

CONSTRUCTION

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Canadian National Exhibition Buildings.
(See Page 59.)



- MONTREAL -

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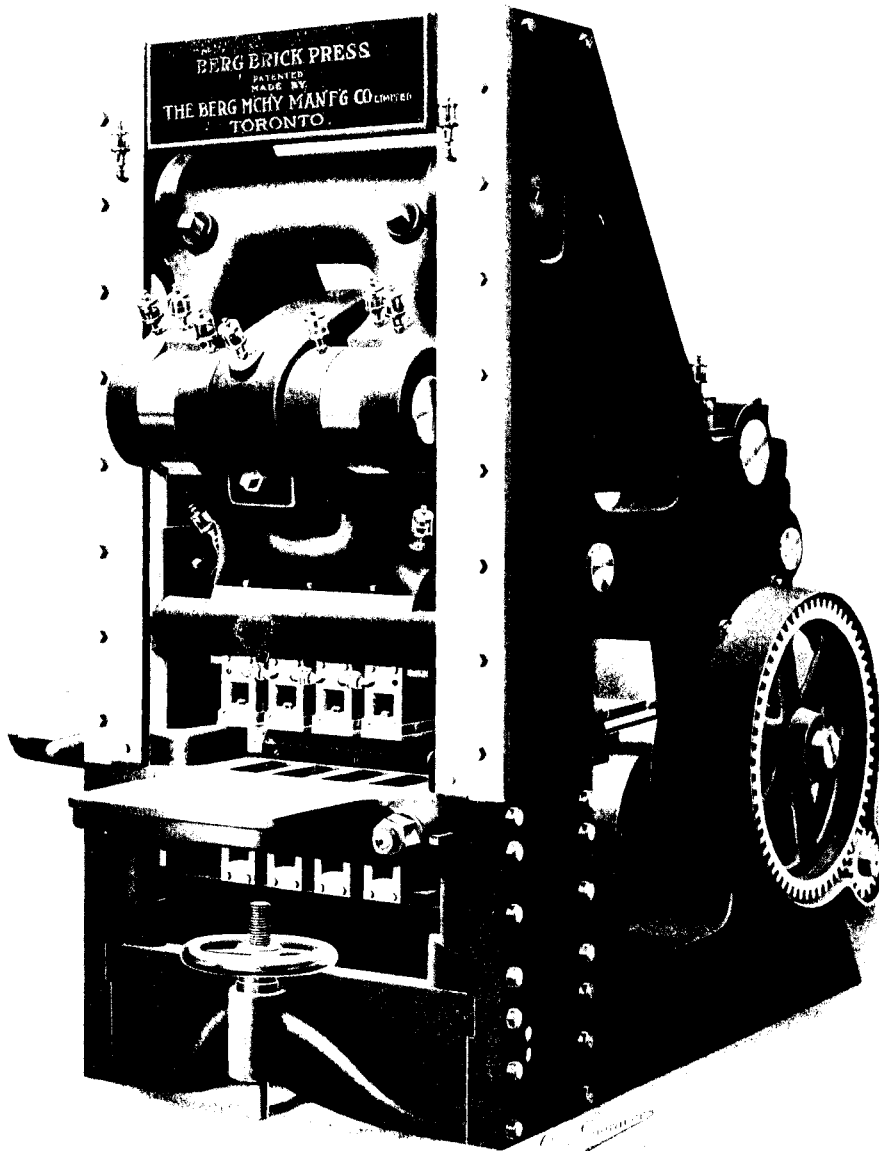
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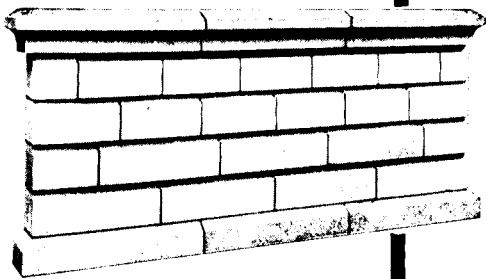
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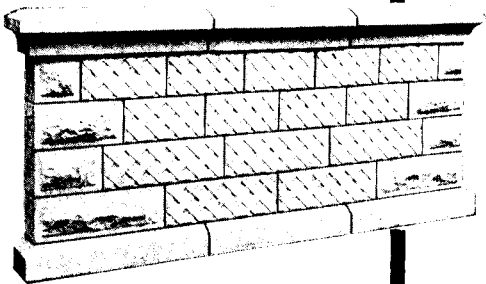
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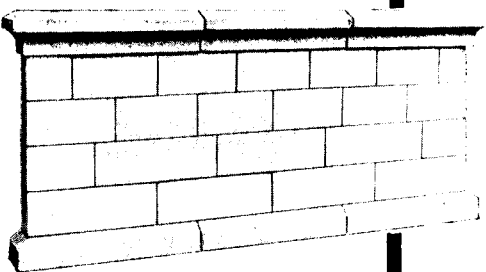
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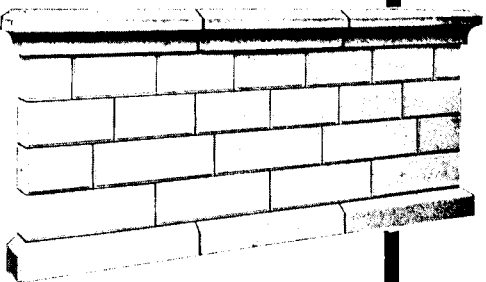
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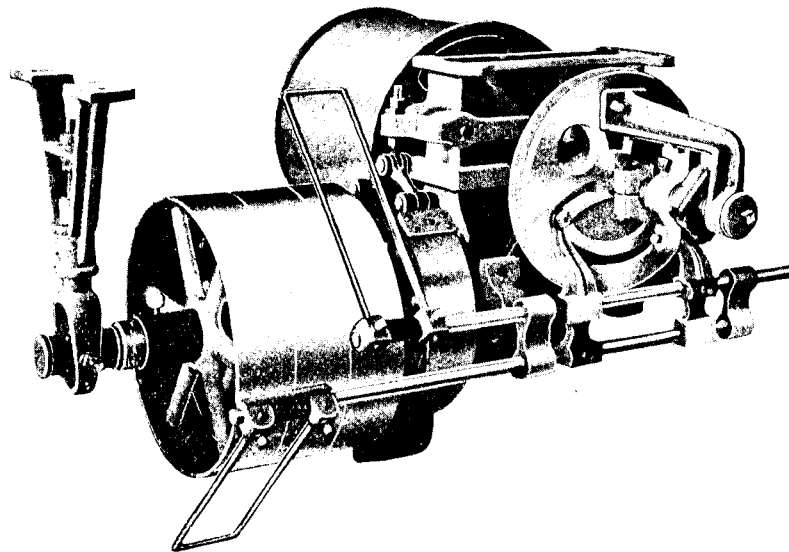
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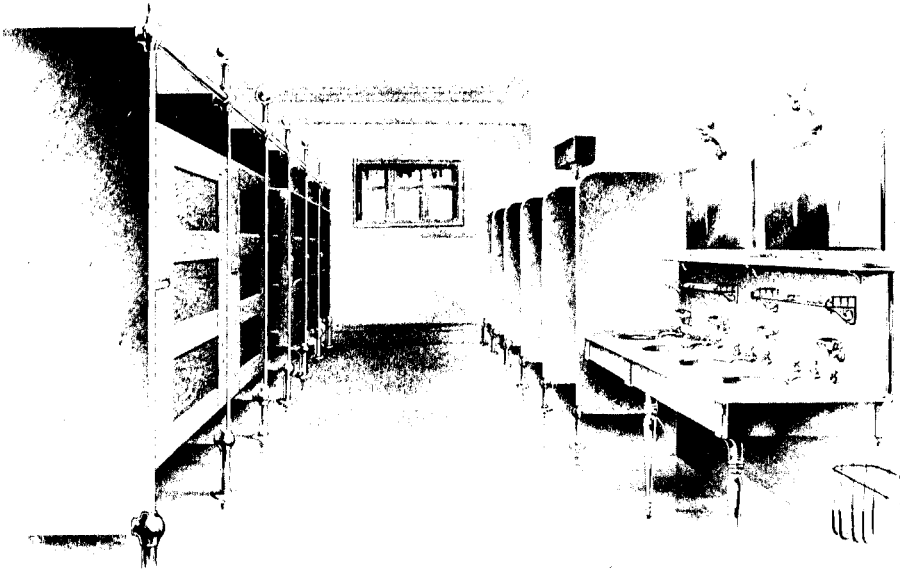


PLATE E 88.



PLATE E 89

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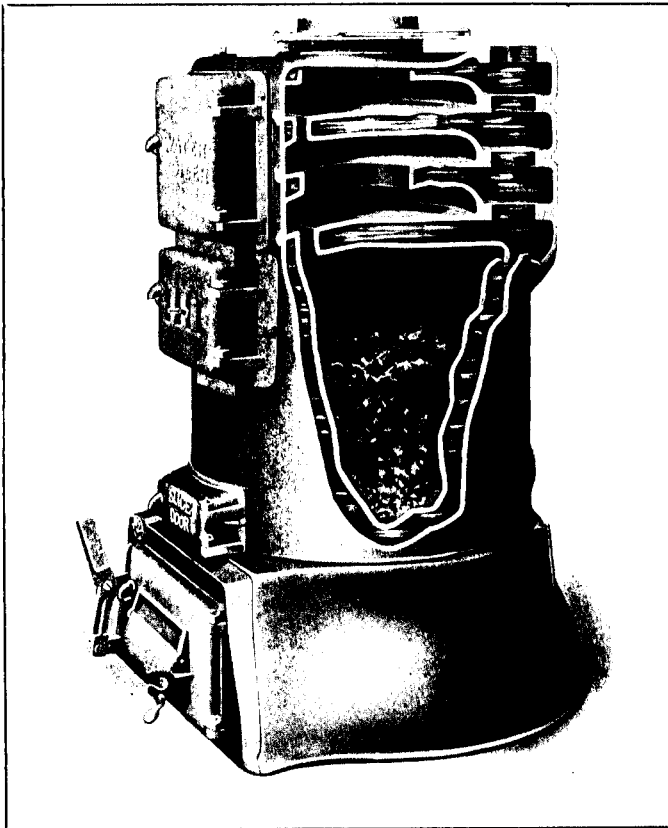
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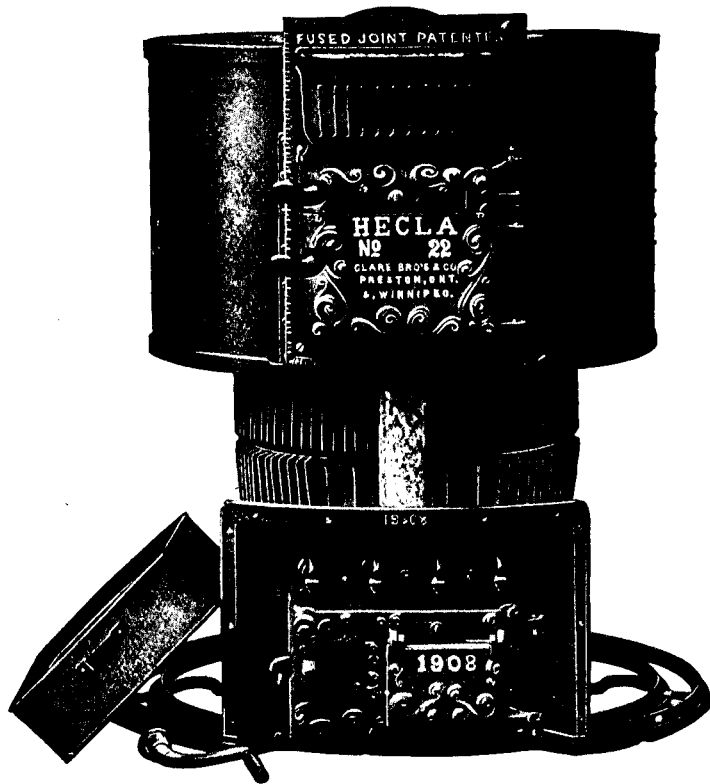
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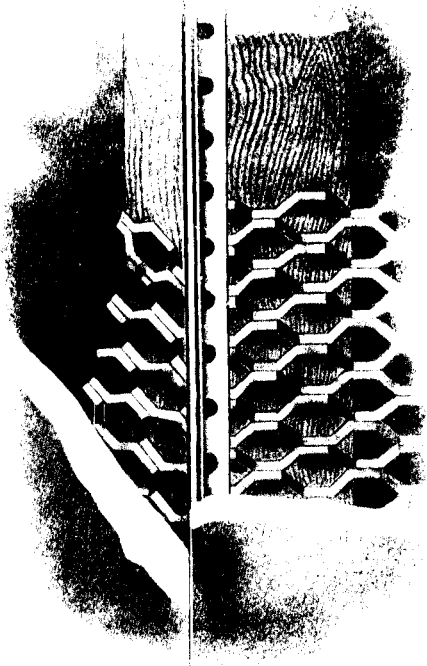
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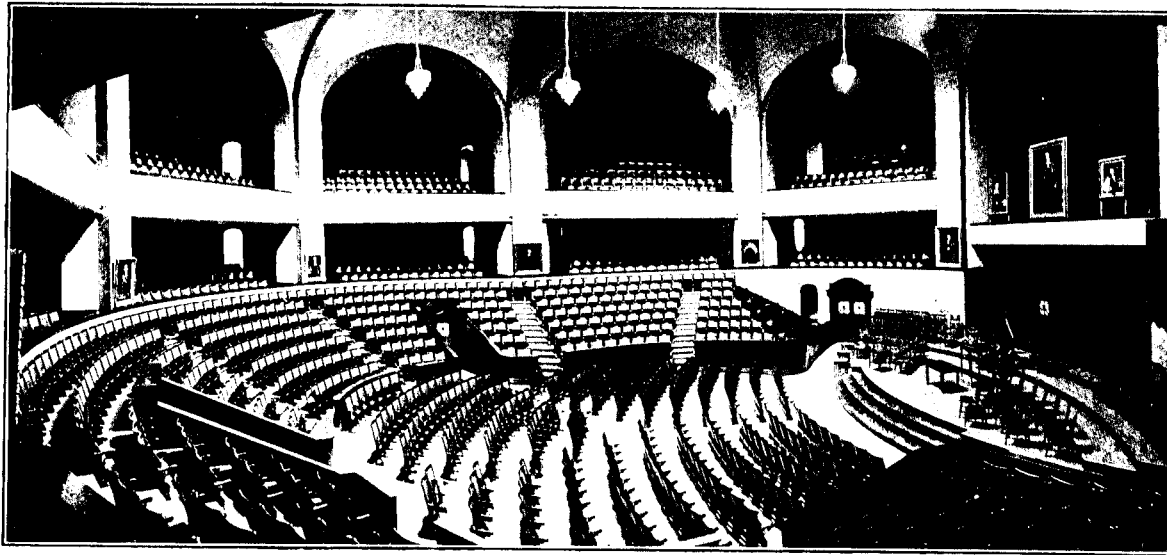
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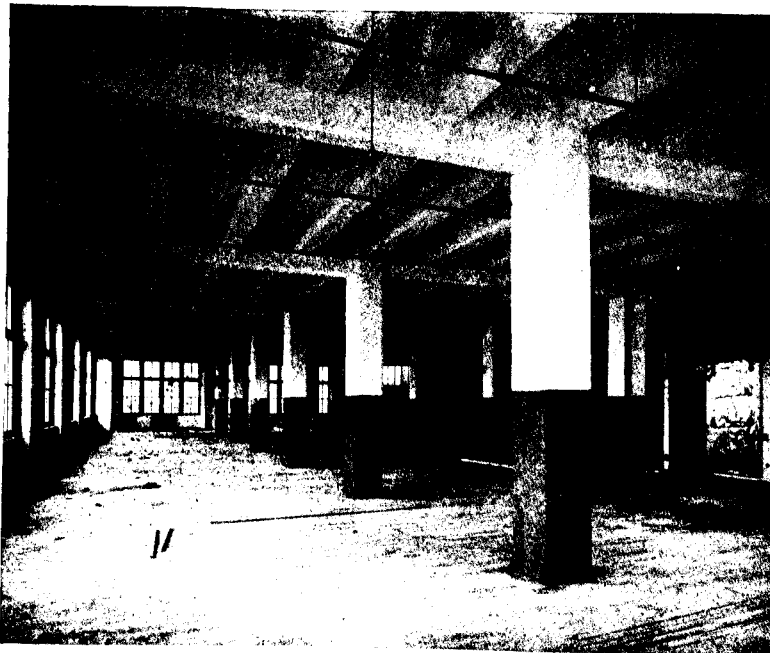
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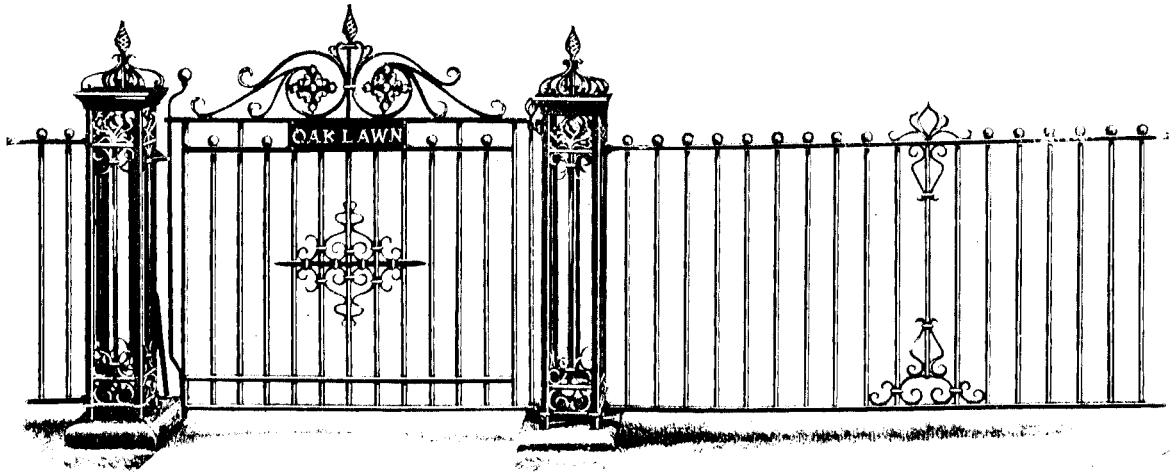
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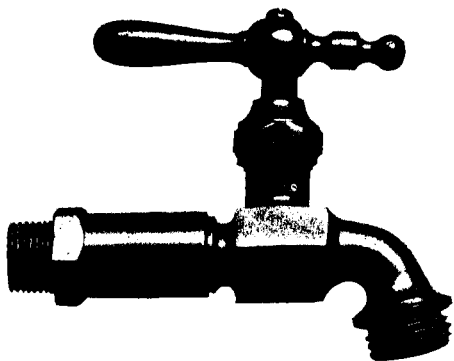
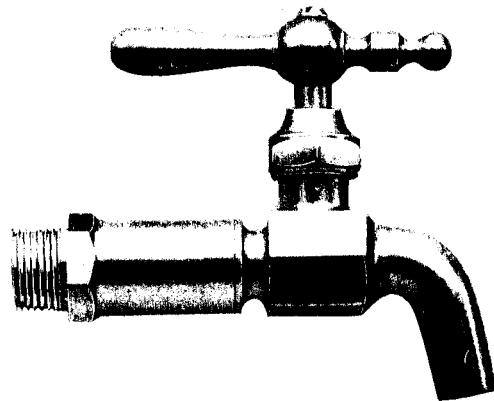
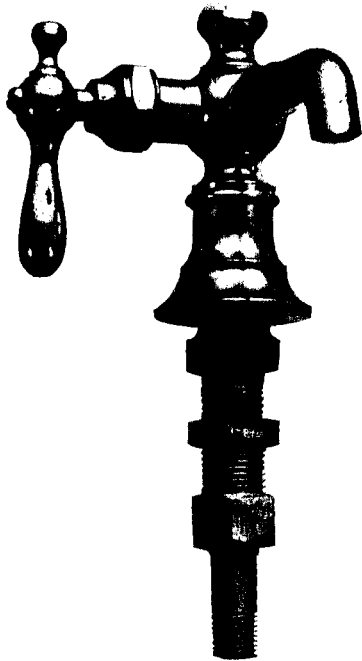
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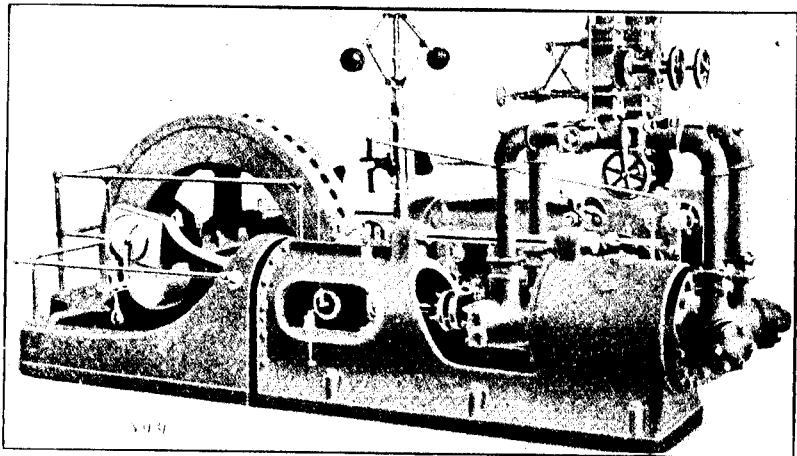
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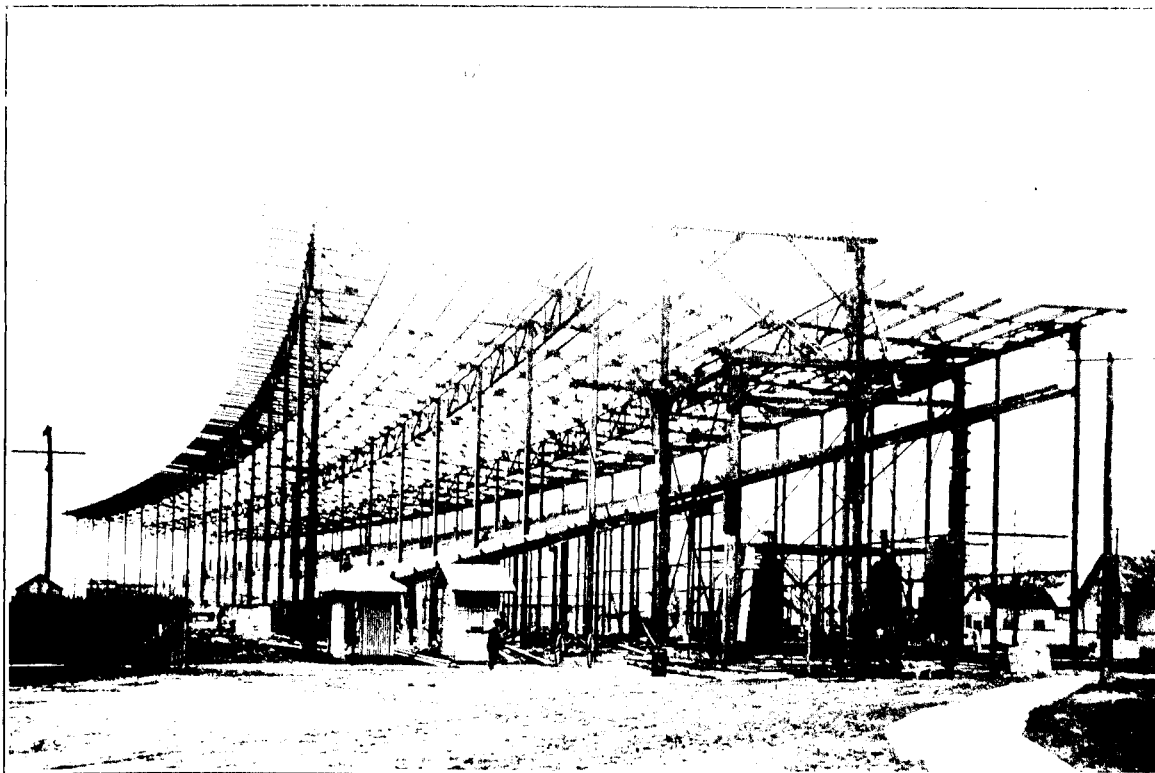
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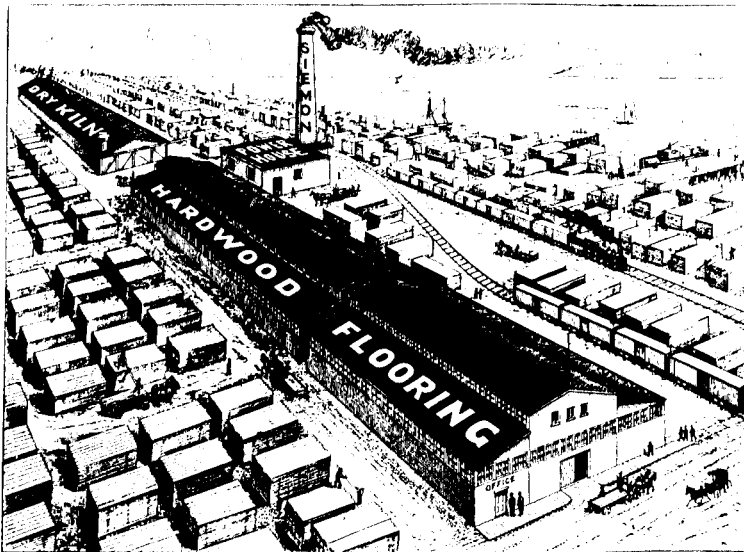
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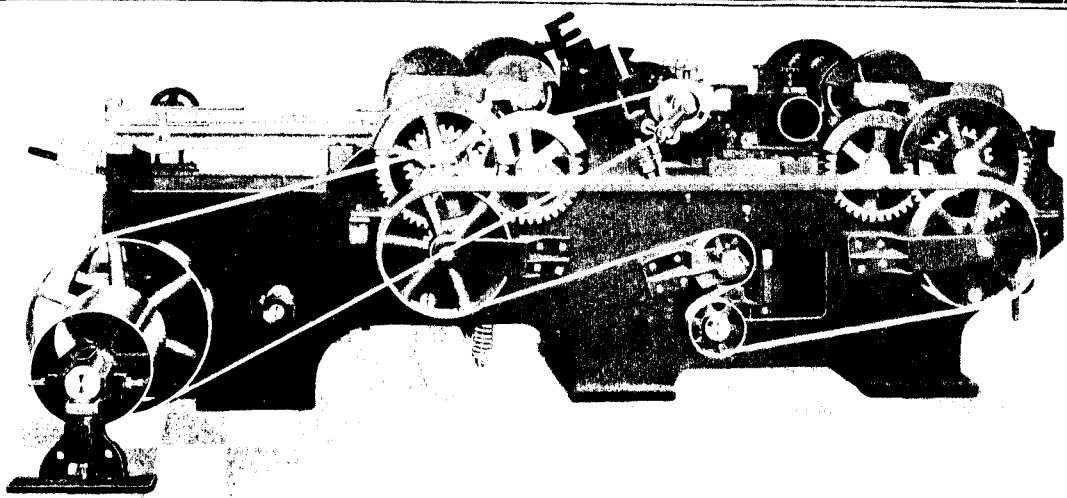
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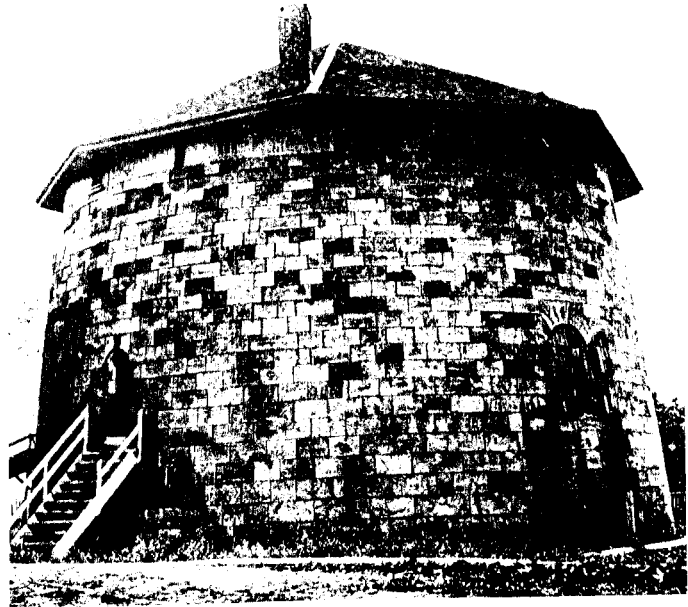


