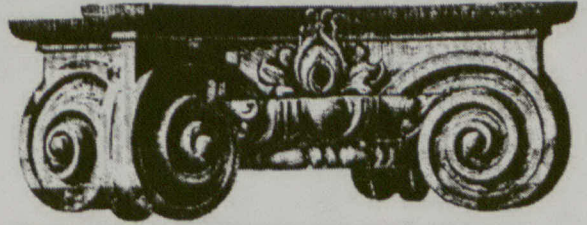
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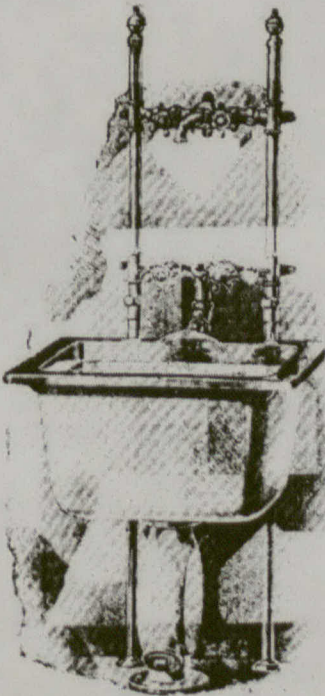
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NOTES.

The brick manufacturing business of W. O'Dell & Son, Ingersoll, Ont., is reported for sale.

Mr. R. C. Wright, son of the late Mr. John Wright, of London, Ont., has been appointed assistant chief architect of the Public Works Department, Ottawa, Ont. At the time of the appointment Mr. Wright was connected with Mr. Clarence Luce, a well-known architect of New York.

Letters patent were recently granted Bechtels, Limited, Waterloo, Ont., by the Ontario Government. The concern is empowered to manufacture brick, tile and other clay products, and the authorized capital is \$75,000. The Provisional Directors include B. E. Bechtel, C. E. Bechtel, W. B. Bechtel, and C. E. Wyard.

The City of Winnipeg is this year inaugurating a new

system in reference to the issuing of building permits. Hereafter a charge will be made on all permits issued, and will be based on the following scale:—Buildings costing up to \$50, 50 cents; \$500 to \$1,000, \$1; \$1,000 to \$5,000, \$2, and for each additional \$5,000 in cost over the first \$5,000 50 cents is added to the fee. Fees will be paid on the cost of each building, and not on the total amount of cost appearing on permits.

George Frederick Bodley, the venerable English architect, now in his eightieth year, is coming to America to design the new Protestant Episcopal Cathedral at Washington. He has long been known as one of England's foremost ecclesiastical architects, and scattered up and down England are many notable churches he designed. He hopes to make the Washington cathedral his masterpiece—the monument by which he will be remembered by posterity.

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Sealed tenders will be received up to 4.30 P.M. of

**MONDAY, FEBRUARY 4TH, 1907,**

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The building will be about 80 ft. x 80 ft. reinforced concrete fireproof construction, cut stone facing and two storeys in height and other details to match this style of work.

The plumbing, heating and ventilating and electric light wiring will not be included in this contract.

Each tender must be accompanied by an accepted cheque for other satisfactory deposit for the amount of \$5,000.00.

This deposit will be forfeited if the tenderer fails to execute the contract and bond when requested and will be returned when the contract and bond is signed and the work is commenced.

The deposit of unsuccessful tenderers will be returned when the contract is signed.

The right to reject any or all tenders and to waive any defects or irregularities therein is to be at the discretion of the Commissioner of Public Works.

Plans, specifications, form of tender and all information may be obtained on application to the undersigned.

The unauthorized insertion of this advertisement will not be paid for.

F. J. ROBINSON,

Deputy Commissioner of Public Works.

Department of Public Works, Regina, Dec. 31st, 1906.

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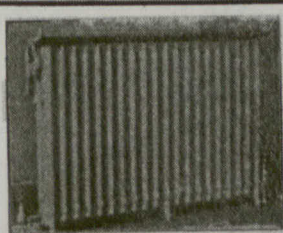
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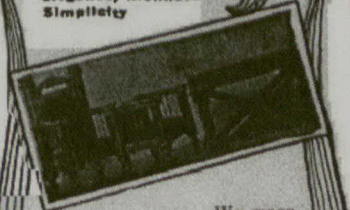
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NOTES.

J. Monette and P. Laurent, brick contractors, Montreal, Que., have registered as Laurent & Monette.

The Brestau Brick & Tile Company, Brestau, Ont., are making several important improvements to their plant, among which is the extension of the dry kiln.

A. C. Leslie & Company, Montreal, Que., have recently been incorporated under the name of A. C. Leslie & Company, Limited, with an authorized capital of \$250,000. No change whatever has been made in the personnel of the management, the directors and officers being as follows: S. Leslie, president; H. Campbell, vice-president; H. Jordon, director; H. Copland, secretary; H. Foster, treasurer.

The Toronto University buildings have been insured under a new arrangement, which will continue for three years. The amount of the insurance is \$1,450,000, being about one-third more than the previous aggregate of insurance, the increase being due to the number of new buildings. The insurance is divided equally among twenty of the companies doing business in this Province, and the premiums amounted to \$16,833.

An enormous block of undressed stone was recently conveyed to Cote des Neiges Cemetery Montreal, Que. to form a monument over the grave where rest the remains of the late Hon. Raymond Prefontaine. The stone measures thirty-two feet in length, and is of commensurate thickness, weighing in all 50,000 pounds. It was cut from the St. Philippe granite quarries in Argenteuil County, Que., and required two flat cars to convey it to St. Lawrence Junction, where it was placed upon specially built sleighs to convey it to the cemetery.

Active operations will shortly be commenced by the Western Timber & Mines Company, of Edmonton, Alta., at their stone quarries, which are situated about 40 miles from Edmonton. A dyke of grey limestone overlaid with 20 to 40 feet of clay and underlaid with sandstone, cuts across this property and outcrops on the river bank. The men now on the ground are building camps and facing off the outcrop to put it into shape for cheap quarrying. The stone will be brought down the river to Edmonton, and the management of the company expect to do a large trade this coming season.

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