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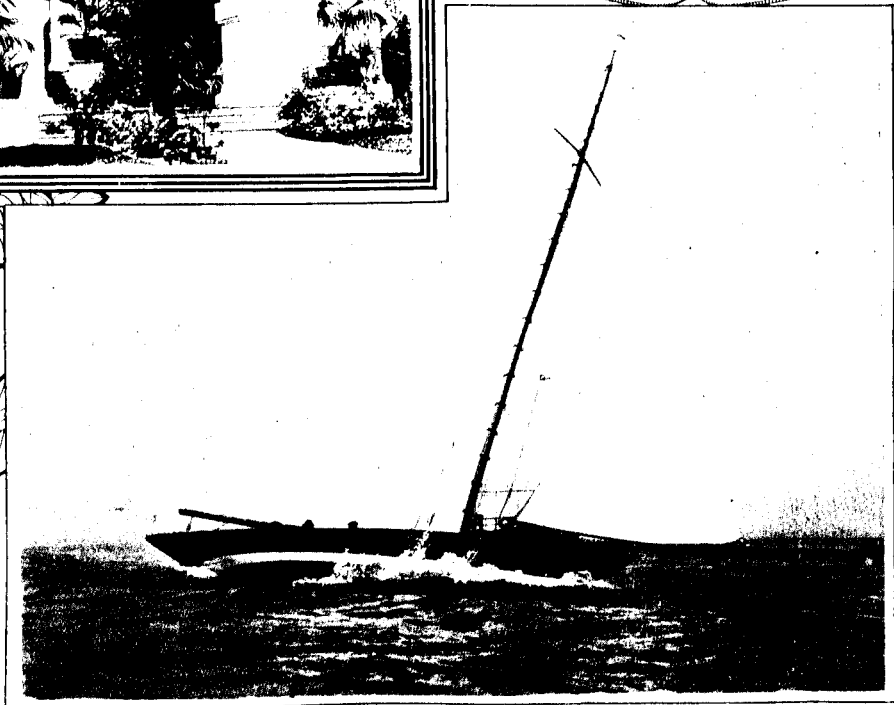


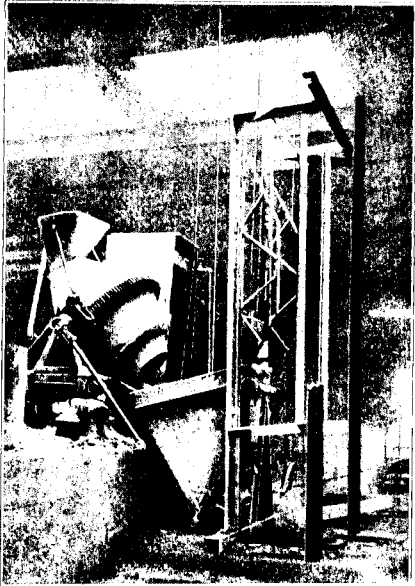
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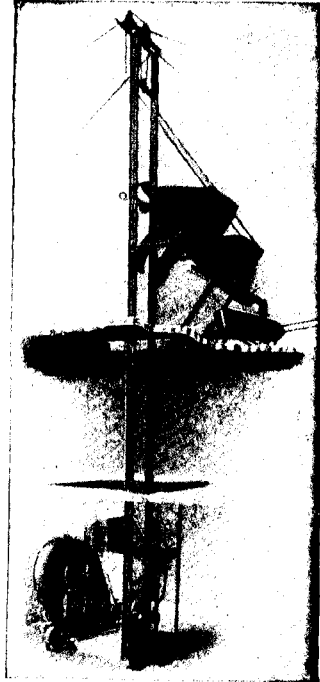
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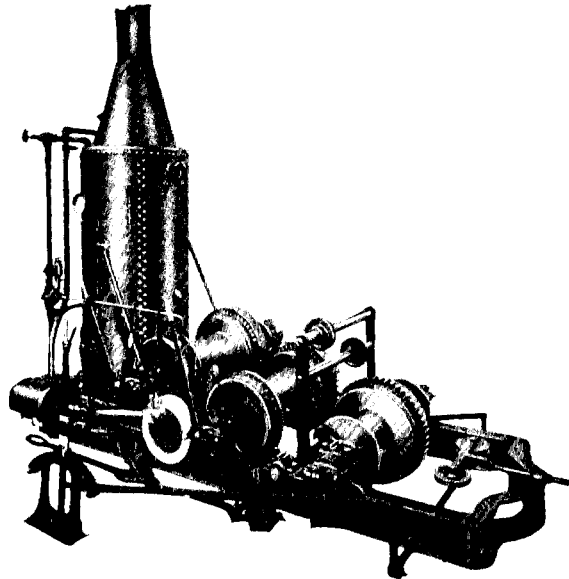


Smith Mixer, with Automatic Concrete Elevator

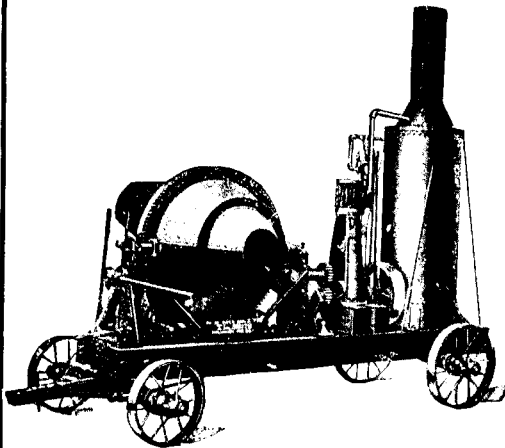
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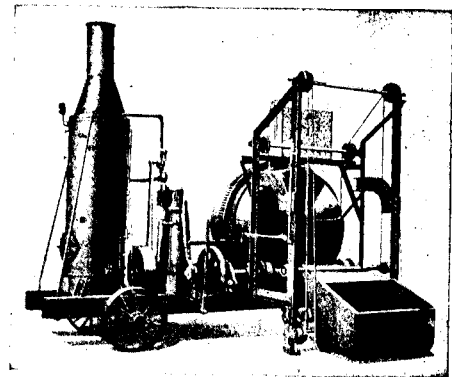


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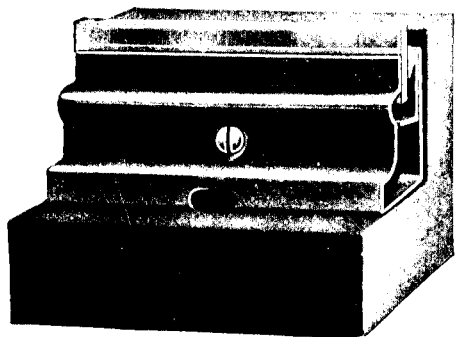
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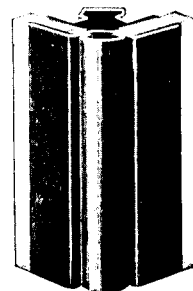
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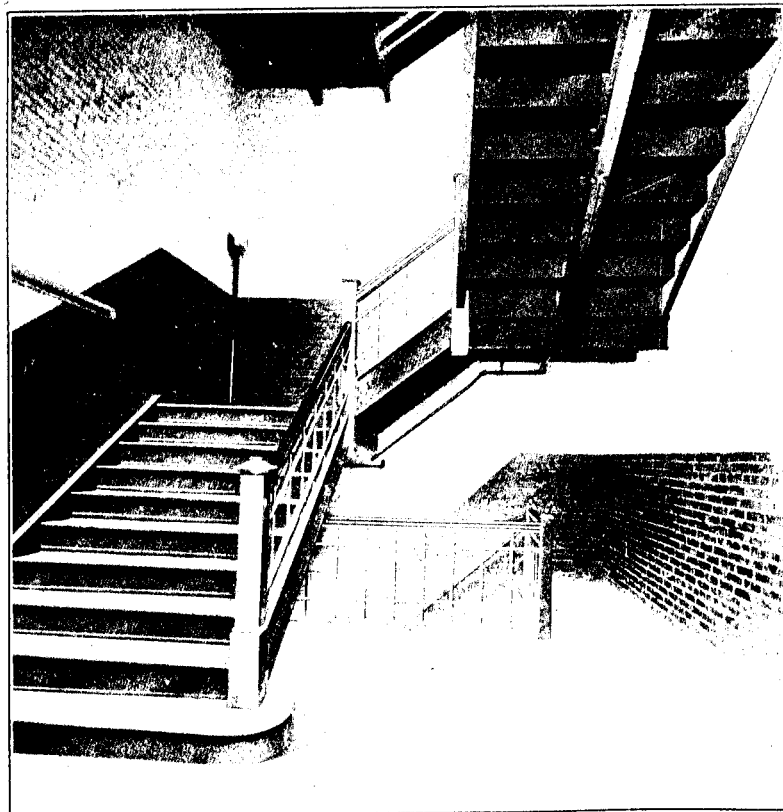
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Reinforce the concrete beams and girders with **Kahn Trussed Bars**—strongest—most economical. For floor slab reinforcement use **Rib Metal** especially designed for the purpose. Reinforce the columns with **Cup-Bars** and **Column Hooping**.

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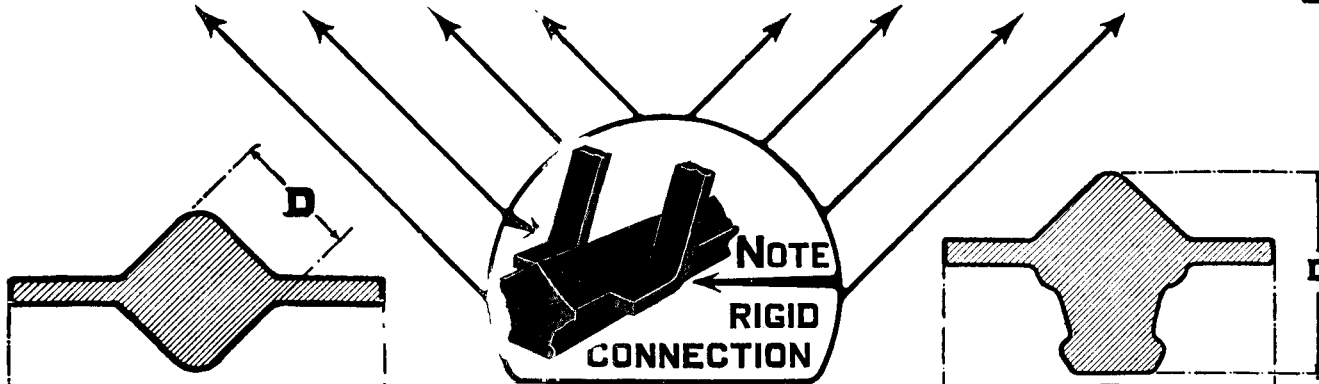
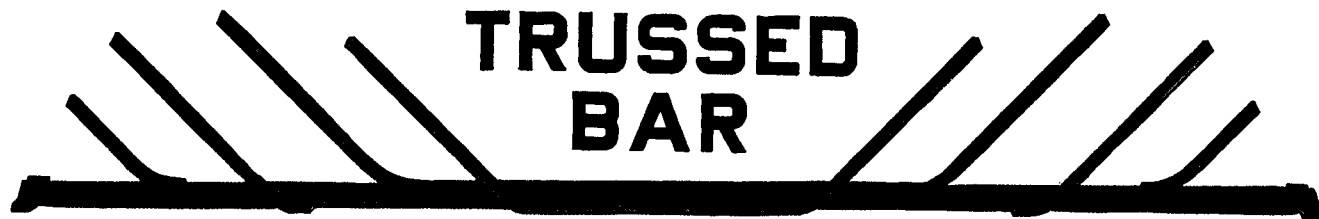
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D x B	Weight per lineal foot	Area	Length of Diagonals
Inches.	lbs.	sq. in.	Inches.
1 1/2 x 1 1/2	1.4	0.11	6, 8, 12
3/4 x 2 3/8-16	2.7	0.79	12, 8, 18

D x B	Weight per lineal foot	Area	Length of Diagonals
Inches.	lbs.	sq. in.	Inches.
1 1/2 x 2 1/4	4.8	1.41	24, 18, 30, 36
1 3/4 x 2 3/4	6.8	2.00	24, 18, 30, 36
2 x 3 1/2	10.2	3.00	30, 24, 36, 48

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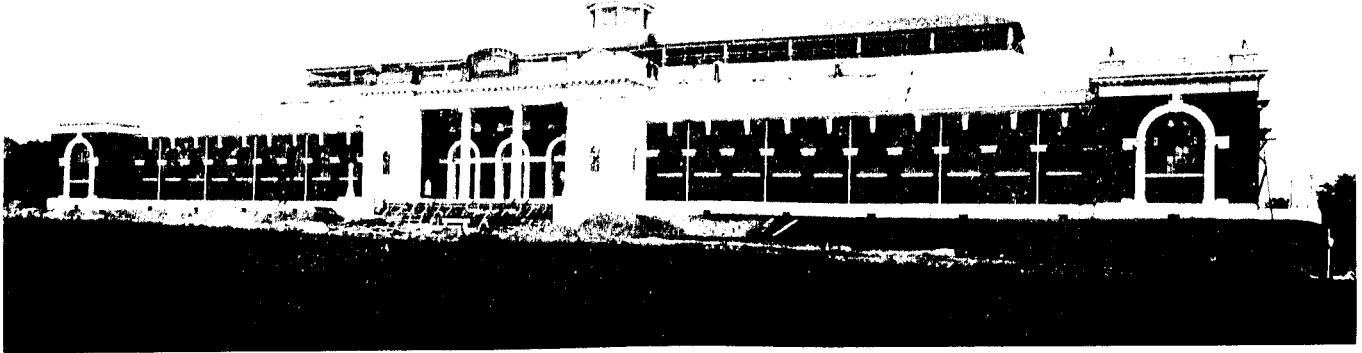
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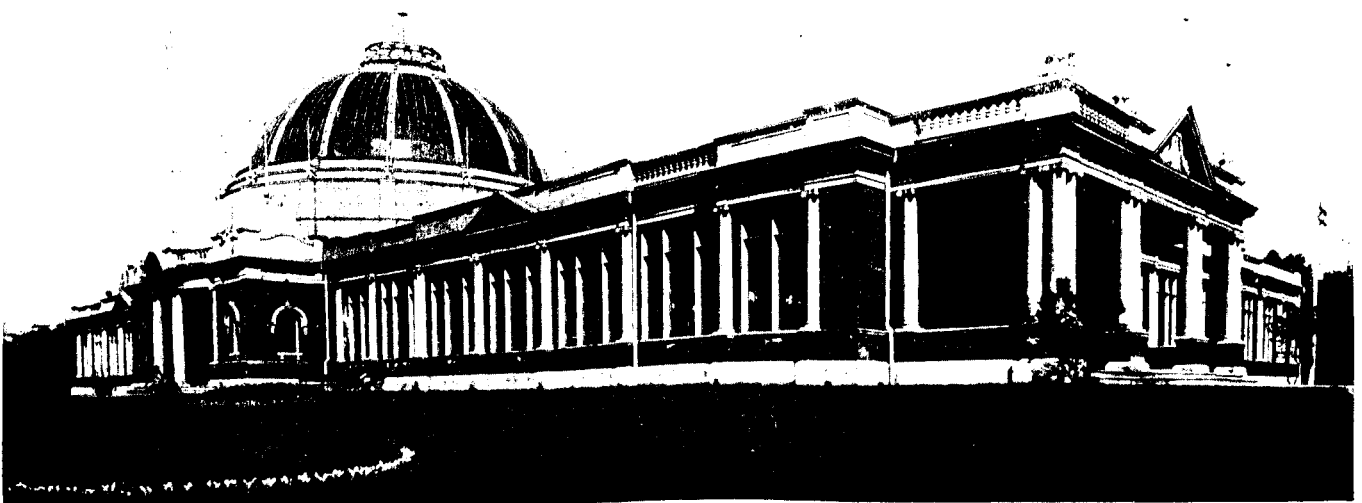
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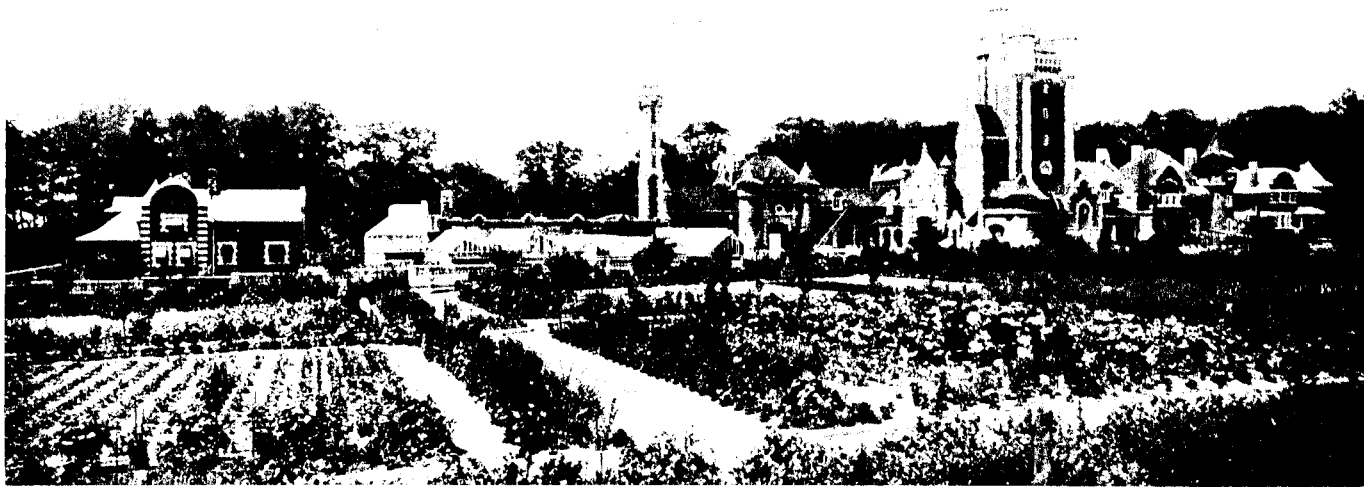
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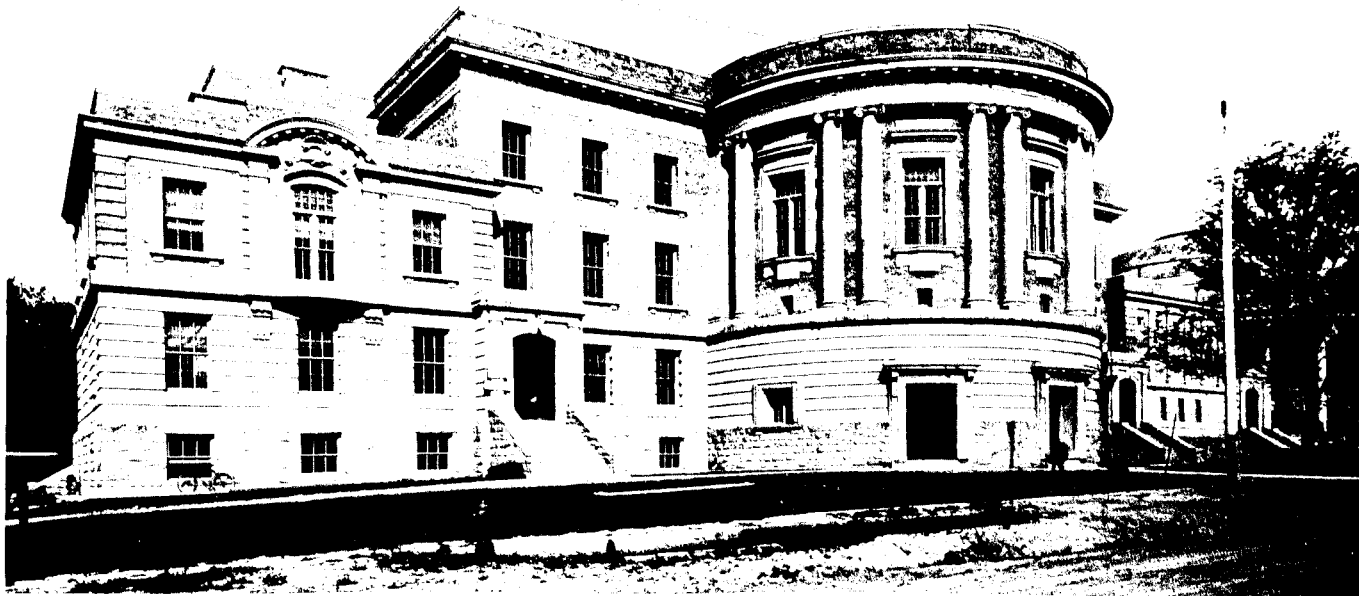
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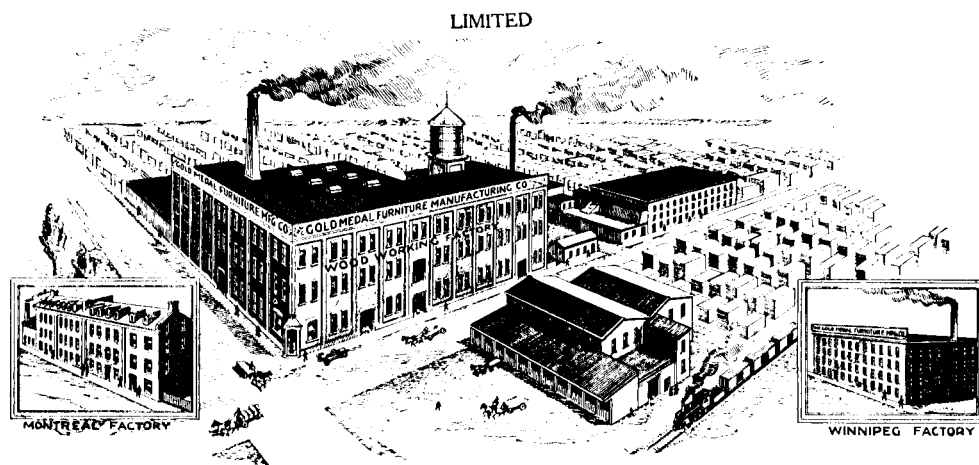


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ALEXANDRA WARE



“Alexandra” Ware versus “Fire Clay Products”

ARCHITECTS have been accustomed to specify two types of bath-room fixtures—*Cast Iron Enameled* ware, or *So-Called Solid Porcelain* ware.

The ordinary type of *Porcelain Enameled Cast Iron* ware serves its purpose well for inexpensive installations. Its sanitary properties are unexcelled. On the other hand *So-Called Solid Porcelain* ware, often specified where high class fixtures are desired, being made from *Porous Fire Clay Products*, glazed on the interior with *Lead Glaze*, has proven not only to be an *unsanitary* product, but is heavy and cumbersome to install, difficult to heat, and highly expensive.

Clay Baths are unsanitary because of the crazing of the glaze on the interior, caused by the difference in the ratio of expansion of the glazing and the fire clay, when extremely hot or cold water is applied. This crazing or cracking of the glaze allows the water to seep through into the *Porous Fire Clay*, causing the fixture to become *water logged* and *unsanitary*.

“ALEXANDRA” WARE has been designed to overcome all the defects in *So-Called Solid Porcelain* ware. In design it possesses a beauty and elegance superior to *Clay Products*, and has to a more perfect degree all the sanitary properties of the ordinary *Porcelain Enameled Cast Iron* ware.

“ALEXANDRA” WARE is high grade porcelain enameled on both the *INTERIOR AND EXTERIOR*; is made in two parts; light in weight; easily heated and convenient to install.

“ALEXANDRA” WARE is free from crazing, being made from a specially prepared iron, with which is united a perfect enamel of Porcelain; the ratios of expansion and contraction of the two materials being equalized.

Our Catalogue F shows 48 Patented Designs in “ALEXANDRA” WARE.

Architects desiring to give their clients the acme of perfection in bath-room fixtures, in the matter of sanitation and elegance of design, should investigate “ALEXANDRA” WARE.

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ALEXANDRA WARE

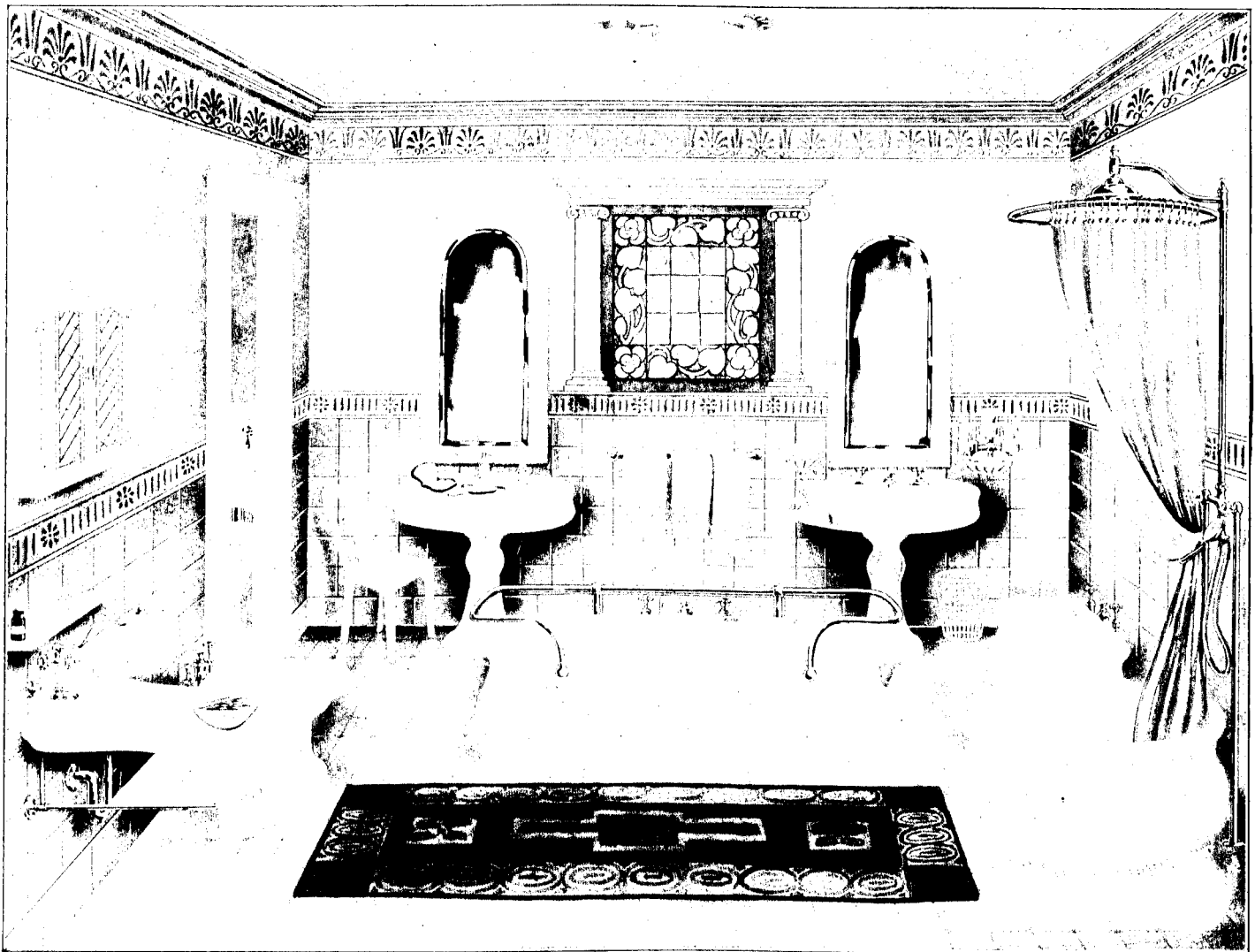
“Alexandra” Bathroom F-A

This Bath-room contains an “ALEXANDRA” BATH, enameled outside and inside, nickel-plated brass guard rail, compression low down bell supply and waste fitting with china indexes. *Plate F.05, Catalogue F.*

“ALEXANDRA” SHOWER, Combination Bath and Shower Receptor, enameled outside and inside, nickel-plated brass shower and shampoo, with supply pipes, valves, curtain ring, holder, and rubber curtain. *Plate F.018, Catalogue F.*

“ALEXANDRA” FOOT BATH, enameled outside and inside, nickel-plated compression bell supply and waste fitting with china indexes. *Plate F.035, Catalogue F.*

“ALEXANDRA” LAVATORY, enameled all over on enameled pedestal, nickel-plated compression combination supply and waste fittings with china indexes, $\frac{3}{8}$ -inch iron pipe size brass supply pipes, $1\frac{1}{4}$ -inch adjustable “P” trap with waste to wall. *Plate F.089, Catalogue F.*



“ALEXANDRA” TOILET TABLE, enameled all over, on enameled pedestal. *Plate F.092, Catalogue F.*

“ALEXANDRA” MANICURE TABLE, enameled all over, with enameled legs, nickel-plated brass wall supports and frame, combination compression supply and waste fitting with china indexes, $1\frac{1}{4}$ -inch adjustable “P” trap with waste to wall. *Plate F.094, Catalogue F.*

“ALEXANDRA” BIDET, enameled outside and inside, nickel-plated compression valves to flushing rim and bidet and “Ideal” waste fitting. *Plate F.051, Catalogue F.*

MIRRORS, two beveled plate glass, with white enameled wood frame. *Plate F.900, Catalogue F.*

MEDICINE CABINET, white enameled with leaded glass doors and two adjustable glass shelves. *Plate F.930, Catalogue F.*

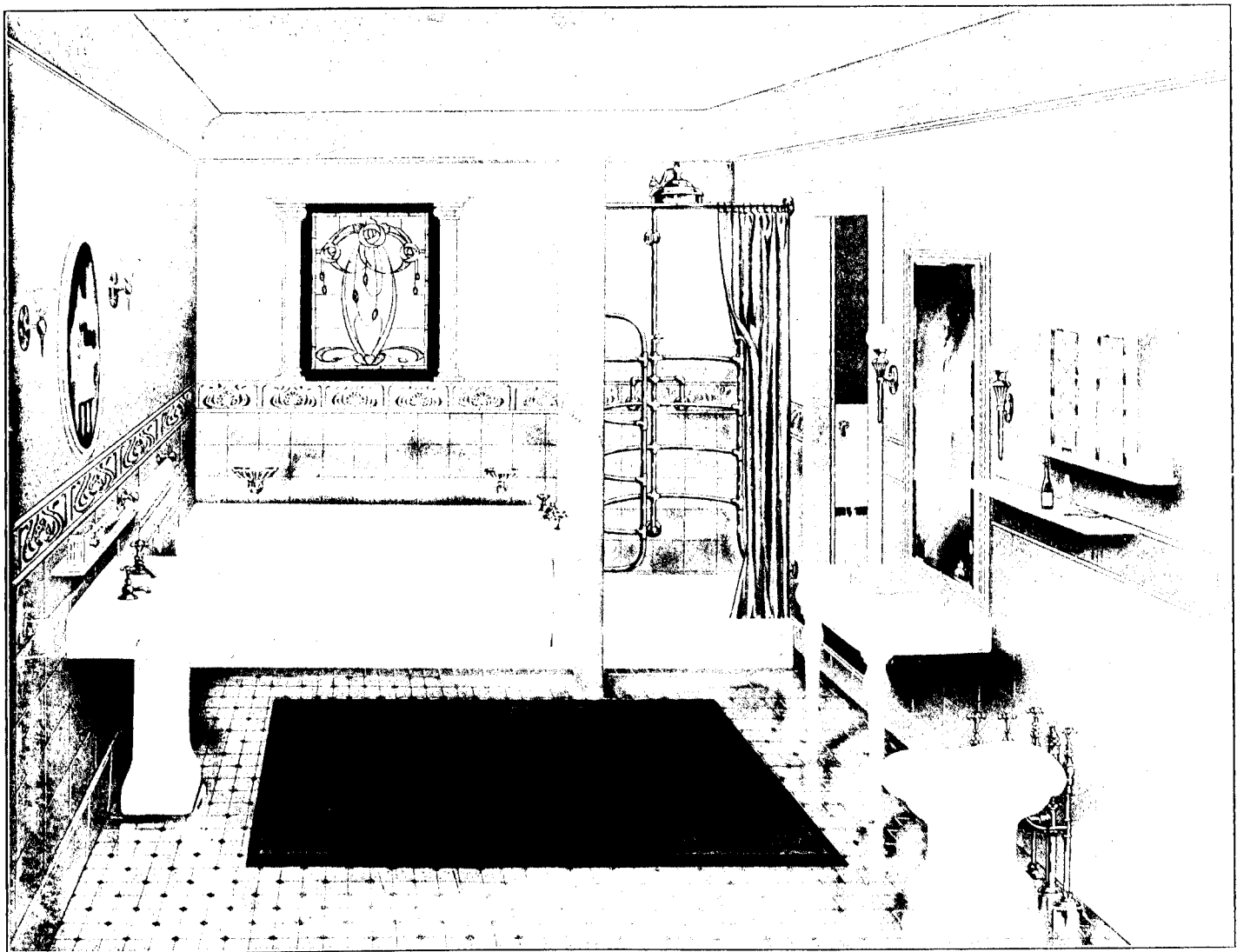
ALSO THE FOLLOWING FURNISHINGS: Opal glass shelf, brass towel bars and posts, sponge holder, soap dish, triple tumbler holder.

“Alexandra” Bathroom F-D

This Bath-room contains an “ALEXANDRA” BATH, enameled outside and inside, nickel-plated compression low down bell supply and waste fitting with china indexes. *Plate F.09, Catalogue F.*

“ALEXANDRA” SHOWER, Shower Receptor, enameled outside and inside, nickel-plated combination needle and shower with valves, brass curtain rod, hook, strainer, coupling and rubber curtain. *Plate F.040, Catalogue F.*

“ALEXANDRA” LAVATORY, enameled outside and inside, nickel-plated compression faucets with china indexes, $\frac{3}{8}$ -inch iron pipe size brass supply pipes, $1\frac{1}{4}$ -inch adjustable “P” trap with waste and vent to wall, overflow strainer and chain stay, P. O. plug and rubber stopper. *Plate F.112, Catalogue F.*



“ALEXANDRA” TOILET TABLE, enameled outside and inside, with enameled legs, nickel-plated brass wall supports. *Plate F.092, Catalogue F.*

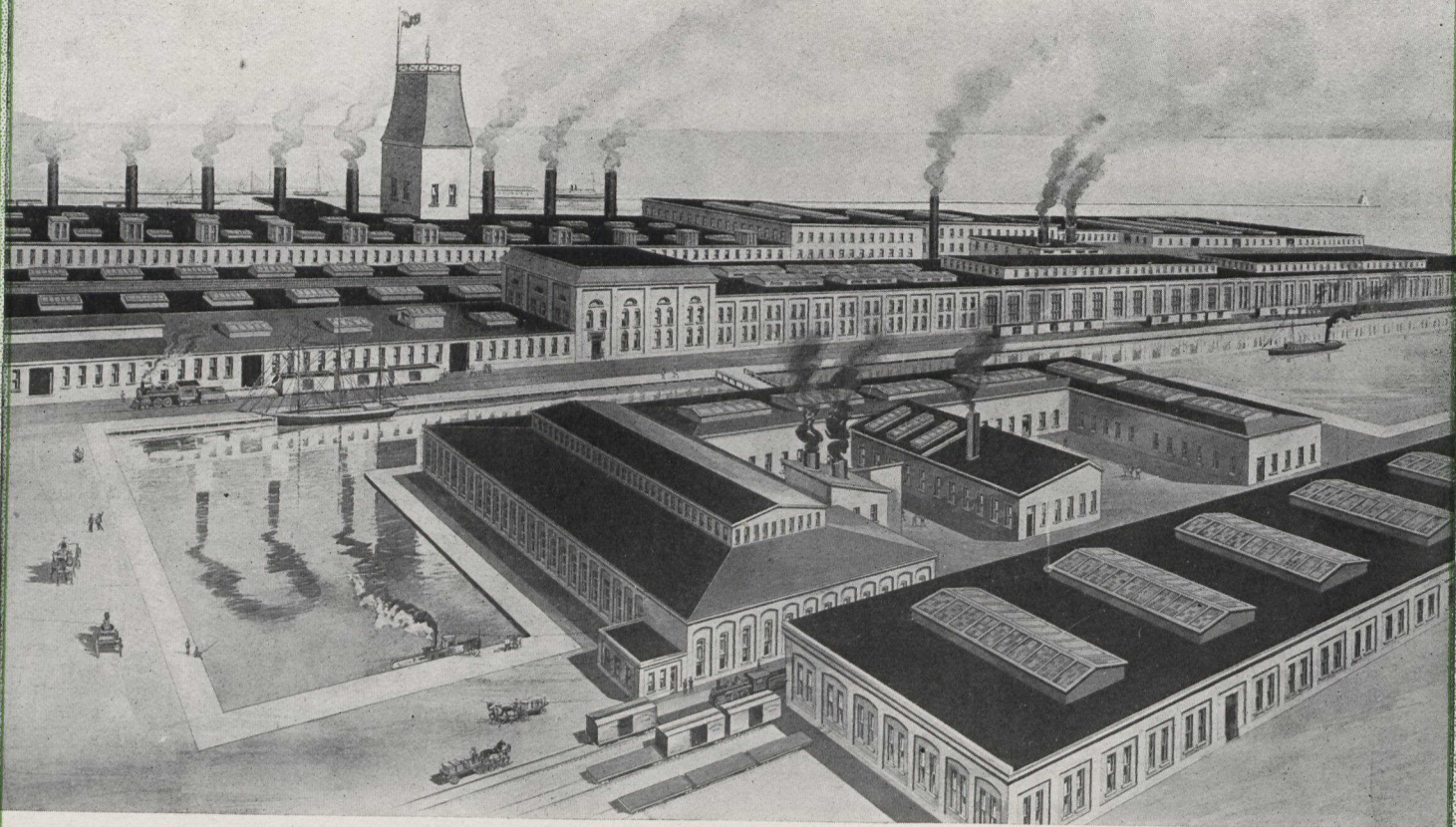
“ALEXANDRA” BIDET, enameled outside and inside, nickel-plated compression valves to flushing rim and bidet, “Ideal” waste fitting. *Plate F.051, Catalogue F.*

MIRRORS, beveled plate glass, with white enameled wood frame. *Plate F.900D, Catalogue F.*

MEDICINE CABINET, white enamel, with leaded glass doors, and two adjustable glass shelves. *Plate F.930, Catalogue F.*

ALSO THE FOLLOWING FURNISHINGS: Opal glass shelves, opal glass towel bar and posts, sponge holder, soap dish.

ALEXANDRA WARE



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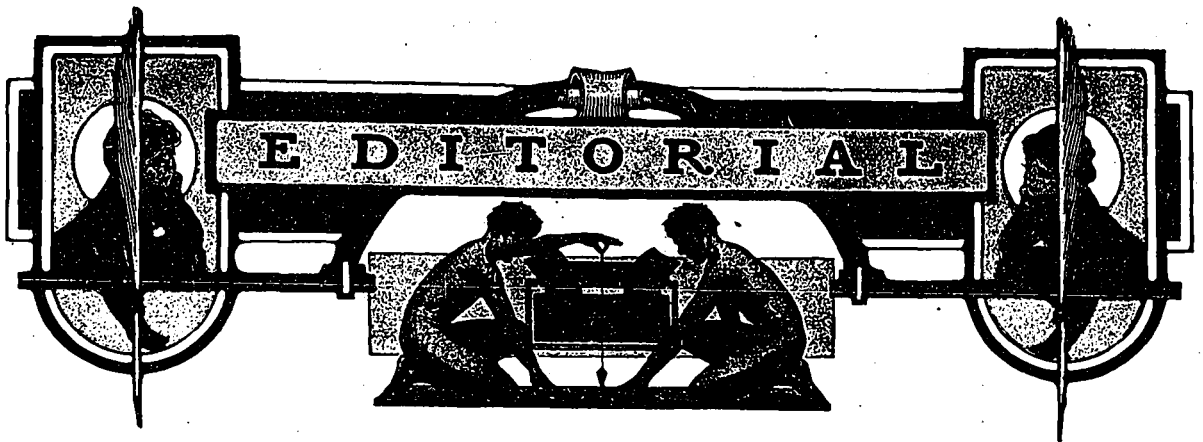
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July Building Operations

BUILDING RETURNS for July from nineteen centres, while showing a falling off in six places—the largest number of decreases recorded for any month so far this year—nevertheless registers on the whole an average gain of 13.98 per cent. Altogether the situation, as based on comparative figures supplied CONSTRUCTION can be regarded as being most satisfactory, as despite the set-back experienced in five Western cities and the loss noted in the case of Halifax, the gains made in other sections are of such proportions as to leave no doubt as to the substantial progress which is being made at present, and which will in all probability be made for some time to come.

The biggest loss for the month is in the case of Brandon, where a slump of 63 per cent. has been experienced. Winnipeg shows a decline of 32 per cent. Edmonton is third, with a deficit of 25 per cent. Vancouver next, by a falling off of 13 per cent.; while Regina falls by 11 per cent. to equal her amount for the corresponding period of last year.

These reversals, as affecting the West, cannot, however, be viewed with any degree of alarm, as it was only reasonable to expect, after a protracted period of unprecedented and consecutive gains, that a temporary break was bound to occur. Winnipeg, Edmonton, Vancouver, and Brandon more than doubled their amounts in the preceding month, while Regina registered an increase of 61 per cent., and, in view of this fact, and the big advances made in each case during the first five months, the loss experienced will in no way materially detract from their season's total. All five places, as well as Halifax, which fell back to the extent of 22 per cent., report the immediate outlook as being bright, and show unmistakable signs of an unusually active fall.

Apart from the losses mentioned, a most wholesome condition in general prevailed, in many cases the gains being equal to or better than those registered in the previous months. Victoria had an exceptionally brisk period, her gain of 250 per cent. placing her at the top of the list, while Calgary's increase of 190 per cent. shows conclusively the uninterrupted growth which this city is undergoing. Saskatoon also has evidently made substantial headway as her total of \$176,315 (not included in following table), although no comparative figures were submitted, clearly indicates a month of tremendous activity.

In Ontario the advance was both steady and strong. Toronto not only had a gain of 43 per cent. but her total of \$1,754,105 for permits issued shows the largest volume of business for the month of any city in the Dominion, and Peterboro followed her gain of the preceding month with another increase of 244 per cent., the second high-

est gain per cent. noted. London advanced 114 per cent.; Berlin 106; Hamilton 31; and Stratford 10 per cent. Fort William, which failed to submit the amount for the corresponding month of 1908, issued permits for new buildings to cost \$186,235; while the month's totals for Port Arthur and Windsor were \$114,260 and \$33,650 respectively, and it is quite likely that both these latter places are considerably ahead of their previous figures.

Farther east, Montreal has jumped forward by an increase of 63 per cent., the sixth consecutive gain this year; and Sydney materially adds to her big advance in June and July by another increase of 82 per cent.

As regards fall operations, it may be said that never before at this season of the year has there been so much work in preparation in the architect's offices, or in immediate prospect generally, as at the present time; and reports at hand from all sections of the country give every assurance that fall building activities this year will be without a parallel in the past annals of the Dominion.

	Permits for July, 1909.	Permits for July, 1908.	Increase, per cent.	Decrease, per cent.
Berlin, Ont.	\$25,000	\$12,000	108.33	.....
Brandon, Man.	20,480	55,854	.....	63.33
Calgary, Alta.	182,280	62,650	190.94	.....
Edmonton, Alta.	274,355	368,765	.....	25.60
Fort William, Ont.	186,235	.....	.....	.....
Halifax, N.S.	48,635	62,461	.....	22.13
Hamilton, Ont.	205,475	156,250	31.50	.....
London, Ont.	73,808	34,600	113.31	.....
Montreal, P.Q.	712,126	435,405	63.55	.....
Peterboro', Ont.	43,195	12,233	244.92	.....
Port Arthur, Ont.	114,260	.....	.....	.....
Regina, Sask.	51,300	58,165	.....	11.80
Stratford, Ont.	14,760	13,400	10.07	.....
Sydney, N.S.	17,750	9,745	82.14	.....
Toronto, Ont.	1,754,105	1,221,000	43.66	.....
Vancouver, B.C.	549,307	636,120	.....	13.64
Victoria, B.C.	372,120	106,070	250.82	.....
Windsor, Ont.	33,650	.....	.....	.....
Winnipeg, Man.	950,800	1,401,250	.....	32.14
	\$5,295,486	\$4,645,968	13.98	.....

R.A.I.C. Convention

ARCHITECTURAL REGISTRATION bids fair to be one of the most important topics for discussion at the next Annual Convention of The Royal Architectural Institute of Canada to be held in Toronto on Oct. 5, 6, and 7.

Registration has been one of the big subjects with this organization since it first applied for its charter. Embracing as it does, a membership from every province in the Dominion, as well as from every architectural organization in Canada, there is a wide diversity of opinion

among the members on the most important subject of compulsory architectural education.

When the organization was first mooted, its promoters aimed to make it a close corporation, but were unsuccessful for two reasons; first, the Dominion Government did not feel that it had the power to grant a close corporation charter to such an organization, and that such power rested entirely with each of the several provinces; secondly, a number of members were not in favor of endeavoring to create a monopoly in the profession of architecture, and, as stated by some, not willing to submit to the control of the profession by any individual organization or clique of men.

However, there are those who still maintain that close corporation is the one desirable thing to be sought. There are others who have extreme views in the other direction; they believe that there is no reason why any legislation should be sought, aiming toward the establishment of a legal standard of qualification. There is also a large number of members who believe that there should be some standard of qualification established by each individual Provincial Government that should be complied with by every man who aims to call himself an architect; that such examinations should be conducted by a Provincial Examining Board, appointed by the Government, with or through the advice of the Provincial Association; that these examiners should further be responsible to the Government, and not to any individual architectural association.

As has been stated in CONSTRUCTION on a good many occasions, we believe that some legal standard of qualification for the profession should be established, but that no individual Architectural Association should be empowered to exercise such a prerogative; that if the Government were induced to limit the use of the title architect, such action could only be taken in the interests of the general public; that even though the granting of a close corporation charter would be justified, and would be in the interests of the profession generally, to secure such class legislation in the Province of Ontario, would as this time be absolutely impossible. We, however, do maintain that a Licensing Act, placing the power of examining in the hands of the Government, such as obtains in several States in the American Union, and is now being proposed in England, would not only prove more practicable, but would be of such character that the Provincial Legislature could undoubtedly be induced to deal with such a measure. It is to be hoped that, under no circumstances, will the Royal Architectural Institute of Canada, be induced as a body, to again endorse the close corporation idea.

Duty on Foreign Plans

ANOTHER IMPORTANT SUBJECT to be dealt with at the Convention of the Royal Architectural Institute of Canada, will be the matter of customs duties on foreign building plans. The present tariff is not only inadequate, but the conditions under which duties are collected, are such as to encourage the devising of many schemes which make possible the smuggling of foreign plans into Canada. The regulation under which architects' plans are appraised, is absurd. It is as follows: "*The rate duty on drawings, blue prints and building plans, is 25 per cent. ad valorem. Specifications are free as Mss., if written or typewritten. Special plans of buildings, or blue prints thereof, are to be valued for duty at the charge usually made by the architect for the drawings, without the specifications. This charge may be fixed for duty purposes at 1 per cent. of the estimated cost of the building to be erected.*"

The last sentence is what renders the whole regulation next to valueless. Every architect realizes how

absurd it is to fix an architect's charge for plans at 1 per cent of the estimated cost of the building to be erected. The manner in which the duty would work out on a \$100,000 building would be as follows: 1 per cent. of the cost of the building, for the architects fees, would mean \$1,000., and 25 per cent. of the architect's fees would mean \$250 duty. In other words, the duty on the plans for a \$100,000 building, would be but \$250. It is this one phrase establishing the fixed charge at 1 per cent for duty purposes that the architects will aim to have changed.

Every architectural organization in the country has been confronted with the extremely unfair manner in which foreign architects, especially those from the United States, have been permitted to come in and secure Canadian work, and it now appears as if this new Dominion organization will undertake its first big task.

Toronto, the "City Beautiful"

THE REMARKS of Mr. F. W. Fitzpatrick, of Washington, D.C., who has for some time interested himself in promoting the "City Beautiful" idea in the United States, on the subject of Toronto as a model of attractive homes and a paragon of cleanliness, should prove most interesting.

"Throughout the United States we are hard at work in an endeavor to clean up and beautify our cities. Architectural societies are making educational efforts along these lines, ladies' societies are giving practical demonstrations by actually cleaning the streets, and school children are planting grass and flowers where tomato cans used to thrive. It is an upheaval, a reformation, and certainly a much needed one. Where there is dirt there is generally also crime, and where physical ugliness reigns you'll as frequently find ugliness of morals, a debased taste in living, in thinking, all around.

"It would be a splendid object lesson, an incentive to do things well and right, an eye-opener if more of us could visit Toronto. There we would find practice, not merely precept, and we would also see the advantages of doing things right always instead of by spasmodic jerks. That city needs no reformatory preaching and exhortation; there is no occasion for its women to go out and clean the streets. Pretty nearly everything there is not only being done right, but has been done so for long, many a year. The people are used to it, they see no reason for the astonishment of their visitors. Cleanliness and good sense seem to come naturally to them.

"The streets are thoroughly cleaned, and moreover, the people help to keep them so by not littering them and throwing garbage, waste paper and what not in them. The stores are clean, the hotels, even unto their kitchens and sculleries, the shops, everything; meats and foods for sale are under glass, and vegetables are not piled upon the sidewalks for customers and dogs to paw over or otherwise defile. The cleanliness of the city is attractive and hygienic.

"There are not the usual unsightly and monotonous rows of houses with filthily backyards and a dozen blades of sickly grass in front; each family has its home, with some lawn and flowers all about it, behind as well as in front. There may be a few millionaires' palaces, but there are attractive and substantial and most artistic homes galore, homes of happy, contented, cleanly people, not a city that has been forcibly scrubbed-up here and there, for one special occasion or because the best element in that city can no longer stand its accustomed filth, but a clean city that was clean yesterday and the day before, and because all its people are clean and will stand for nothing else and would tolerate nothing else.

"Yes, undoubtedly, there is no more satisfying and attractive and clean city upon this Continent—and prob-

ably any other Continent—than is Toronto. And the most restful, beautiful and artistic section is that model city is Rosedale, at least, I think it is so, for it is both consistent and charming; the epitome of suburban beauty.

"We may have to consult sanitarians and skilled scavengers as to how we are to remove the outer coating, the years' accretions of filth in our cities, but it is to Toronto we should go for lessons as to how to stay clean."

While we agree with Mr. Fitzpatrick that Toronto's streets are kept exceptionally clean, and that its wholesale streets, both as regards the architecture of the buildings and the condition of the streets, are to be unequalled in any city on the American continent, and also that Rosedale is an ideal suburb; also that Toronto's residential streets generally, and the general character of the average homes, compare most favorably with those of any city of its size in the world, we are inclined to believe that Mr. Fitzpatrick has, undoubtedly, never taken a carriage ride up University avenue from Queen street. When he viewed the City Hall, he must have approached it from the east and not from the west. There is one thing, however, that Mr. Fitzpatrick's compliments for Toronto signifies, and that is that the beauties of a city are never fully recognized by its own citizens, and that far away pastures look green. Some of the statements that have been made by some of the more enthusiastic members of the Toronto Guild of Civic Art, with regard to the eye-sores of Toronto, are particularly interesting, as compared with the views of Mr. F. W. Fitzpatrick, whose exceptionally broad experience as an architect and as a "City Beautiful" specialist, makes him a man who knows.

Building 2000 Feet High

A NEW YORK man has perfected the plans for a colossally tall tower building, which is to rise 2,000 feet above the street level and cost about \$60,000,000. F. O. Semsch, chief engineer for Ernest Flagg, architect of the Singer building, is responsible for the design of the tallest building probably ever conceived by man, and rising to the supreme limit allowed by the laws of New York City.

By the building code of New York, the eastern metropolis, the maximum pressure under the footings on a rock bottom, if caisson foundations are used, is not to exceed fifteen tons a square foot. When that point has been reached, and not till then, the building department says "Enough." But it makes no stipulations as to the number of stories that may have been heaped up ere this point was reached.

Mr. Semsch found that 150 stories in a building 2,000 feet in height practically would be the limit. Assuming a lot 200 feet square, Mr. Semsch calculated his structure to have walls twelve inches thick at the top and 140 inches, or almost twelve feet, thick at the bottom. They would weigh 203,000 tons if built of brick, while the floors would add 213,500 tons. The "live" floor load would be 100,000 tons, making a total of 516,500 tons. This, distributed over the 40,000 square feet available for footings would result in a pressure of thirteen tons a square foot, which, with wind and other incidental pressure, easily would bring the total pressure to the maximum of fifteen tons a square foot. Since the overturning centre of pressure would be 1,000 feet above the street level, the overturning moment would be 6,000,000 tons.

The dead weight of the huge mass would be so great that there would be no danger of overturning. Opposed to the overturning moment of 6,000,000 foot tons there would be a moment of stability of 51,650,000 foot tons, making the overturning moment not quite 12 per cent. As designed, this mammoth building practically would be

ten fifteen storied buildings placed one on top of each other. The Equitable Life company's new building, the plans for which have been filed, will rise 909 feet above New York's street level.

Future of the Engineer

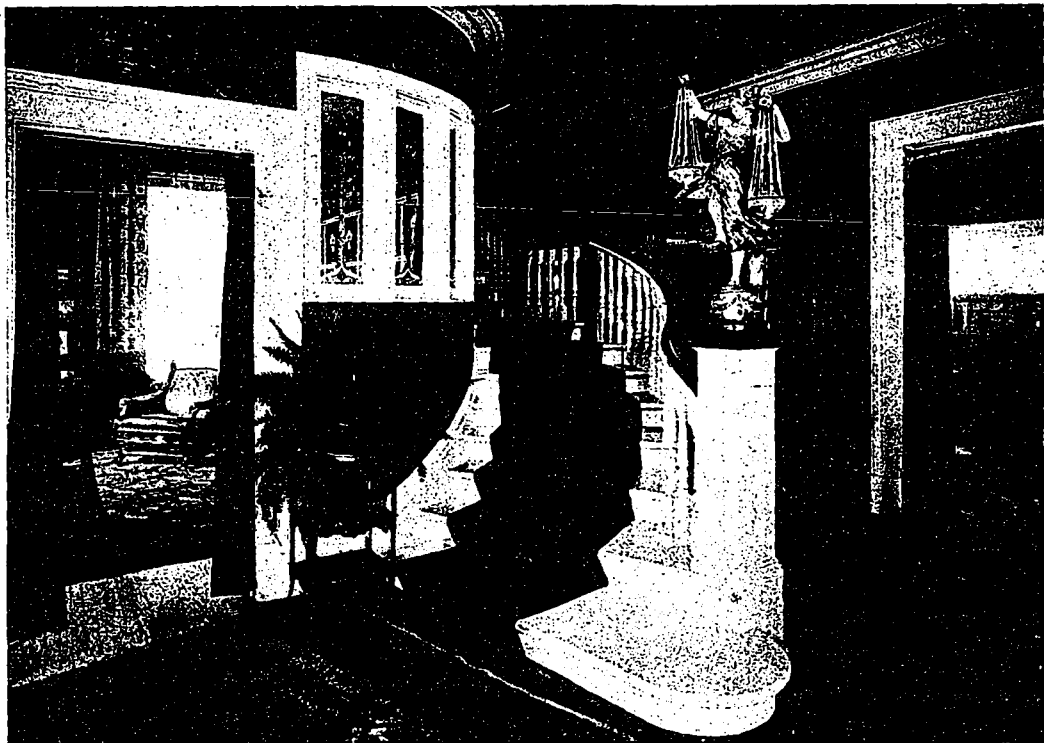
THE PESSIMISTIC VIEW regarding the future of the average engineer which is occasionally expressed seems to be based on wholly erroneous assumptions. The standard of efficiency in every trade and profession is constantly rising, and it is doubtless approximately true that promotion to the higher places in engineering work requires greater technical fitness and more executive ability than ever before. On the other hand, the field for engineers is widening so rapidly that it is difficult to follow all its extensions. This Journal has no sympathy with the assertion that an engineer who acts as a salesman for a manufacturing company loses all right to call himself an engineer. Much of the progress that is being made in some engineering lines is due to these men, who come in touch with the problems of many purchasers and utilize their special engineering knowledge to help their solution. Moreover, it is not conceivable that an engineer who has achieved success in his technical work loses all interest in it when he assumes an executive position. The chief engineers of two great undertakings have recently stated that no small measure of the successful prosecution of their work was due to the fact that in each case the executive over them was a man who had deservedly won a prominent position as an engineer before taking up administrative duties. As a matter of fact, engineering is changing its boundaries and its nature as rapidly as the demand for engineering work is increasing. The field is enormous, and no one can foresee in what direction its ramifications will extend most rapidly in the next few years.

REFERRING TO THE CLINKER BRICK RESIDENCE illustrated in the previous number of this magazine, and accredited with being the first structure of its kind erected in Toronto, Mr. Edmund Burke, of the architectural firm of Burke, Horwood & White, writes CONSTRUCTION, under the date of August 7, in the following interesting vein, and throws additional light on the early use of this material, which at one time was regarded as being wholly inferior in character, and of little or no value. No architect or builder for many years ever thought of specifying such bricks, and even the brick makers themselves had doubts as to their adaptability, believing at the best that they were only fit for secondary work of a utilitarian nature.

"I was surprised to observe that you have credited the Sanderson house, corner Crescent road and Cluny avenue, as the first clinker brick residence in Toronto.

"My house was the first one in which such bricks were used, and was built, at least, a year previous. I still remember the peculiar look upon the face of the Don Valley representative when I selected such bricks for my residence when visiting their yards. He stated that such bricks were practically culls, and that they had little use for them. I fancied I saw a pitying smile pass over his face when I told him that I would take them. I also remember the shake of the builder's head when I informed him of what I had done. I also remember the time I had in teaching his men how to lay the bricks.

"They were looked upon as quite a curiosity at the time by all passersby, many of them wagging their heads with a superior air, as much as to say, that a man who is building that house is a fool, or a faddist."



Entrance Hall, looking towards library (on left) and Dining Room (on right). Home of Mr. H. T. Bush, Port Hope, Ont. The walls are done in soft rich yellows and marked into panels with a border design in gold, black and red; the hangings are of rich crimson and gold satin, while the tones of the rugs and stair carpet carry out the color scheme of the walls.



Dining Room, Home of Mr. H. T. Bush, Port Hope, Ont. Here the walls are covered with gold hopsacking paper, outlined with a panel decoration and finished at top with a medallion effect in red and gold, the crimson curtains and rich rug greatly adding to the general scheme. A pleasing feature is the fireplace, having built-in cupboards on either side with leaded glass doors.



"Inglebush," the Home of Mr. H. T. Bush, Port Hope, Ont., recently remodelled after plans by Mr. J. J. Laferme. This residence, which was built more than fifty years ago for Senator Seymour, is situated on an ideal site, beautifully wooded, and located on an elevation which affords a magnificent view of the surrounding country.

RESIDENCE OF MR. H. T. BUSH—A Home with Superb Grounds and an Admirably Appointed Interior Scheme—Wall Decorations, Hangings and Furnishings in Perfect Harmony—Bathrooms a Feature of Interest—Description of Various Rooms.

"INGLEBUSH" the place is called, and the name as applied has a fitting equivocity that makes it peculiarly appropriate. The term is not only fully expressive of the character of the grounds, but the word *inglc* finding a synonym in *home*, and the *final* of the compound spelling with its four letters the *name* of the owner, gives the appellation a most pertinent and significant meaning.

The place in question is the home of Mr. H. T. Bush at Port Hope, Ont., and its beautiful wooded site, comprising two acres, which nature has generously adorned with spreading elms and maples and covered with a luxurious carpet of velvety green—a truly delightful spot which, from its elevated position, overlooks the town and encompasses a magnificent view of the surrounding country for a distance of fifteen miles.

The house, which is approached from the west by a macadamized driveway that sweeps gracefully past the entrance porch, is a structure of the square type with thick substantial wall—a most interesting example of the old solid type of brick masonry—built some fifty years back for Senator Seymour, so long ago in fact that the identity of the original architect seems to have been completely lost. Since the house was acquired by the present owner, it has undergone certain alterations, including the complete transformation of the interior; the remodelling and redecorating being done in accordance with plans and designs made by Mr. J. J. Lafreme, of Paris, France, a personal friend of Mr. Bush, and a member of the Paris Chapter of the French Academy of Architects.

While outside, the house beckons invitingly as one approaches, its chief charm and interest lies within the interior. Not because of costly appointments or any unique feature in plan, but because of the absolute harmony in its scheme of interior decoration and furnishings. Very often the excellent work of an architect, even where unlimited funds are available, suffers from the owners' selection of hangings and furnishings which mar the beauty of the decorative scheme as originally intended. But in "Inglebush" it is quite different. Here one finds an exquisite appropriateness and perfect consonancy in the decorations and appointments which gives each room a distinct individual feeling, and yet results in an interior which is most satisfactory and pleasing in its entirety.

Passing through the porch one enters the spacious hall where the walls are done in soft rich yellows, and marked into panels with a border design in gold, black and red. The hangings are of rich crimson and gold satin, and carpeting the polished floor, and white enamelled staircase which winds leisurely to the second floor, are a series of beautiful rugs carrying out the color scheme of the walls. Handsome wrought wall shields and a gracefully draped statue surmounting the newel at the base of stairway, further enhances the general effect; while through artistically designed windows, opening from the library and dining room, comes filtered rays of light which shed a

Editor's Note.—The residence illustrated in this article is the home of Mr. H. T. Bush, President and General Manager of the Standard Ideal Company.



Living Room, Home of Mr. H. T. Bush, Port Hope, Ont., looking toward the front. The ivory and dull green which predominate the color scheme work out most successfully, and together with the rich green hanging, rare floor rugs, and mahogany furniture, make this a truly livable room.



Living Room, Home of Mr. H. T. Bush, Port Hope, Ont., looking towards the rear and showing arched opening to bay window or sun parlor on the right. This is practically two rooms which have been formed into one by means of a large square-arched opening, with a large column on either side.

soft radiance over the whole and renders it particularly alluring. Under the staircase is a secret plan for the small plate safe, and also lavatory facilities.

Opening from the hall, at the left, is a small but cosy library with rich Oriental decorations, styled "the Prince of Babylon," and carried out in soft reds, greens and yellows. The panelling is strikingly exquisite, being marked off and forming squares at the top with rich centre decorations. Above the moulding is a very effectively designed border, while from the centre of the ceiling is suspended a craftsman lantern with four pendants enclosing electric bulbs. The bookcases are built-in, and in keeping with the scheme are the dull flat black of the woodwork, the yellow of the hangings, and the leather upholstered furniture.

The living room has a southern exposure, and occupies the entire portion to the right of hallway. It is unusually large and rectangular in shape, being practically two rooms formed into one by a large arched opening with a column on either side. Here the predominant tones—ivory and dull greens—work out most successfully, and with hangings of rich green velvet, rare rugs and mahogany furniture, make it a truly inviting and livable place. A pleasing feature, and one of its chief attractions, is a big bay window forming a delightful sun parlor at the side.

At the rear of the living room, a white enamelled arched opening, with large pillars, gives access to the dining room, which can also be reached directly from the entrance hall. The walls in this room are covered with gold hopsacking paper, outlined with a panel decoration and finished at top with a medallion effect in red and gold. Crimson curtain, rug and couch, in accord with the mahogany furniture, lend a warm glowing effect; and an unusually large, beautiful brick fireplace claims the instant attention of one on entering. Off the dining room is a most attractive out-of-door living room or veranda, equipped with everything necessary for summer comfort. The kitchen, pantries, maids' sitting and dining rooms are in an adjoining wing to the north, and are carried out in a soft yellow shade that is really the keynote of the entire lower floor, outside of the living room.

Upstairs the house displays the same harmony of decorative detail as that which characterizes the floor below, and each room is designated according to the tone

of its color scheme. Ascending the broad staircase one enters the yellow room, a guest chamber, decorated in yellow of a very dainty shade with a small border of roses forming a panel effect. A soft yellow rug is thrown on the floor, and together with yellow curtains and bed hangings, contributes materially to make this a bright and cheerful interior. The furniture is of bird's-eye maple, and a full length mirror forms a door opening into a private bath, which is exceptionally well equipped.

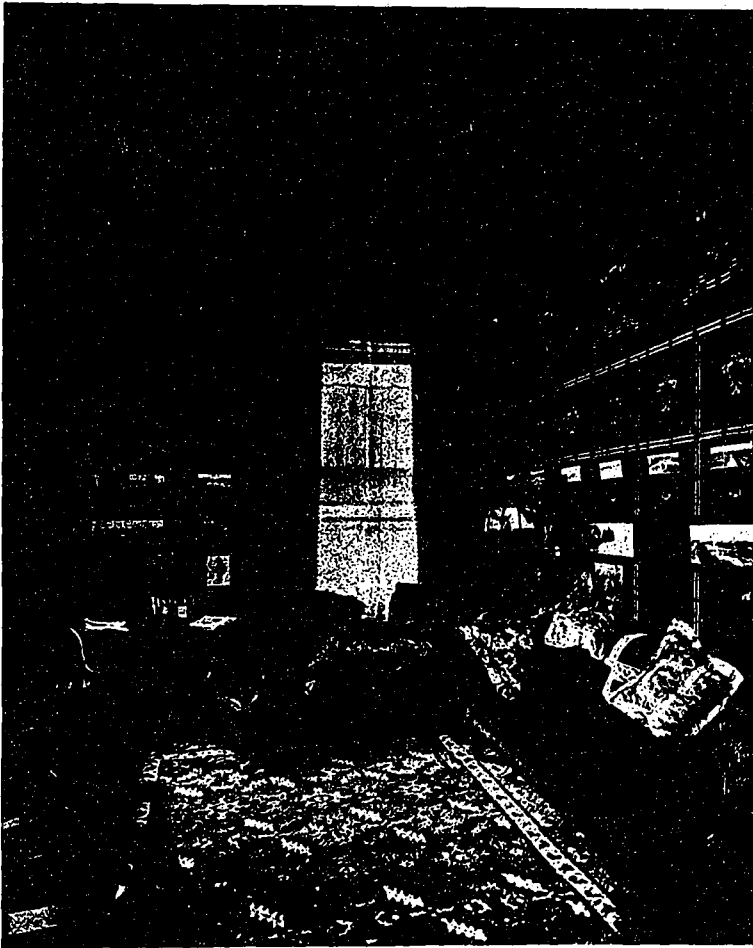
Directly across from this is the room devoted to the young daughter, Miss Virginia, and is a fairy room, with a decorative scheme exquisite enough to delight the heart of a child. The wallpaper is blue, with top border of roses, and with the valances of pink and blue chintz, white enamelled furniture and small blue rug, effects a most happy and charming combination.

The room immediately over the large living room, and embracing a continuance of the bay window, is devoted to the use of Mr. and Mrs. Bush, and is an interior of unusual size and beauty. The walls are in ivory with trellises of roses forming panels and bordering at top. Silk curtains, and rich rugs, in pale green, mahogany furniture and twin bed in brass complete the appointments, and result in a room that is very attractive. Two wardrobes, built in on either side of a large window, and each having a pier mirror, produce the added charm of a small bay effect. A door opens directly from this room into a bathroom equipped with every luxury for comfort and sanitary convenience.

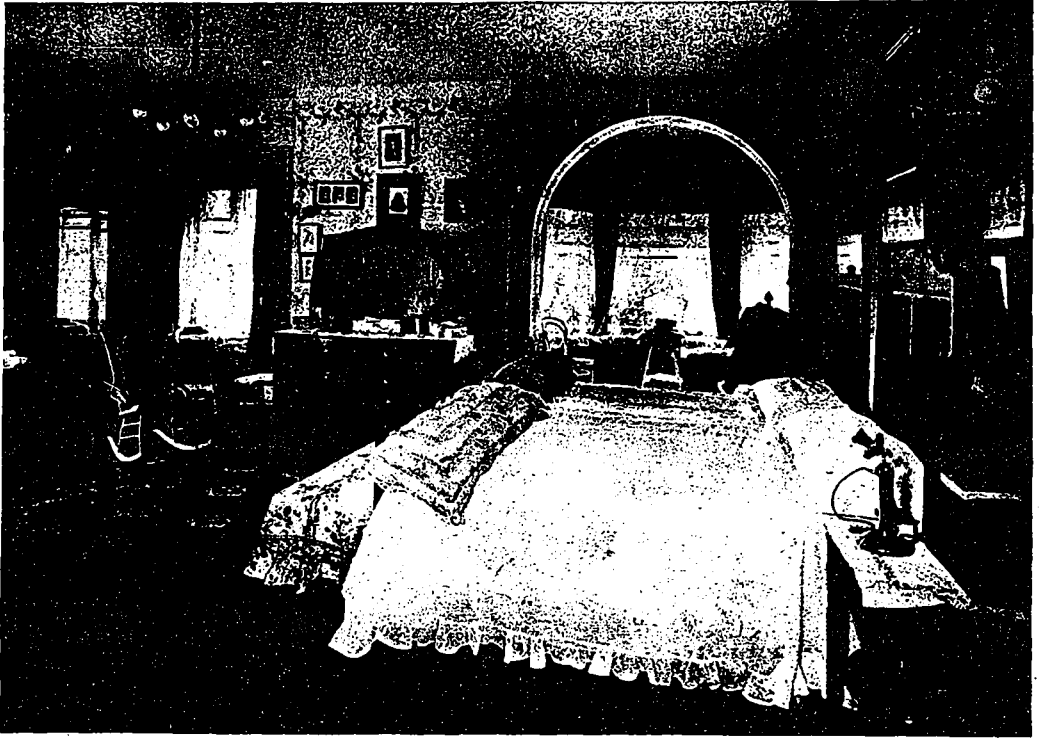
Two other guest chambers are worthy of note. One all in pink

with panels of flowered chintz, the same being used for bed draperies and curtains. The closet is built-in with a pier mirror, and the room is furnished with a green rug and mahogany bedroom suite. A smaller guest room adjoins this, and is done in ivory and green with a panel effect of roses with doves perching on the branches. Bird's-eye maple furnishes this room, which, when not in use as a bedroom, is used as a sewing room. Entirely shut off from the main part of the house are the servants' quarters, and here are found cozy rooms, private baths, and a large wardrobe.

In view of the fact that the owner is interested in the manufacture of sanitary plumbing fixtures, it is but reasonable to assume that the bath-rooms are one of the



Library, Home of Mr. H. T. Bush, Port Hope, Ont., with its "Prince of Babylon" decorations, a rich Oriental scheme, carried out in soft reds, greens and yellows. Here the woodwork is a dull flat black, the hangings of yellow, and the furniture upholstered in leather.



Owner's Room, Home of Mr. H. T. Bush, Port Hope, Ont. An unusually large and attractive room with walls of ivory having trellises of roses forming panels and bordering at top. The silk valances and rugs are in pale green, the twin beds are of brass, and the furnishings of mahogany. Two pier mirrors, one on either side of a large window, produce the added charm of a small bay effect.

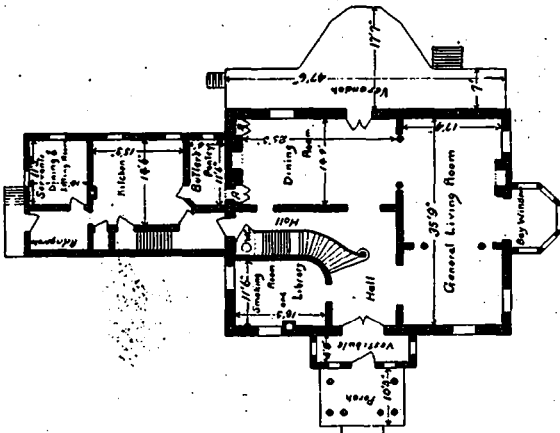


Room of young daughter, Home of Mr. H. T. Bush, Port Hope, Ont. A fairy room, exquisite enough to delight the heart of a child, done in blue with rug to match, pink and blue chintz hangings and white enamelled furniture.

important features of the house. In this one is not mistaken, for the equipment and facilities for toilet purposes are such as to provide every requisite for sanitary use and convenience. The large bath-room, opening from the hall and owner's chamber, is especially model in its

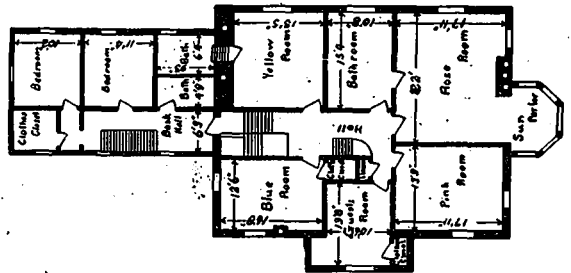
ORIGIN OF DECORATIVE SENSE

AN INTERESTING DISCUSSION concerning the origin of the decorative sense was noted in one of the French publications. The article is by a noted authority on house decoration and consequently his opinions should carry considerable weight, at any rate they offer food for reflection. Our early ancestors, the apes, if we can judge from their undeveloped posterity, appear to have had no decorative sense. This, like many other faculties, moral as well as artistic, now possessed by human beings, must have been dormant during the Simian period. That it was transmitted to us cannot of course be doubted, or how could we have obtained it? The birds have it very strongly, according to Mr. Darwin, and there can be no doubt that the oyster, though rather careless as to the front view of his house, shows exquisite taste in the decoration of his "interior." He is the prototype of those daily lessening human beings who ground their disregard of architectural beauty on the plea that you do not live on the outside, but inside your house. Our taste in dress is doubtless inherited from the birds, our taste in wall papers from the oyster. Whether, however, we accept the



First floor plan, Home of Mr. H. T. Bush, Port Hope, Ont.

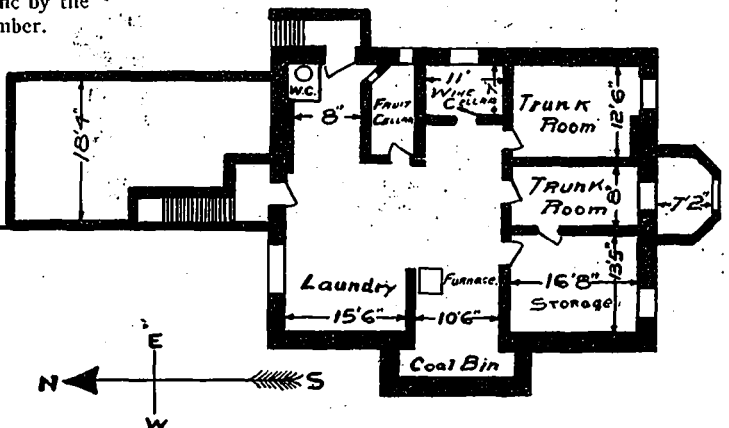
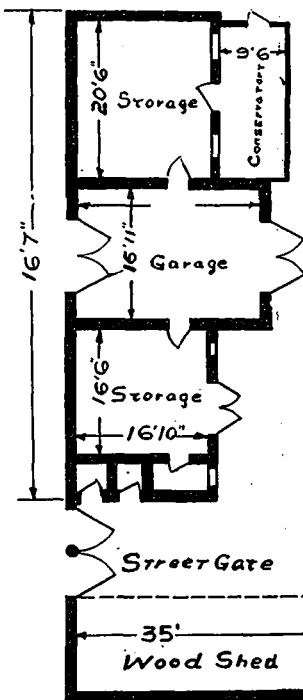
appointments. Here the delicate pink tile of the high wainscot, the snowy white fixtures and nickel trimming impart an effect that is at once inviting, wholesome and refreshing. At the end are double doors of glass, with an art glass transom, leading into two compartments containing the closet, and a splendidly equipped shower which are separated by a glass partition with nickel frame, and lighted by an oblong dome of art glass. The floor plan, sectional drawings and diagram of this bath-room, showing the location of the various fixtures are published here-with, and will be found to be of more than ordinary interest.



Second floor plan, Home of Mr. H. T. Bush, Port Hope, Ont.

TRAINS ARE NOW RUNNING over the big steel bridge on the C.P.R. cut-off at Lethbridge, the final details of construction having been completed by July 22. The Dominion may well boast of this immense structure, as it is a Canadian product in design, material and workmanship, and one of the greatest bridges in the world. It is expected that the bridge across the Old Man River, another Canadian designed and built structure, which is also being erected on the cut-off, will be ready for traffic by the first of September.

Darwinian theory or not, we must allow that uncivilized human beings are very like apes, and that the decorative sense, dormant or not in the monkey, is one of the first to show itself in man. Nor is this unnatural, for when he, to suit his own purposes, began to alter things that nature had made, he destroyed beauty. The thing might indeed be useful, but something had been lost in making it so. Possibly a dim sense of contrast between the pleasure of looking at the thing manufactured, and that of looking at the thing out of which it had been hacked or burnt, created a dissatisfaction with the appearance of his handiwork, and a wish to improve it. Hence may well have arisen the decorative sense in man, desirous to beautify what he had disfigured. Some of the earliest of these decorative efforts are careful figures of reindeer carved or scratched on bone implements. What the man of the bone age did with the reindeer, what the ancient Peruvians did with the birds and flowers, what the Greeks and Etruscans did with the human form, is not, however, the



Plan of basement and outhouses, Home of Mr. H. T. Bush, Port Hope, Ont.



Yellow Room, or guest chamber, Home of Mr. H. T. Bush, Port Hope, Ont. So designated from the dainty soft yellow tone of the walls, which are effectively panelled by an exquisite border design in roses. A soft yellow rug, yellow curtains, appropriate hangings and bird's-eye maple furniture all tend to make this a bright, cheerful room. The private bath-room is seen through the open door which, when closed, forms a full-length mirror.

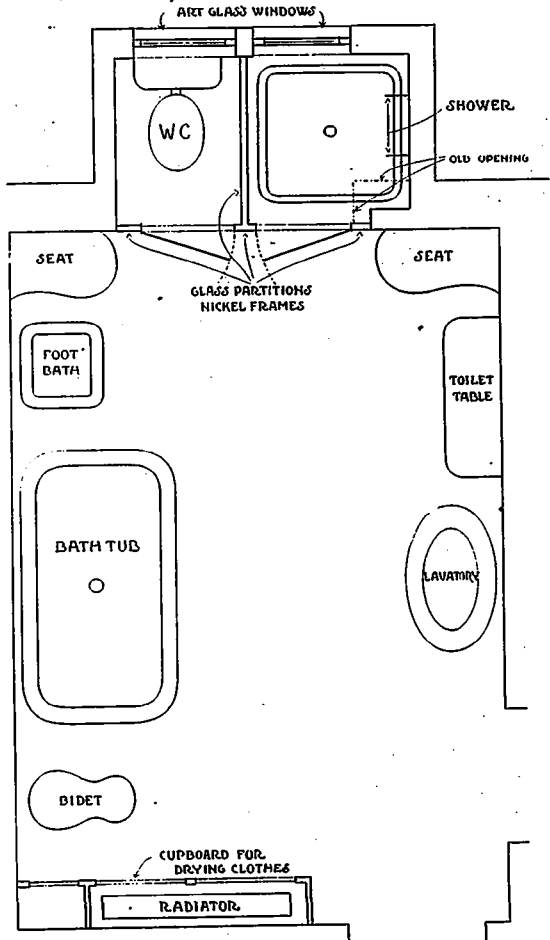


Guest Room, Home of Mr. H. T. Bush, Port Hope, Ont. A tastefully decorated room, done in pink with flowered chintz panels, the latter also being used for the curtains and bed drapery. The furniture is of mahogany and the rug is a soft green with an effective pattern, while at one end of the room a pier mirror forms a door opening into a built-in wardrobe.

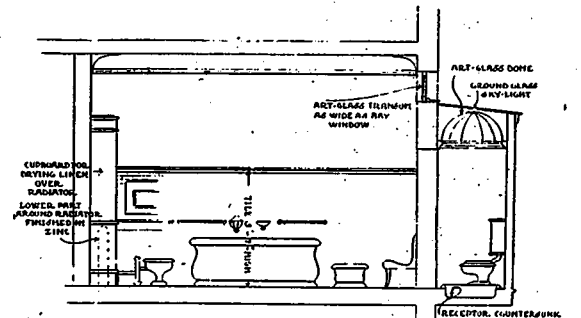
most elementary form of decoration. Odd scratches and marks with a sharpened flint on wood, with the end of a stick or finger nail on pottery, rude combinations of the curve and straight line are the purest form of art—art for art's sake. But whatever the first manifestation of the artistic sense, it was essentially decorative, and was as instructive as the desire to walk in a child.

THE SPELL OF EGYPT.
BUILDINGS HAVE PERSONALITIES. Some fascinate as beautiful women fascinate; some charm as a child may charm, naively, simply, but irresistibly. Some, like

a sense of heavenly peace to the heart. Some, like certain temples of the Greeks, by their immense dignity, speak to the nature almost as music speaks, and change anxiety to trust. Some tug at the hidden chords of romance and rouse a trembling response. Some seem to be mingling their tears with the tears of the dead; some their laughter with the laughter of the living. The traveler sailing up the Nile, holds intercourse with many of these different personalities. He is sad, perhaps, as I was with Denderah; dreams in the sun with Abydos; muses with Luxor beneath the little, tapering minaret whence the call to prayer drops down to be answered by the angelus bell; falls into a reverie in the "thinking place" of Rameses II., near to the giant that was once the mightiest of all Egyptian statues; eagerly wakes to the fascination of record at Diel-el-Bahari; worships in Edfu; by Philæ is carried into a realm of delicate magic, where engineers are not. Each prompts him to a different mood; each wakes in his



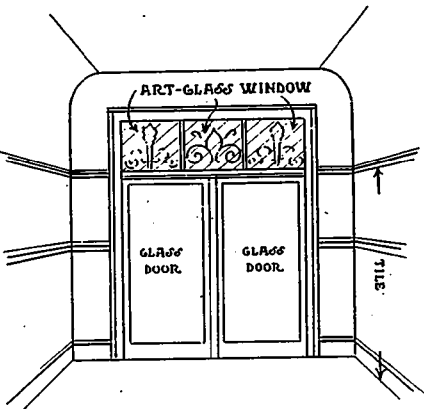
Floor plan of bathroom, Home of Mr. H. T. Bush, Port Hope, Ont.



Sectional view of bathroom, Home of Mr. H. T. Bush, Port Hope, Ont.

nature a different response. And at Karnak what is he? What mood enfolds him there? Is he sad, thoughtful, awed or gay? An old lady remarked in my hearing, with a Scotch accent and an air of summing up, that Karnak was "very nice indeed." There she was wrong. Karnak is not nice. No temple that I have seen upon the banks of the Nile is nice. And Karnak cannot be summed up in a phrase or in many phrases; cannot even be adequately described in a few or many words. Long ago I saw it lighted up with colored fires one night for the Khedive, its ravaged magnificence tinted with rose and livid green and blue, its pylons glittering with artificial gold, its population of statues, its obelisks, and columns, changing from things of dream to things of day, from twilight marvels to shadowy specters, and from these to hard and piercing realities at the cruel will of pigmies crouching by its walls. Now, after many years, I saw it first quietly by moonlight after watching the sunset from the summit of the great pylon. That was a pageant worth more than the Khedive's.—From Robert Hichen's "The Spell of Egypt."

conquerors, strike awe to the soul, mingled with the almost gasping admiration that power wakes in man. Some bring



Detail of doorway and longitudinal section of bathroom, Home of Mr. H. T. Bush, Port Hope, Ont.—Showing location of bay and art glass window.

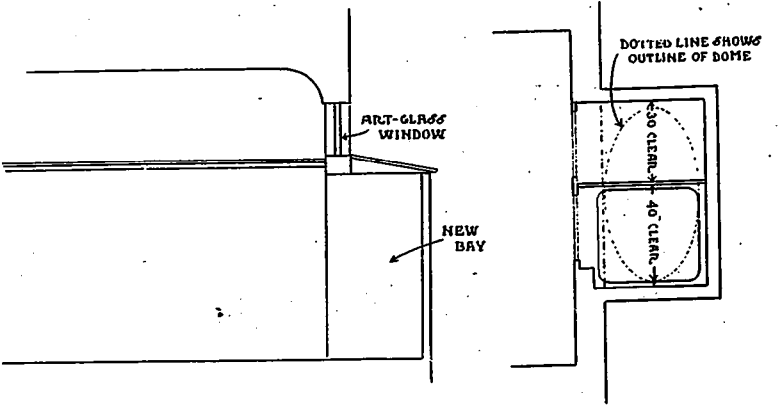
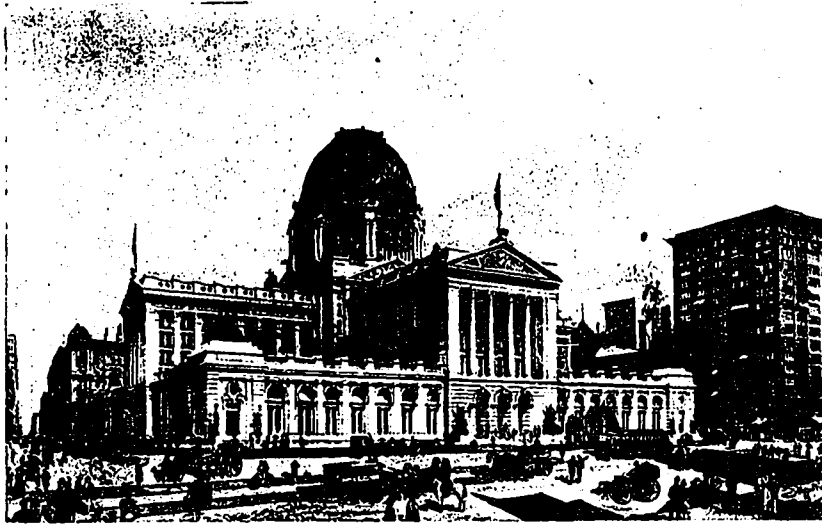
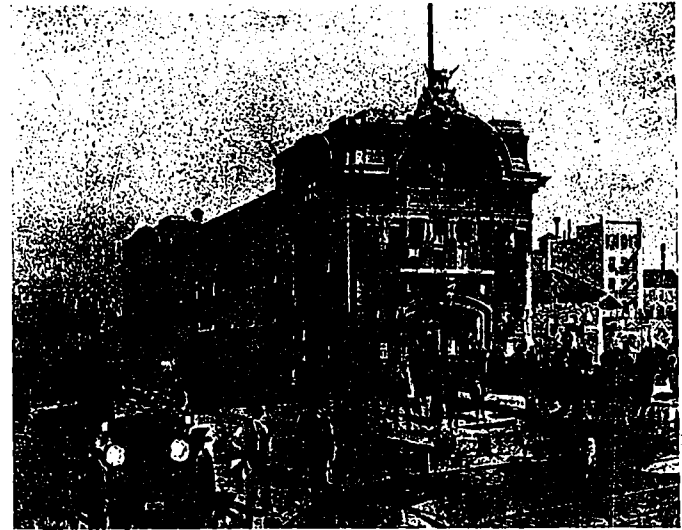


Diagram of dome over closet and shower compartments.



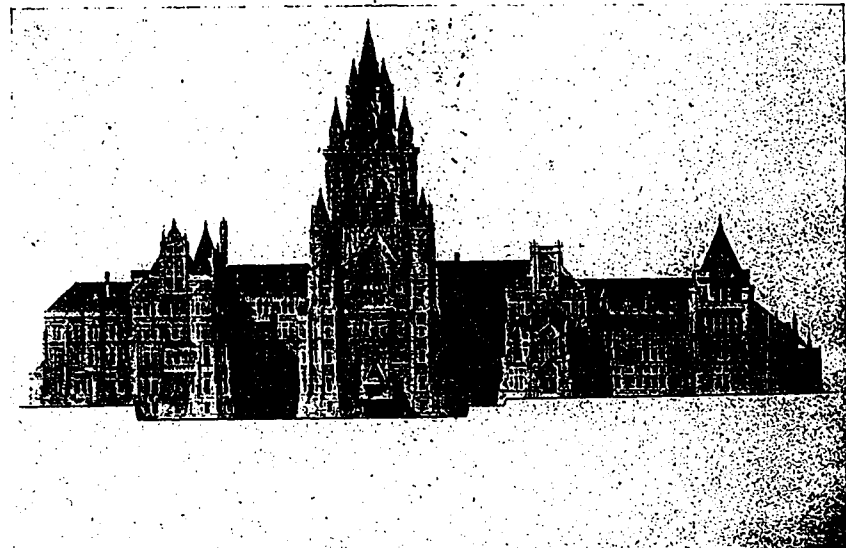
Rendered Drawing of Chicago Post Office by F. W. Fitzpatrick.



Rendered Drawing of Fire Hall by F. W. Fitzpatrick.



Rendered Drawing of Church by F. W. Fitzpatrick.



Rendered Drawing of Parliament Building by F. W. Fitzpatrick.

THE ART OF PRESENTATION.—Importance of Artistic and Accurate Perspective Drawings of Proposed Buildings.—Rendering Should Truthfully Represent Structure as it is to be.—The Work of a Canadian in the United States. By WM. T. ROGERS.

Canadian architects, as a rule, do not make it a practice to develop, to any great extent, the art of presentation. That is, they do not make it a custom to depict with accuracy a building as it is or as it is to be. Few architects in England or in the United States would expect to get a commission of any importance without first having shown to their client an accurate perspective of the building they propose to erect. Plans and elevations give the untrained mind little conception of the true architectural effect of the structure when completed. It has been even suggested that many of our Canadian architects suffer, in competition with their confreres in the United States, for this very reason. Realizing that there is much truth in this statement, we propose to run a series of articles showing the best of such work by Canadian, English and American artists, through which we aim to show the professional importance of an accurate perspective, a drawing that is the highest perfection of art. The client to whom is submitted a drawing that is artistic and truthful, sees exactly what he may expect, no more, no less. Mr. F. W. Fitzpatrick, whose work the following article, by Mr. Wm. T. Roger, deals with, is a Canadian (having been born in Montreal) who has gained an enviable reputation in the United States for his ability in the art of architectural rendering. Mr. Fitzpatrick, although now a citizen of the United States, strongly approves of "Construction's" policy in opposing the employment of foreign architects to erect Canadian structures. He believes that, although, in some cases, it may be expedient to call in expert advice or assistance from outside, there is no reason why architects in Canada cannot erect our buildings.—Editor's Note.

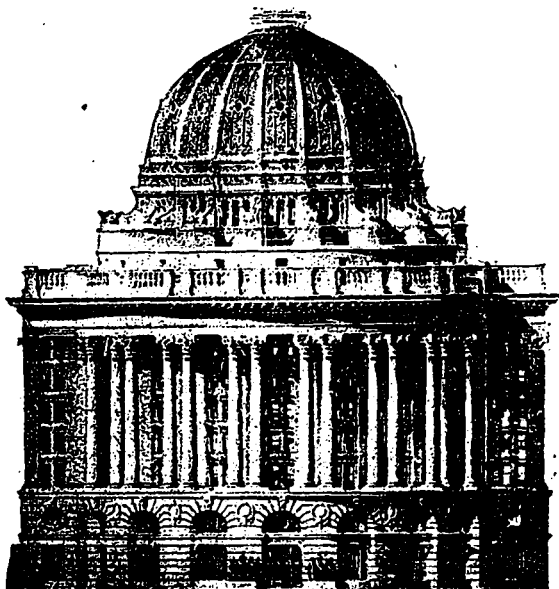
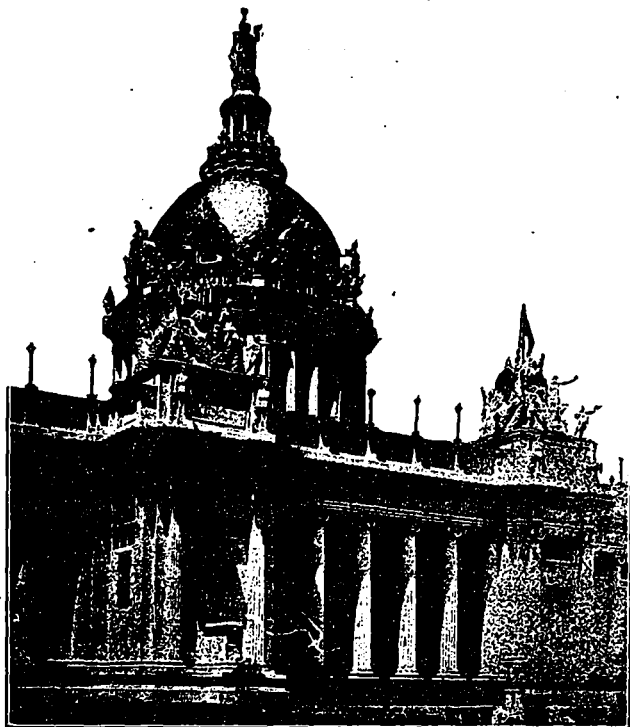
SOME DRAUGHTSMEN, particularly the younger ones, just out of the Beaux-Arts, or other such institutions, indulge in the mistaken notion that a rendering drawing is a finality. Their greatest ambition and sole endeavor is to make it resplendent, beautiful, and, usually very untrue. As a matter of fact, architectural drawings are, in the main, mere instruments, written directions, so to speak, as to how the completed building shall be. Unlike a picture of a landscape or an historical subject, the architectural drawing is but the means to another end, and, therefore, the poetic license, the latitude allowed and expected in the one should be conspicuously absent in the other. Seldom is a perspective or pictorial drawing made of a completed building, photography is resorted

to when a presentation of the latter is desired. The architectural picture, therefore, is almost invariably of something that is to be, and one of its primal and essential requirements is that it shall be as nearly photographic of the composition that is imagined, but that some day is to be as nearly a reality as it is possible to make it.

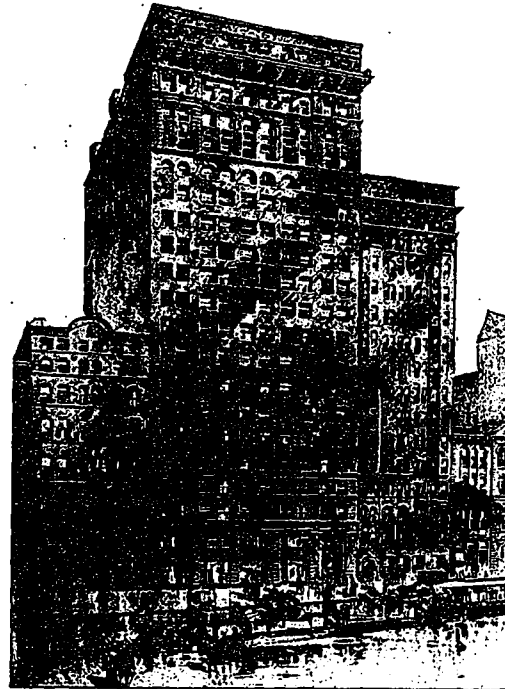
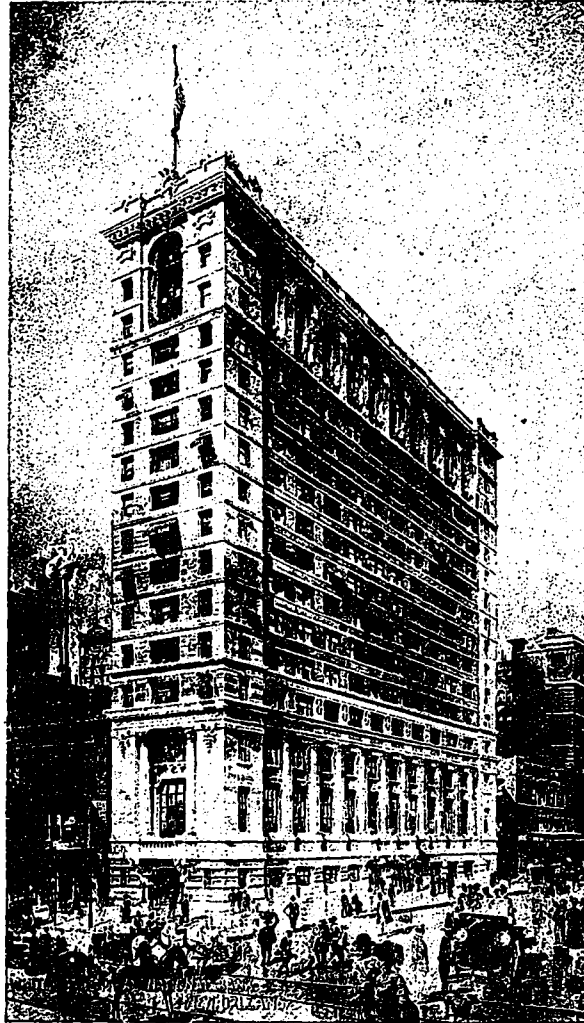
Not so long ago French, Italian, and German architectural artists were looked upon as the leaders in that art. Of late, whether they have degenerated, or the men on this side of the water have vastly improved, is immaterial, but the fact remains that the best of judges unanimously agree that we of the United States and Canada have developed a class of such artists that stand head and shoulders above their European confreres. The European School has become almost exclusively impressionistic. Their drawings are vague, can mean anything, and their draughtsmen fondly but mistakenly imagine that they are great masters, and that a few splotches of paint and an uncertain line or two will tell the whole story, provided the "pictures" be but signed with their august names.

This criticism, however, applies more particularly to our Latin-European friends. The English draughtsmen hardly sin in the same way. They run more to woodenness of touch, a harshness of detail that reminds one of the straight edge and ruling pen, too forcefully. The drawings of T. Raffles Davidson and of Collin Campbell Cooper are exempt from this, however, and those two English artists are to be classed with the architect on this continent, who have shown us the best that has so far been produced in architectural rendering.

In Canada and the United States there are perhaps twenty-five men whose work in that special line is especially commendable, men who make drawings that show a building just exactly as it will appear when completed, and do so with ease and facility in drawings that besides



Rendered Drawing of Government Buildings by F. W. Fitzpatrick.



Rendered Drawings for Commercial Buildings by F. W. Fitzpatrick

being what might be termed portraiturely correct, are most pleasing and artistic in themselves. Of that group, so our most artistic architects agree at least. Some of the most prominent of the leaders are Fitzpatrick of

his powers as a draughtsman, and easily retains his laurels as the most skilled of them all.

It would be most interesting if CONSTRUCTION would publish a series of master drawings that would graphically illustrate the art of rendering. It could easily obtain selected works from each of the great draughtsmen for such a series, and that series would be a whole education for the younger generation, a work of the very greatest benefit to the profession that CONSTRUCTION serves. This may help to start such a series.

It is my pleasure and privilege to know Mr. Fitzpatrick personally, and to have access to his sketch-books and files. The illustrations that accompany this brief review will tell the story of his artistic achievements better than can any words of mine.

Francis W. Fitzpatrick was born in Montreal forty-six years ago. He developed artistic talent early in life, studied art and architecture in Canada and

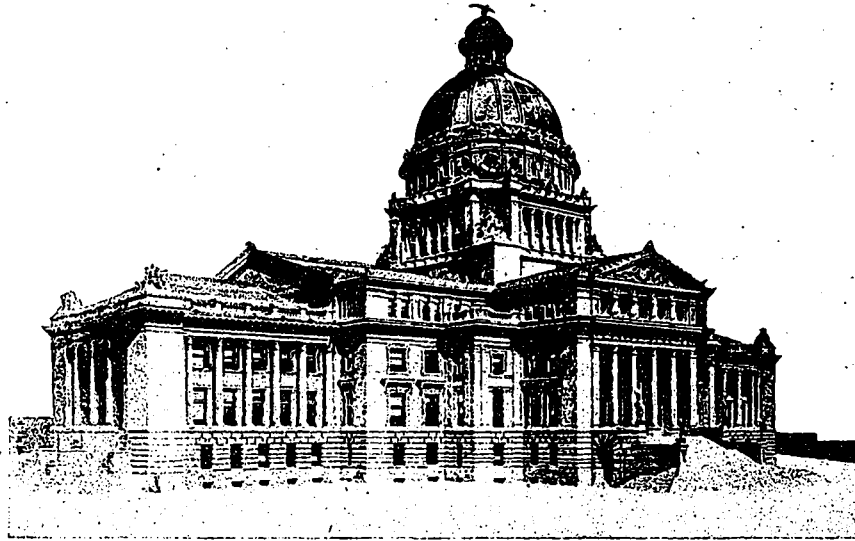
abroad, and worked under some of the old-time leaders in Canada, but soon sought the larger opportunities that the United States afforded in those early days.

Some of his precocious but masterly work is shown in the designs and drawings he made, and in some cases the supervision of the work, too, in the early 80's of the grand altar of Notre Dame's in Montreal, the exterior of St. James (R.C.) Cathedral, the Canadian Pacific Railway buildings, and Sir George Stevens' magnificent residence. He did splendid work in the West, State Capitols, Court Houses, and other important buildings

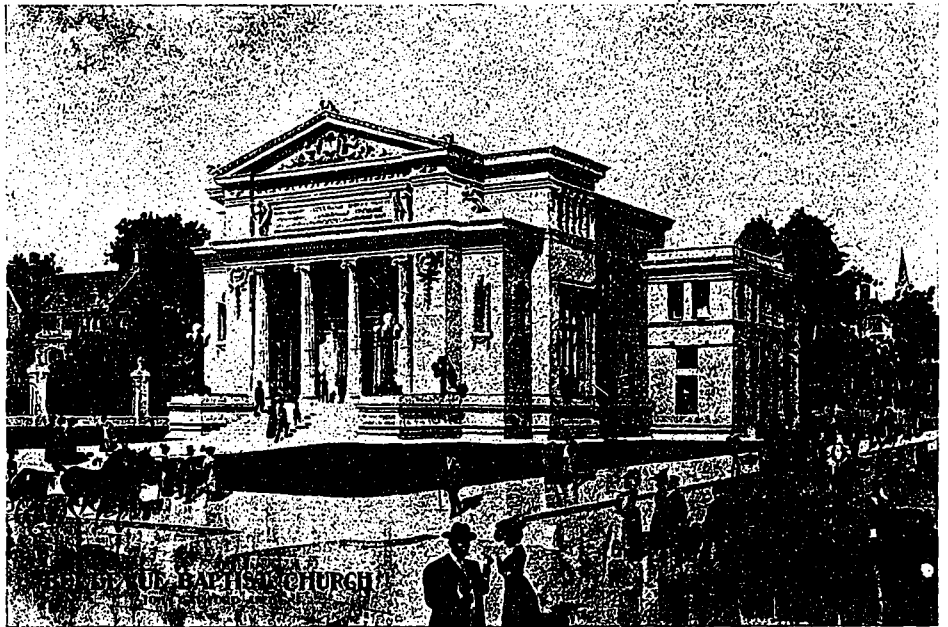
Washington, Guerin of New York, Hawley of New York, and Enders of St. Louis. With these used to rank Laurtrup of Chicago, Ellis of New York, and Anderson of San Francisco, three men of splendid ability, but who have passed to the Great Beyond within the last few years.

Most draughtsmen who excel in this pictorial phase of architectural drawing are what might be called exclusively, artists; that is, their work is invariably in rendering pictures of others' designs. Fitzpatrick differs from them in that nearly all his pictorial work is of his own designs though many are made in association with practising architects. These pictures are, therefore, what might be called children of his own creation, and he is as versatile and able an architect, in the fullest sense of that broad term, as he is an artist—a rare combination. He differs from most of these artists, too, in that his growth has been continuous and lasts well. With most brilliant men such a career is more or less meteoric. They take the world by storm, and are everything to-day, and to-morrow you hear nothing more about them.

Fitzpatrick's drawings were remarkable, popular and highly prized twenty-five years ago; to-day, though he has many other interests, has a most extensive practise as a consulting architect, and has won National fame as a writer, an organizer and a leader of popular reforms, he is still at the very zenith of

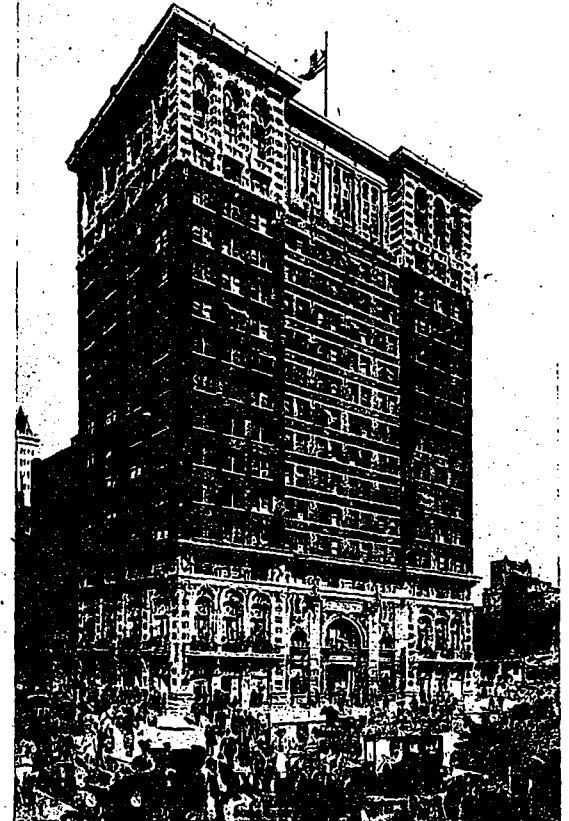
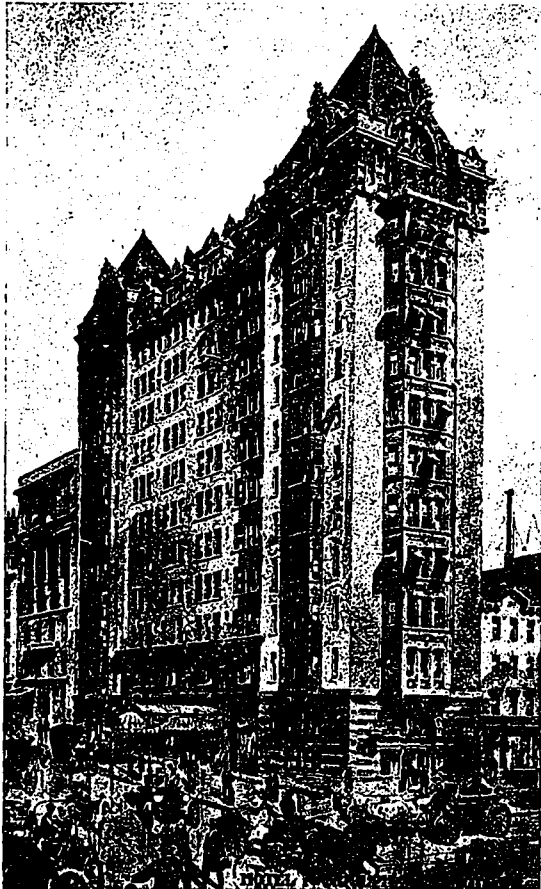


Rendered Drawing of Government Building by F. W. Fitzpatrick.



Rendered Drawing of Church by F. W. Fitzpatrick.

of that character in his own name, and as designing associate with other artists. All this time he was reeling off superb drawings of this work, for he always designs in perspective and colors. The architectural journals of



Rendered Drawings for Commercial Buildings by F. W. Fitzpatrick

those times fortunately preserve the record, in illustrative plates, of that work of his. In '96, he was made one of the principal officers in the United States Federal Building Service, and contributed a very large share of the taking of Governmental architecture out of the "Slough of Despond" in which it had wallowed for some years previous. He designed much of the Government's important work and left it an inheritance of beautiful drawings. In 1904 he resigned in order to give more of his attention to the consultation practise he had built up.

This work that he still carries on, despite his many other exacting duties, is virtually a silent partnership with architects in private practise, in Canada, in the United States, in Mexico, and even in far off Australia. Naturally, he only gets the best of everything architecturally.

No architect will go to him with a little house or any the lesser matters that are brought into the office. It is in the larger problems, the more important buildings, and particularly in competitions that architects enlist his assistance. This, of course, keeps him keyed up to the very highest pitch and in the closest touch with the best that is going on all the time.

One architect may have one Parliament Building or Capitol once in his life time, but five or six architects or a dozen having such commissions, will call upon Fitzpatrick for assistance in the course of a year. He is associated with specialists in engineering, sanitation, lighting, etc., so that through him expert assistance is given in all those lines, but he personally takes care of the design, the scheming out, the solving of the architec-

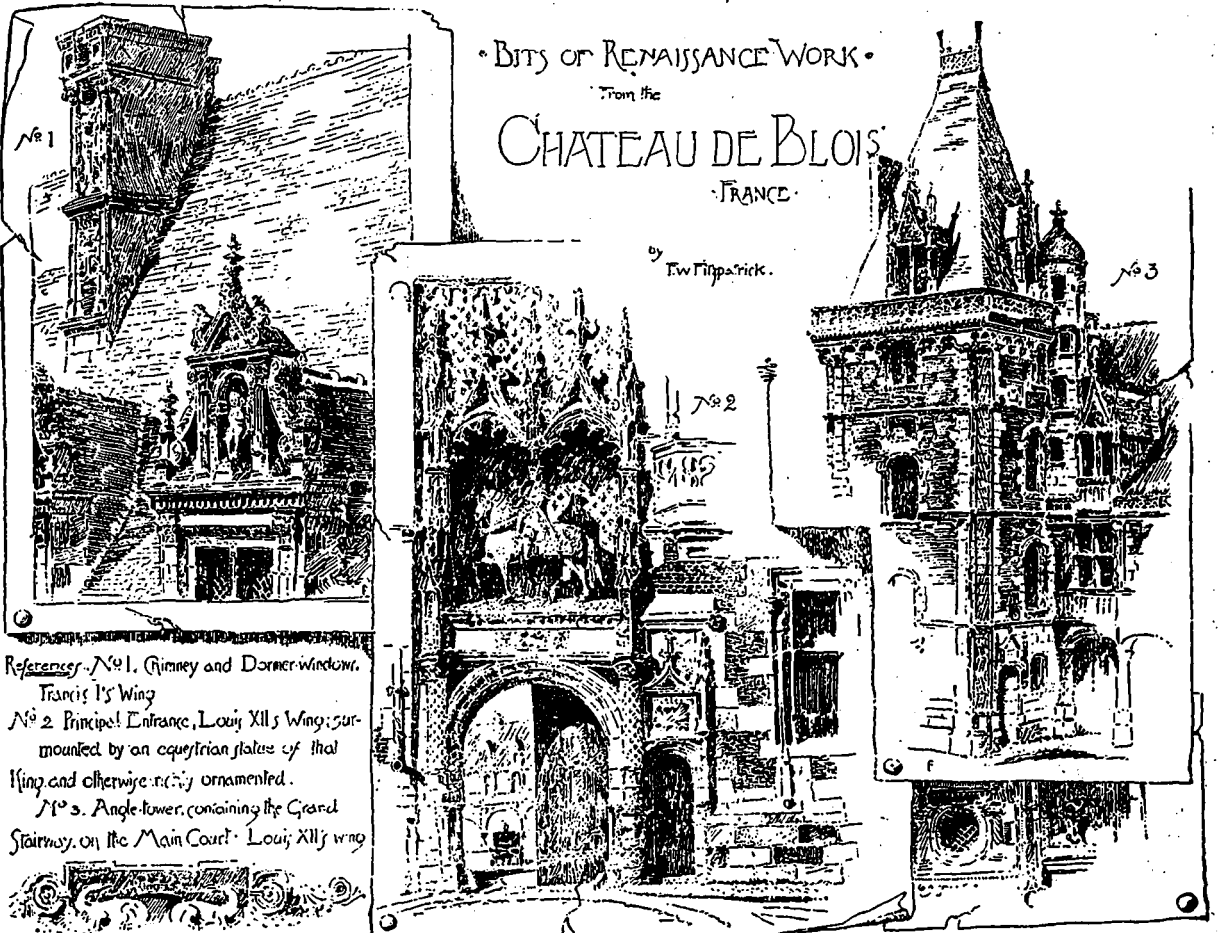
tural problem, and the presentation of that solution in artistic and convincing form.

Naturally, the number of drawings, pictures he makes is legion, and as "much practice makes perfect," superb as his drawings have always been, the latter ones stand forth as pre-eminently his best work, and, though never satisfied with it himself, he typifies the epitome of true progress in that his last is always his best.

ARCHITECTURAL ENGINEERS AND ARCHITECTS the country over, says the Pittsburgh Gazette-Times, took a lively interest in the dismantling of the Murtland Building at Smithfield street and Sixth avenue, which was torn down recently to make room for Pittsburgh's largest office building.

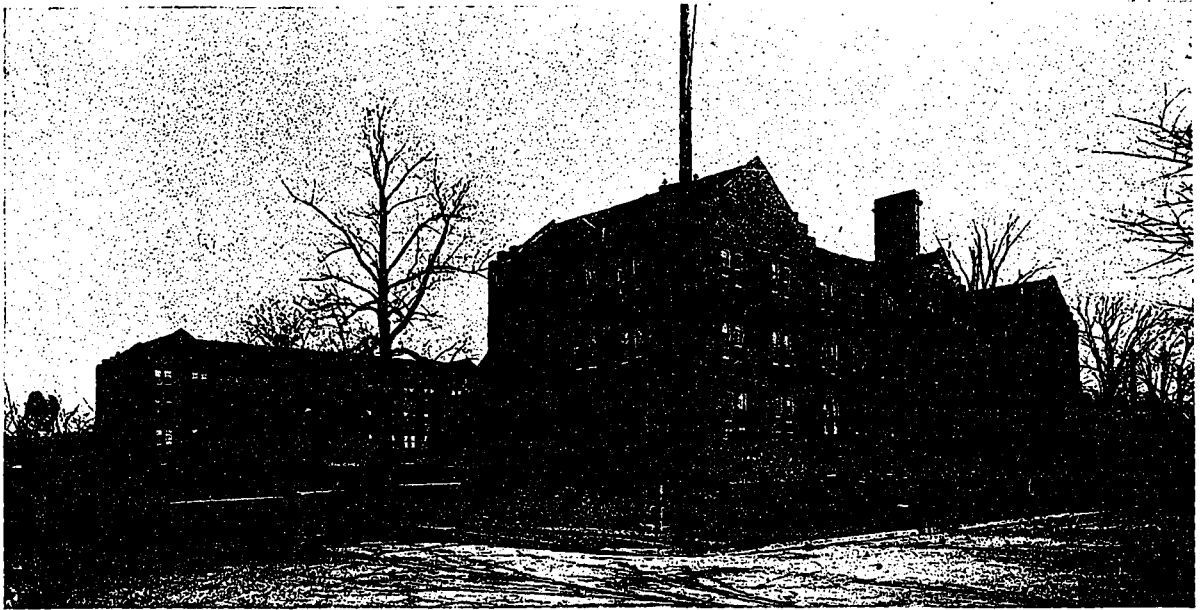
The building was only twelve years old, yet it was one of the first steel frame structures in the country to be dismantled, and furnished the experts in that kind of construction a chance to prove that their theories regarding the durability of steel have been correct. For the steel in the Murtland Building showed no signs of deterioration; the material was in just as good condition when uncovered to the elements as it was when it was erected twelve years ago. The rivets were tight and even the grillage upon which the beam columns rested, and which was under the ground, was in perfect order.

The structure was eight stories high, with a basement, the ground area being 20 x 60 ft. The amount of structural steel in the building was about 150 tons.



References: No. 1. Chimney and Dormer window, Francis I's Wing
 No. 2. Principal Entrance, Louis XII's Wing, surmounted by an equestrian statue of that King and otherwise richly ornamented.
 No. 3. Angle tower, containing the Grand Stairway, on the Main Court, Louis XII's wing

Pen Sketches of Chateau de Blois by F. W. Fitzpatrick.



Students' Residences, Toronto University, showing the end buildings which flank quadrangle on the right and left. Messrs. Eden Smith and Son, Architects.

STUDENTS' RESIDENTIAL BUILDINGS.—New Group at Toronto University Comprising Three Successfully Planned Structures. —Their Plan and Construction.— Built for Male Students.—All Rooms Have Outside Exposures.

TO HOUSE A COMMUNITY in itself, and still to provide a distinctively private little home for the individual members who comprise it, so that each may benefit from a broader spirit of fraternalism, and yet grapple with the intricacies of high learning in unmolested privacy, is the task which the architect undertakes when designing a student's residential building for any of the greater universities.

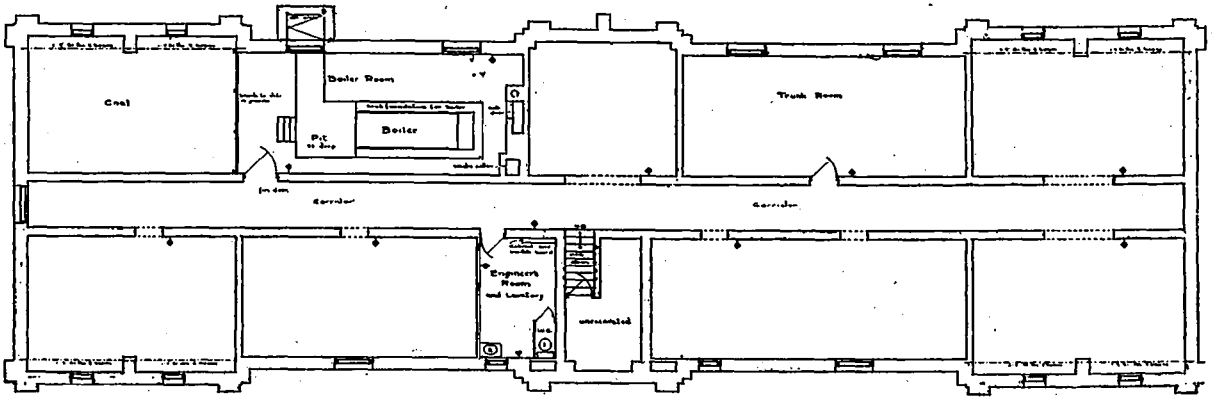
Such a building is vastly diverse in character from the purely *morphean* abode with its presiding domine, as some of the dormitories of the early school have impressed us. It combines as economic, sociological and domestic phase which the other conspicuously lacks, in that it is the student's home, his study, meeting place and social world, all in one—the place where he spends the

major portion of his time during the long terms of the scholastic year. Consequently a building of this type must of necessity be well designed, carefully planned, fittingly appointed and provided with every reasonable facility which will contribute to his comfort and convenience, so as to exert a wholesome influence, and encourage him to readily cultivate, appreciate, utilize and respect the environments within which he dwells.

The successful solution of the architect's problem, therefore, lies in the designing of a structure that will adequately meet the students' social, domestic and scholastic requirement by providing him with a central place in which he can commingle with his fellow students outside of the class room, and still be assured of the ad-



Students' Residences, Toronto University, showing central building and end building on the left. Messrs. Eden Smith & Son, Architects.

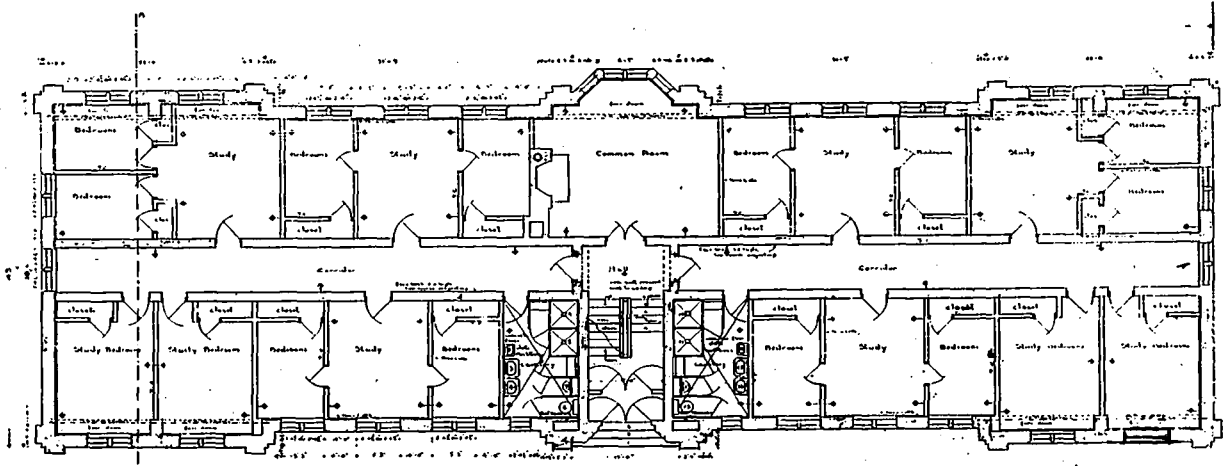


Ground floor plan, Students' Residences, Toronto University. Messrs. Eden Smith & Sons, Architects.

vantages of undisturbed study in the pursuit of his university course.

Three interesting buildings, designed by Architects Eden Smith & Sons, and comprising a group of university residences, were erected on the grounds of the Toronto University within the past year. These buildings are most successfully planned, and all three are similar

the wall above it up to the roof line, is executed in red New Brunswick stone; this material also being used for the ashlar work to the first floor sills and the cut stone trimmings throughout. The upper portion of the walls is of red pressed brick and the roof, sloping gradually at the front and back, is of green slate with copper gutters and flashes.



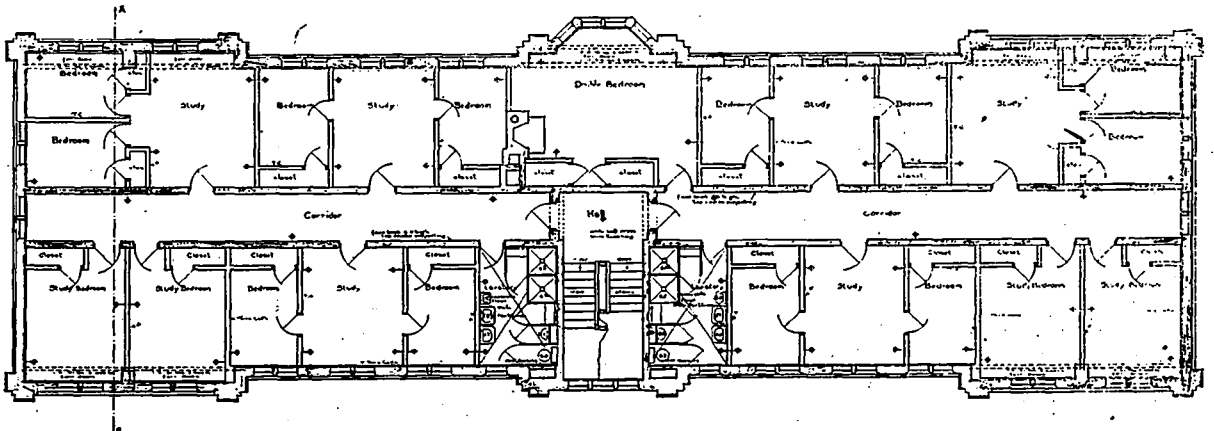
First floor plan, Students' Residences, Toronto University. Messrs. Eden Smith & Sons, Architects.

in design, construction and arrangement. They are arranged around a quadrangle which has a roadway forming the line of demarcation on its open side. The general architectural effect is derived from straight, broad lines, perfect proportions, simple surfaces and a well balanced door and window arrangement.

In each case, the entrance, located at the centre and having a wide splayed arched opening, together with

At the centre and both ends the wall extends above the eaves so as to face three gable projections which come forward at these points on either side, and which tend to give the buildings their strong sense of equipoise.

On the inside, each floor contains two independent sets of rooms, which are either studies with two bedrooms opening off them or combination study bedrooms. These suites and combination rooms are arranged on

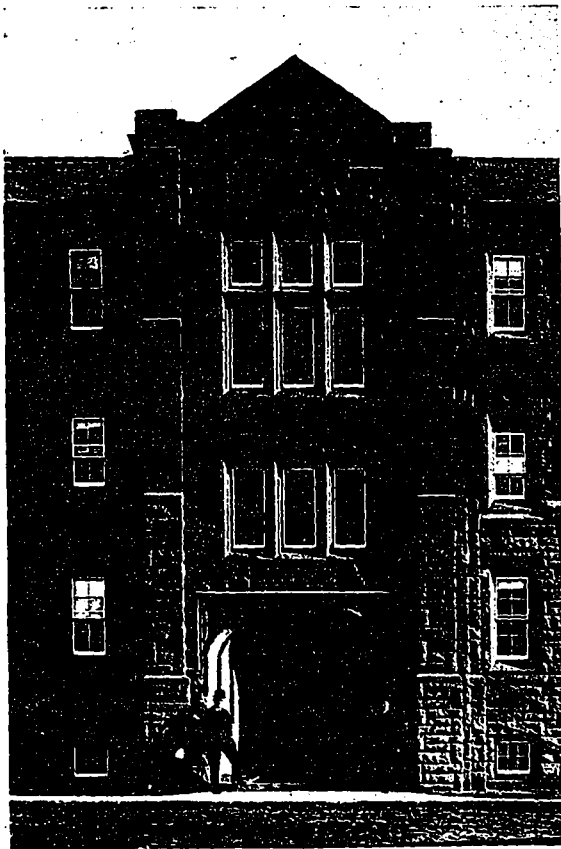


Basement plan, Students' Residences, Toronto University. Messrs. Eden Smith & Sons, Architects.

either side of a corridor which extends from one end of the building to the other, this disposition giving each room the advantage of an outside exposure.

All the doors and wood trimmings are of quarter cut oak, stained and waxed, the floors are of maple, and the walls of the bed-rooms and studies covered to a height of six feet with painted burlap. On the ground floor opposite the entrance is a large general sitting room having an open fireplace, which the students can enjoy in their spare time. The lavatories are finished in cement plaster and cement floors, and equipped with shower baths and modern plumbing. The basement contains the heating apparatus and engineer's rooms, with switches and other controlling devices.

In construction the structures are about as fireproof as it is possible for modern building science to make them. The floor system throughout is of reinforced concrete built according to the Kahn System, and the partitions



Main Entrance, Students' Residences, Toronto University, showing detail of stone and brick work. Messrs. Eden Smith & Son, Architects.

are of either brick or hollow terra cotta tile. The corridors and stair openings have brick walls, the stairways themselves being built of iron and having reinforced concrete landings.

The heating is the one pipe system, the structure being heated from the two boilers contained in the south building. The wiring is in conduits and the lighting of the corridors, lavatories and bed-rooms, is controlled by switches in the Engineer's room.

The locks throughout are master keyed so that a key will only open the front door, the corridor, study door and bed-room of the student to which it belongs. There are the usual building master keys and grand-master keys.

GOTHIC GEOMETRICAL PLANNING. . .

MANY ARCHITECTS SCOUT THE IDEA of proportion in Gothic buildings altogether. They say that it is useless to design the building on paper according to strict geometrical rules, as the foreshortening in perspective and the differences of planes will destroy the proportions in execution; but, on the contrary, we know that Greek and Roman buildings are equally satisfactory in drawing and in execution, says a writer in the Architect and Contract Reporter. There is no good architecture without good proportion, for without proper proportion architecture is merely indifferent building. All the best buildings of the best Gothic period, such as Ste. Chapelle, Amiens, and the cathedral of Lausanne, were designed on certain principles of proportion, and this can be proved by measurement. This fact has attracted the attention of many eminent architects and writers on architecture. The first to call attention to it was Cæsar Cesariano, the translator of "Vitruvius," who proved clearly that Milan Cathedral was designed on the lines of a combination of squares and triangles. This idea was developed by Kerrich in a paper in the nineteenth volume of "Archæologia," who applied the form of the vesica piscis to many ancient examples with great success; to the plans of Bath Abbey Church, Croyland, Lincoln, Hereford, and other cathedrals and churches. Hawkins, in his book on "Gothic Architecture," published in 1813, recapitulated the evidence in favor of the system of proportion. Professor Cockerell, in a paper read at a Winchester meeting of the Archæological Institute, showed that the vesica gave William of Wykeham the guiding lines for the plans of his chapels, but he found that the equilateral triangle did not apply to the sections of all the chapels. In the Lincoln volume of the same institute there is a paper by Mr. Penrose on the "Proportions of Lincoln Cathedral," which he proves to have been originally designed on the system of squares called pariquadrats.

But Viollet-le-Duc in his essay shows conclusively that triangles of various forms characterize generally the buildings of successive periods. In the round arched styles the rectangle was used; in Early Pointed, what he terms the Egyptian one, in which a perpendicular line drawn from the apex equals two and one-half to four parts of the base; in later periods the equilateral triangle together with the Egyptian.

In the church of St. Sernin, at Toulouse—a noble Romanesque edifice with double aisles, the interior of which strikes everyone who enters it on account of its fine proportions—he found that on dividing the ground line into 20 parts 5 of them gave the half width of the nave, 2 the thickness of the pier, 4 the width of the inner aisle, 2 the thickness of the second pier, 4 the width of the outer aisle, 2 the thickness of the wall and 1 the projection of the buttress. An Egyptian triangle springing from the outer base line gives the springing of the vault of the nave and the abacus of the arches of the aisle, and an equilateral triangle opening from the centre of piers of the arch meets this in the center of the arch and gives the height of the nave arches. In the Ste. Chapelle he shows that two equilaterals give the slope of the arch over the windows; that another, based on the window sill, gives the springing of the groining, and that others govern the entire composition internally and externally.

IN OSAKA, JAPAN, which was recently swept by fire, is a building that is of interest on account of its age, if for no other reason. It is the chief public building and one of the three Imperial palaces of the Empire. The date of its erection goes back to the year 1593.



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

Vol. 2 Toronto, August, 1909 No. 10

Current Topics

THE GENERAL SCHEME of wharves and warehouses which the Canadian Pacific Railway has in view for Victoria Harbor, on the Georgian Bay, embraces the largest elevator in the world, one with a storage capacity of 12,000,000 bushels. Operations on the immense plant will start in the near future. It is also the intention of the C.P.R. to in time connect Victoria Harbor with Montreal by a double track railway which will be practically level for the entire route.

* * *

CANADIAN MATERIALS will be used in the construction of the Chateau Laurier to be built at Ottawa, and Canadian workmen will put it up, says *THE EVENING CITIZEN* of that place in quoting Mr. T. T. Amos, the local representative of the Geo. A. Fuller Company, a New York concern, who have been awarded the contract for its erection. In the same item the *CITIZEN* states that "Ohio Sand Stone has been decided as the material for the building." It will undoubtedly surprise many Canadians to learn that Ohio has been annexed to the Dominion. "Consistency, thou art a jewel!"

* * *

IN THE MATTER of local building legislation and civic organization, Edmonton is moving ahead in a manner much to be admired. Recently the council adopted a new building code enlarging the power of the city architect and demanding a better type of structure in general, and now comes a move on the part of the Board of Education to create the office of Building Inspector of Public Schools, the appointee to devote his whole time to the services of the board. The duties of the position will consist of the drawing of plans for and the supervision of all new building, the planning of all necessary alterations to existing structures, the looking after of all repair work, and the managing of the school properties in general. The salary attached to the office will be \$2,000 per annum.

THE OLDEST TEMPLE IN THE WORLD, so far discovered, has been unearthed by excavators at Bisyra, in Central Babylonia. The walls of the tower were first uncovered and the summit cleared. The first inscription on the surface was of brick stamped with the name Dungi, which goes back to 2750 B.C. A little lower appeared a crumpled piece of gold with the name Param Sim, who lived in 3750 B. C. Just below were large square bricks peculiar to the reign of Sargon, 3800 B. C., and who was probably the first Semitic king of Babylonia. A large platform was discovered 2½ yards below the surface, which was constructed of peculiar convex bricks such as were used in building 4500 B.C.

* * *

THE CHANGE OF AIR in a closed room due to the porosity of walls and the leakage of air around windows and doors has been investigated by Arthur D. Little, of Boston. This room, having a contents of 615 cubic feet, was in, the second story of an ordinary frame dwelling house with clapboarded exterior walls. The interior walls and ceilings were plastered and papered, the single window was made as tight as possible by means of putty and the interior door was fitted with weather strips. Notwithstanding these conditions, which one might assume would very materially limit the rate of ventilation, it was found that through perfectly natural causes the air was changing at the rate of one and eight-tenth times per hour. This fact was shown by measurement of the rate of disappearance of carbonic acid.

* * *

SIXTEEN HORSES, with haunches firmly set and every muscle strained, pulling an immense steel girder, was one of the recent sights on the streets of Toronto. The girder was one of a pair which is to be used to support the gallery of the new Shea's Theatre, and it was being conveyed on a low, broad wheeled, truck of fifty tons capacity, from the works of the Canada Foundry Company at the head of Lansdowne avenue to the corner of Victoria and Richmond streets, where the playhouse is being erected. The weight of this huge steel member is 48,000 pounds, or twenty-four tons. It is 70 feet in length, four feet wide, and twenty-four inches in depth, and is the biggest girder that has ever been carted through the streets of Toronto. At the present time there is in the shop of the foundry a girder which is probably the largest ever manufactured in Canada. It has been built for the swing span of a bridge at New Westminster, and weighs one hundred tons, the length being 232 feet, and the width 12 feet.

* * *

"A GREATER AND BETTER CITY than ever before." This is the slogan which emanates from fire-stricken Cobalt, where those who are conversant with the aggressive and business-like spirit of this thriving mining community, say that the town will rise from its ashes in a truly Phoenix-like manner. From now on a new order of things will be in force. The town's fire department and water supply and sanitary systems are to be brought up to a high standard of efficiency. Stricter building laws and rigid supervision over all new structures are also to obtain. To quote Mayor Lang: "Everything will be done to satisfy the insurance companies and assure the erection of buildings which will not only be substantial and safe, but a source of civic pride in general character." The mayor's statement is a most encouraging one, and if followed out will mean progress, permanency and economy to the town. As regards the rebuilding of the burned district, His Worship adds that the rapidity with which operations will be carried on, will only be limited by the capacity of the builders and contractors to do the work. As soon as the mining companies are prepared to issue leases, the town will go up like magic.

A RUST-PREVENTING COATING for iron, used by a German manufacturing company, consists in coating iron and steel ware first with lead, then electrolytically with zinc, and finally heating this coating, so as to obtain an alloy of the two metals which has the same potential as zinc.

* * *

PROCEEDINGS HAVE BEEN INSTITUTED against the G.T.R. by Architect Bradford Lee Gilbert, of New York city, who asks for the sum of \$119,453.23 for services rendered in connection with the preparation of the original plans for the Chateau Laurier and Central Station, which were subsequently rejected for plans prepared by a firm of Montreal architects. The writ in action was recently filed in the High Court at Ottawa, where the structures are to be erected, by Mr. Harold Fisher, who will look after Mr. Gilbert's interests. The contention of the plaintiff is that the ideas he evolved in planning the buildings were appropriated and incorporated in the accepted designs. The outcome of the case is being awaited with interest by a large number of architects throughout the country.

* * *

AT THE FORTY-THIRD ANNUAL meeting of the National Board of Fire Underwriters, recently held in New York city, President J. Montgomery Hare made an address, in which he stated that a comparison with statistics of losses in foreign countries shows that the loss per capita in the United States is from 10 to 30 times greater than in the principal European cities. For the last five years, he said, the annual fire loss in this country has averaged \$269,200,412, the total for the period being \$1,346,022,059, or about three-quarters of a million for each day of the five years. In this period the figures were largely increased by the San Francisco conflagration, but even taking the two years since then the losses have kept well above the \$200,000,000 mark. Without counting losses from forest fires, the destruction of property in 1907 by fire totaled \$250,084,709, and in 1908, \$217,885,850. The figures for this year give no promise of improvement, President Hare said, having reached a total of nearly \$53,000,000 for the first three months.

* * *

IN THE SMALL SIZED CITY where there is only business enough for one enterprising and studious architect the gentleman who occupies that position is somewhere near the most important man in the community, says Rock Products. The tone and character of the whole town is in his hands, for he models the buildings for the business district as well as for the residence portion, and it is remarkable that a large number of the towns have nearly all their buildings designed by one brain, that of the local architect. He takes a personal pride in his work, really claims the work for his own and frequently gives his best work at small cost for the sake of obtaining for the completion of his plan of beauty some missing link which he could not otherwise secure. The people of the community should be loyal to such a man and not take their large appropriation to some big city and hunt up a stranger who has not given his life work to the town and his best study to its artistic development. The builders of every community should realize that we do not build for ourselves alone, but for the whole community, and respect the plan and ideals of the man who gives up his life to the study of pleasing effects and symmetrical combinations for the various localities which go to make the town a handsome and presentable whole to the stranger within the gates, and incidentally the captain of industry comes along occasionally to make big investments which redound to the benefit of every property holder represented. The architect is loyal to his town and each community should be loyal to its architect.

A DWELLING HOUSE which is in some respects unlike any other ever constructed in this country, if not in the world, is located in the city of Memphis, Tenn. It is a two-story structure with heavy projecting cornice and dormer windows, and has the lower story built of stone in blocks and chips collected by the owner in every State in the Union and in many foreign countries. In its walls are pieces of rare marble from Greece and Italy, sandstone from Norway, onyx from Mexico and odd specimens from Australia, Ceylon, Egypt and other distant lands. These materials, which are set in cement reinforced with steel rods, include many examples of gold bearing quartz, ores of silver, copper and iron, together with curious bits of jasper, sardonyx and basalt. It is stated that the walls contain more than 50,000 separate pieces, and the effect produced by the play of the rays of the sun upon them is both novel and brilliant.

* * *

THE DOUBLE SWING BRIDGE at the Libau, Germany, harbor entrance provides a main shipping channel with a minimum clear width of 210 feet and consists of two similar swing bridges seated on pivot piers, 128½ feet apart on centers. The total width of the waterway is 435 feet, so that three channels are provided, the two smaller ones being, roughly, 70 feet wide in the clear, the center of the pivot piers being placed 89 feet from shore. The bridge carries a single-track street railway line, a roadway on each side and the usual footwalk. The two pivot piers are each built as a circular tower of masonry with a diameter of 30 feet from the foundations, 50 feet below water level, to the surface. Above water level they rise in two steps of diminishing diameter, the last one being 22 feet. From this base the masonry is carried up for about 15 feet as a truncated cone with a table 7 feet in diameter, on which the metal cap or pivot is fastened. The weight of each complete half bridge, 325 tons, is transferred to the pier by means of a cross girder, the top member of which rests upon the metal cap. The slopes around the masonry cone. The last step of the masonry cone, allowing the whole, when in position, to revolve pier, 22 feet in diameter, is furnished with a heavy steel of the girder correspond with the slopes of the masonry band or rail, on which the lower members of the cross-girders are supported by rollers.

* * *

AN IMMENSE CONCRETE SEA WALL, built subsequent to the great hurricane which in 1900 killed thousands of persons and wrecked every building at Galveston, Texas, prevented history from repeating itself on July 21, when that city was again visited by a storm which was equally as furious in its onslaught as the one which brought disaster nine years ago. Not a single life was lost in the city proper, and the damage to property, considering the potency of the elements, was comparatively slight. The action of the wall in beating back a sea whipped by a seventy-eight mile gale, has given the city a feeling of confidence which it has never before enjoyed. The force of the impact was so great that the spray from the immense waves shot sixty feet into the air. The wall, which is 17 feet high, extends along the gulf side of the city. On the top of the wall is a boulevard wide enough for driving six carriages abreast. When the wall was designed and built grave doubts were expressed as to the practicability of the plan, and also as to the strength of the material. It was feared that the work would be wiped out before an onslaught of the sea such as formerly destroyed the city. The recent storm, however, fully vindicates the design, the dimensions and the material, and demonstrates the strength and durability of concrete as a material in such important structures. There are many cities of the seaboard sadly needing seawall protection of this very class. Such a wall along the water's edge at Toronto would eventually save the city thousands of dollars, besides giving it a driveway and water front of which it could be justly proud.



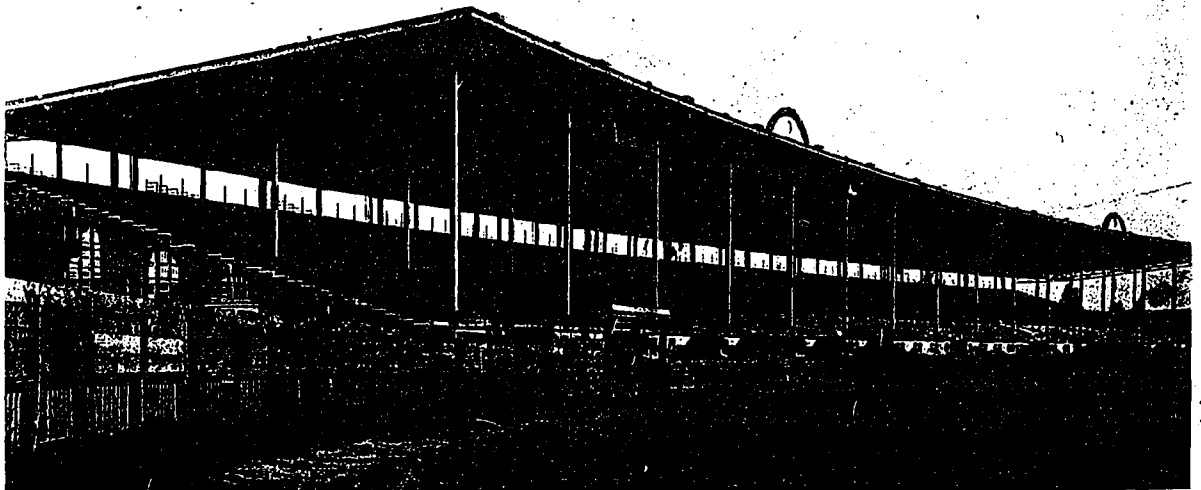
New Transportation Building, Canadian National Exhibition Grounds, Toronto. Built during the past year at a cost of \$95,000. In size it is 337 feet long and 153 feet wide. The walls, which are of red pressed brick with Roman stone trimmings, are carried on a solid concrete foundation, while the roof is of the steel truss type, thus making the building practically fireproof. Mr. Geo. W. Gouinlock, Architect.

CANADIAN NATIONAL EXHIBITION BUILDINGS—Group of Interesting Structures in which the Arts, Industries, and Natural Resources of Canada are Annually Displayed—Brief Comments on Their Construction—Built in the main of Non-Combustible Materials.

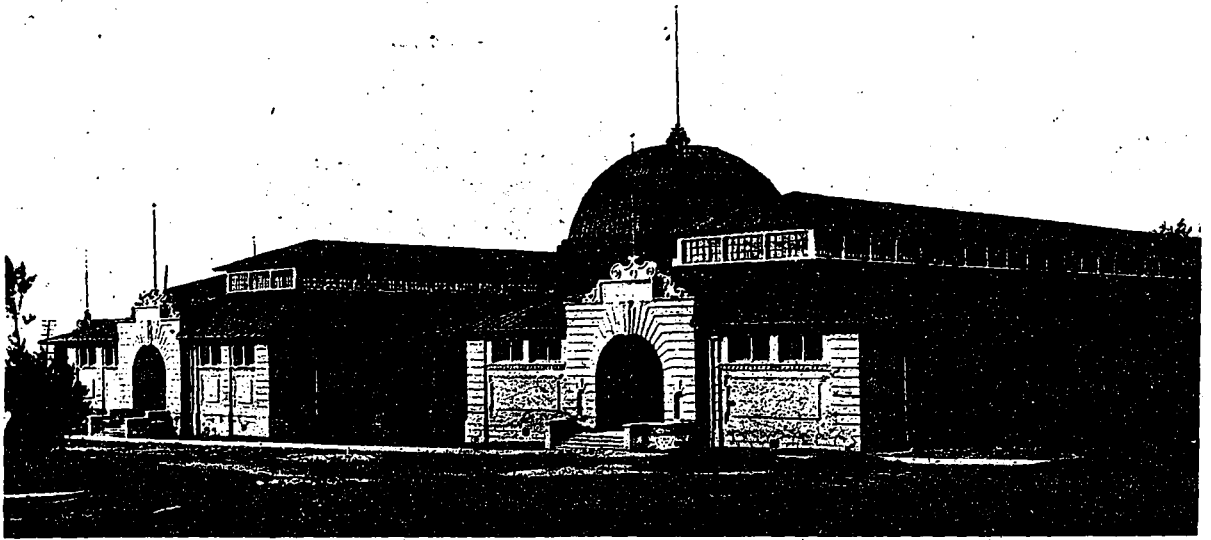
TORONTO has the most beautifully situated and largest exhibition grounds in the world, and, incidentally, it may also be said, the finest type of permanent exhibition buildings. This is the consensus of opinion of the legion of American visitors who annually find the Canadian National Exhibition a cynosure of attraction, and also the expression of the many travelers from abroad, who have in journeying through the Dominion on business or pleasure, includes this important event in their itinerary. And well may this be said, for both the grounds, which cover an area of 260 acres and extend a mile and a half in length, and the substantial character and magnitude of the buildings are such as to readily impress one with the importance, the greatness and the vastness of it all.

From the time when it was first established; twenty-

seven years ago, until the present day, the Exhibition has undergone a complete transformation. Each year has seen the erection of new buildings, and each year has also seen it brought up to a higher standard, with better accommodations, and conducted on a more stupendous scale than ever before. Gradually the original frame structures have been replaced by larger and more modern buildings. The fire which a few years ago destroyed the old Main Building, Crystal Palace, and the grand stand, made progress in this direction, for, while the Exhibition Board had long recognized the value and economy of safe and permanent construction, the fire more fully pointed out the absolute necessity and importance of employing none but steel, brick and stone and such non-inflammable materials in the erection of all future buildings. As a result, the entire Exhibition proper, with the exception of the cattle



New Grand Stand, Canadian National Exhibition Grounds, Toronto. A steel and reinforced concrete structure which is capable of comfortably seating, in chairs, 17,000 people. The immensity of its size can be imagined from the fact that it is 725 feet long and 100 feet wide. It was erected at a cost of \$240,000, and is the largest covered and most complete fireproof grand stand in the world. Mr. Geo. W. Gouinlock, Architect.



Industrial Building, Canadian National Exhibition Grounds, Toronto. This building is in the form of a double H, and is 231 feet long by 340 feet wide over all. Access to the interior is obtained through eight separate entrances, the central one being elaborated with a columned portico. The structure is built of cement concrete, brick and stone, with steel trussed roof having a large dome at centre. It contains 74,000 superficial feet of floor space, and cost, complete, \$95,000. Mr. Geo. W. Gouinlock, Architect.

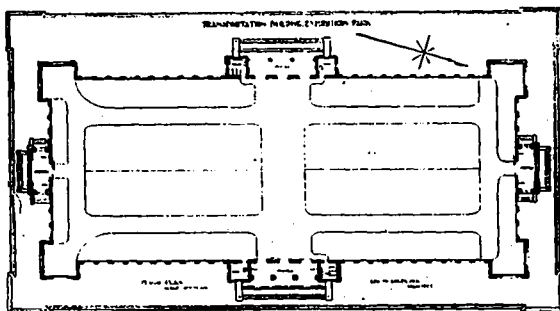
sheds, is to a large degree a fireproof city with splendid facilities for display, and a daily floating population of from 50,000 to 100,000 for two weeks of every year.

But even with the many new buildings and additional facilities, the increasing demand for accommodations has been such as to completely tax all available floor space. The growing number of United States and European firms who find it expedient to exhibit annually, is most significant, as it is not only the surest indication of the great importance of the Exhibition, but an unmistakable sign of the universal growth and prosperity which this country is experiencing.

Within a fortnight (August 28 to September 11) the Exhibition will again be in full swing, and the public for the first time will have an opportunity of seeing the new Transportation building, a structure of magnificent di-

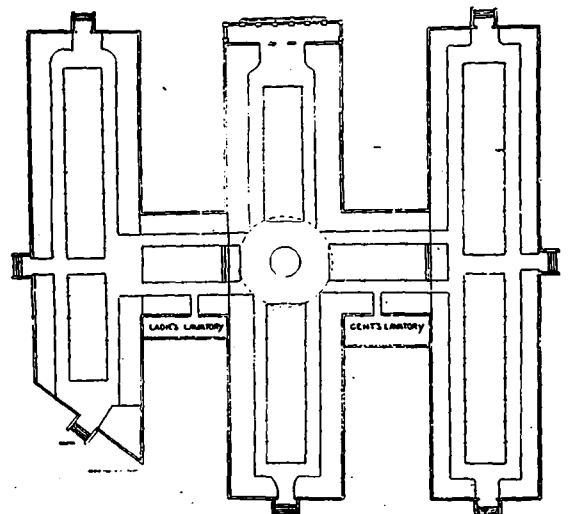
trilled by a patent operating device. As its name would imply, the building is to be used for the exhibit of transportation facilities, such as automobiles, carriages, launches and other types of conveyances, and it will undoubtedly prove to be one of the most attractive places within the Exhibition grounds.

There is no structure of the many to be seen, that is more interesting in its general construction than the new grand stand, which is the most complete fireproof and largest covered structure of its kind in the world. An



Floor plan, Transportation Building, Canadian National Exhibition Grounds, Toronto. Mr. Geo. W. Gouinlock, Architect.

mensions, which was erected during the past year, at a cost of \$95,000. This building is constructed of red pressed brick and Roman stone trimming of a buff tone, the foundation being of solid concrete, and the roof supported with columns and steel trusses. Architecturally, it is one of the most successful structures of the entire Exhibition group. There are four entrances having approaches of granolithic steps, the two at the centre of the building being adorned with large pillars which form a colonnade on either side. The dimensions of the structure, which is 337 feet in length and 153 feet wide, give it an immense interior which is well lighted and ventilated by lantern lights arranged around the roof and con-

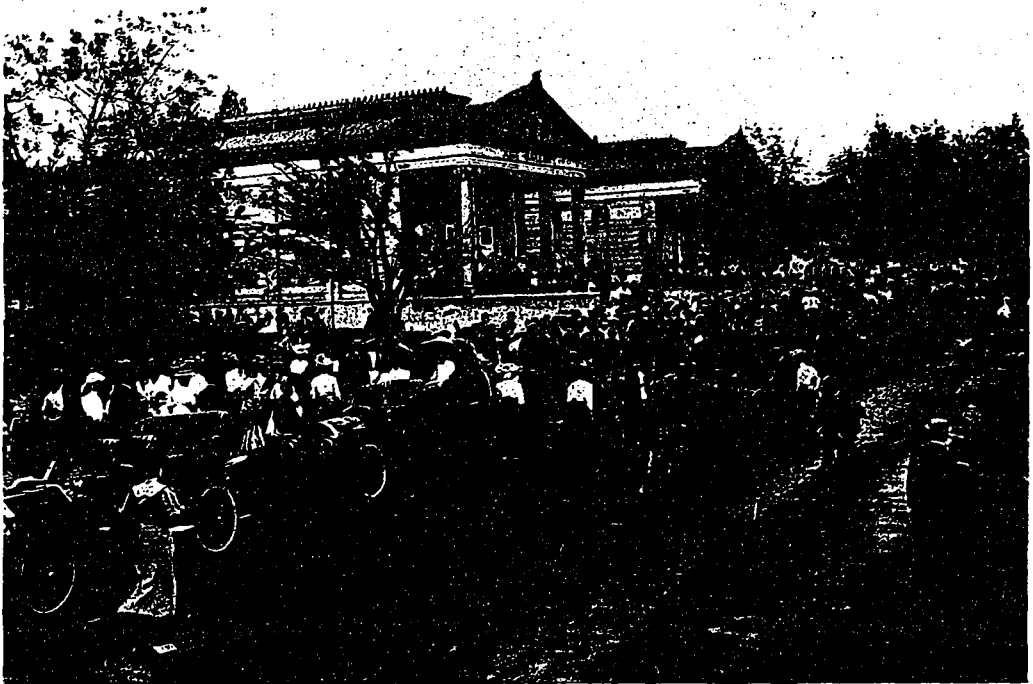


Floor plan, Industrial Building, Canadian National Exhibition Grounds, Toronto. Mr. Geo. W. Gouinlock, Architect.

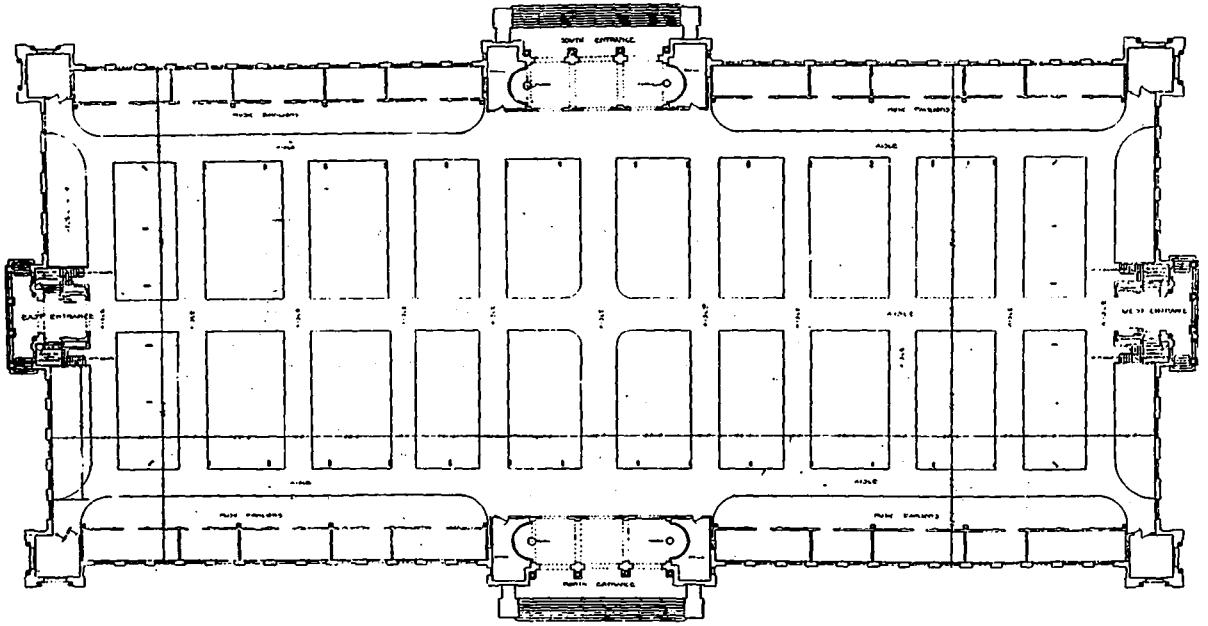
idea as to the immensity of its size can be obtained from the fact that it will comfortably seat 17,000 people in chairs, and with its great standing room and emergency seating capacity, can provide accommodation for an additional 10,000, should the occasion demand. The structure is built throughout of steel and reinforced concrete, and its cost complete was \$240,000. It is built to conform with the contour of the track which it adjoins, and from end to end is 725 feet, its width being 100 feet. The record time in which this grand stand was erected is a most substantial proof of the ability of Canadian firms



Manufacturers and Liberal Arts Building, Canadian National Exhibition Grounds, Toronto. Constructed of brick and steel, and having large arched trusses spanning the central portion. It is 450 feet long by 250 feet wide, and is utilized for exhibiting the finer class of manufactured goods. The cost of this building was \$110,000. Mr. Geo. W. Gouinlock, Architect.



Art Gallery, Canadian National Exhibition Grounds, Toronto. An absolutely fireproof building, with walls of brick and stone, and floors and roof of reinforced concrete. Erected at a cost of \$40,000. It is 120 feet long by 82 feet wide, constructed in quadrangular form, and will readily permit of future extensions. Mr. Geo. W. Gouinlock, Architect.



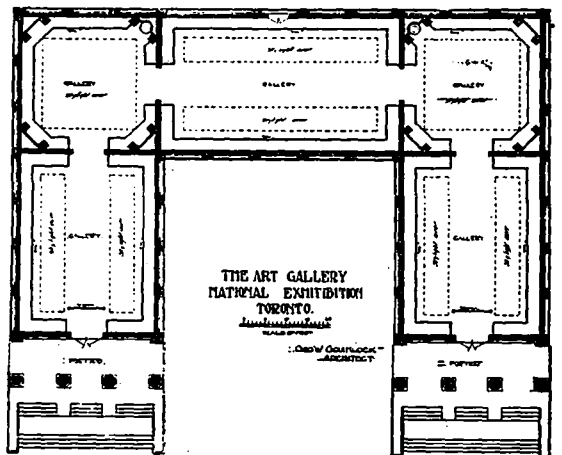
Floor plan, Manufacturers and Liberal Arts Building, Canadian National Exhibition Grounds, Toronto. Mr. Geo. W. Gouinlock, Architect.

to execute important contracts in expeditious and thorough manner. Three months from the date the contract was awarded, Messrs. Holmes & Son (Toronto), and the Hamilton Bridge Company, who carried out the work, turned this completed structure over to the Exhibition Board; and the careful attention given to constructive details and the thoroughness of the work in general made it an accomplishment, which to say the least, is a credit to the building interests of the Dominion.

A building, which not so much on account of its architectural treatment, as its general arrangement and utility of plan, that is worthy of note is the Industrial Building—formerly known as the Process Building. This building is in the form of a double H., and is 231 feet long by 340 feet wide over all. The principal facade faces the west on the main thoroughfare, and there are eight entrances, the central one of which being elaborated by a columned portico. Over the central portion of the structure is a large dome, and the lighting is so arranged as not in any way to interfere with the placing of exhibits. The building is constructed of cement concrete, brick and stone, with steel trussed roof. It contains 74,000 superficial feet of floor space, and was erected at a cost of \$95,000. The entire space is devoted to demonstration of the process of manufacture, and it is daily the gathering place of thousands of interested visitors.

Farther east and more towards the centre of the grounds is the Manufacturers' and Liberal Arts' Building, an immense structure of brick and steel, with a pleasingly detailed exterior. The roof is of the arched type, with large steel trusses spanning the central portion, above which rises a low spreading dome. This building is possibly the largest and most costly on the ground, its length and width being 450 feet and 225 feet respectively, and its construction involving an expenditure of \$110,000. The vast space afforded by these dimensions is utilized exclusively for the exhibiting in finer class of manufactured goods. The entrance at either end have columned porticos, while those on either side at the centre are flanked by large rustic brick piers capped with ornamental plinths and spheres, executed in cut stone. In the basement of building, at the east and west ends, are moderately equipped lavatories for the use of the public.

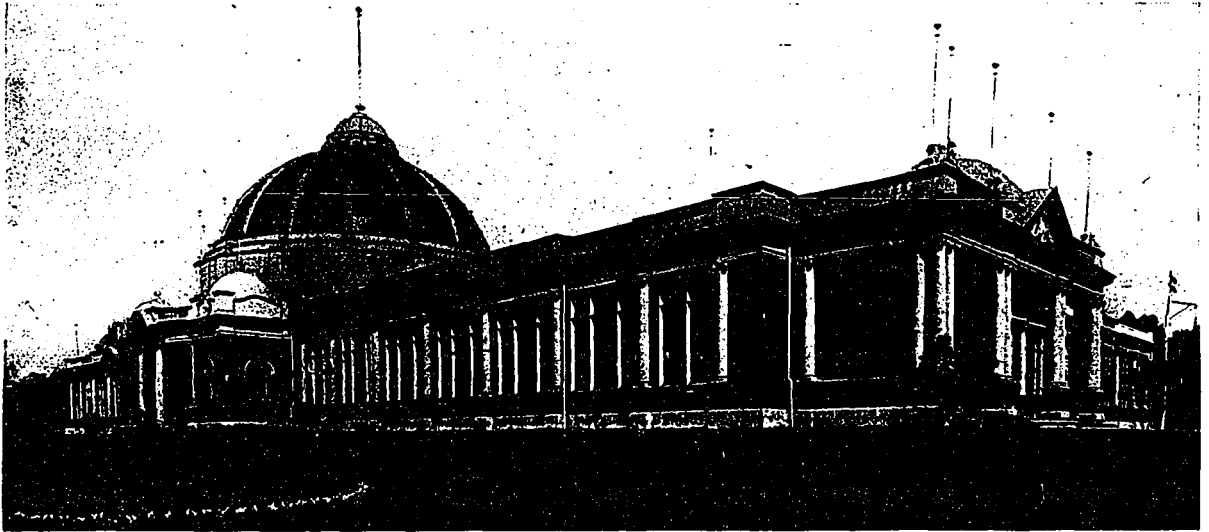
Owing to the important character and high value of its exhibits, the Art Gallery, which has much from an architectural viewpoint to commend it, has been built so as to be absolutely fireproof. Here each year the work of Canadian artists are shown, and here also are exhibited annually rare and valuable paintings from the leading galleries of England, as well as from the collection of private individuals. As a painting or work of art which is once destroyed is lost forever, the wisdom of the Exhibition Board in adopting only non-inflammable materials in the construction of this building, cannot be over-esti-



Floor plan, Art Gallery, Canadian National Exhibition Grounds, Toronto. Mr. Geo. W. Gouinlock, Architect.

mated. The walls are of stone and brick, and the floor system and roof—the latter having a skylight over each of the three sections—are built of reinforced concrete. The building represents an outlay of \$40,000, and it is 120 feet long by 82 feet wide, being constructed around a quadrangle having the main thoroughfare on the open side, and so planned as to permit of future extensions.

Upon the site of the old Crystal Palace now stands the new Horticultural Building in which are housed the agricultural, horticultural and floricultural departments. This structure was complete just prior to the opening of the 1907 Exhibition, and it is conceded to be one of the finest,

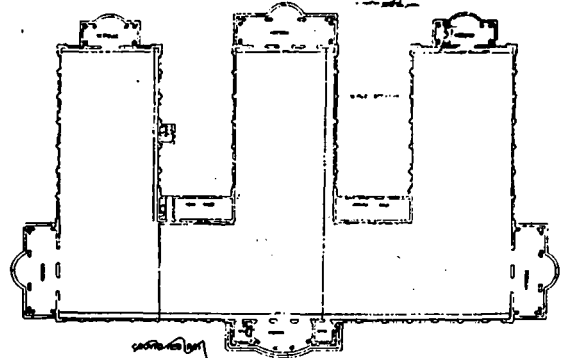


Horticultural Building, Canadian National Exhibition Grounds, as seen from the main approach. One of the most successfully designed buildings in the entire Exhibition group. It is of red pressed brick construction, with gray stone trimmings, trussed steel roof and concrete floors, and cost, complete, \$97,000. Mr. Geo. W. Gouinlock, Architect.

if not the handsomest building on the grounds. The walls are constructed of red pressed brick with gray stone trimming, and the roof is supported by a system of steel trusses; while around the entire building, on either side of the windows, are a series of Ionic columns carrying a simple entablature, above which rises a low balustrade agreeably detailed. The plan of the building is in the shape of a double U, thus giving it three distinct sections which are connected to each other by the portion of the building across the front. Six advantageously placed entrances readily give ingress and egress to and from the interior, while over the central portion towards the front is a large well-proportioned dome which brings the entire structure up to an agreeable height. The dimensions of the building are 253 by 155 feet over all, and the cost of its construction was \$97,000. In the basement are facilities for the reception and potting of plants, and the floors throughout are built of concrete.

As regards uniqueness in design and individuality of plan, the Railway Exhibit Building, which is occupied jointly by the Canadian Pacific, Canadian Northern, and Grand Trunk Railways, offers a most attractive study. Here the problem of providing three great corporations with equal facilities has been most successfully worked out. The structure, which cost \$45,000, is in the form of a trefoil, and the general design is such as to be far removed from the conventional type of exhibition buildings. The interior is most equitable in its lay-out, being

arranged into three equal sections, so that each company get just as much as the other and no more. These sections, which are octagonal in shape, open into each other by means of arched doorways, and each section is pro-



Floor plan, Horticultural Building, Canadian National Exhibition Grounds, Toronto. Mr. Geo. W. Gouinlock, Architect.

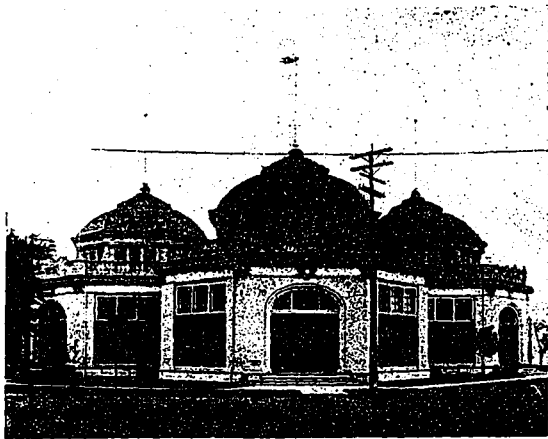
vided with seven booths and individual offices, as well as separate entrances from the outside. In construction, the building is of red pressed brick with art stone trimmings, the roof being of the steel truss type, and each section



Horticultural Building, Canadian National Exhibition Grounds, Toronto, showing the projections which give its plan the form of a double U, and which provide separate sections for the agricultural, horticultural and floricultural exhibits. The building, over all, is 253 feet long, by 155 feet wide. Mr. Geo. W. Gouinlock, Architect.

having a large dome, which gives the whole a well balanced effect.

Another structure of interest is the Press Building, which was erected at a cost of \$15,000, so as to provide better accommodation for the representatives of the local and outside papers. It is built in the modern Classic style,

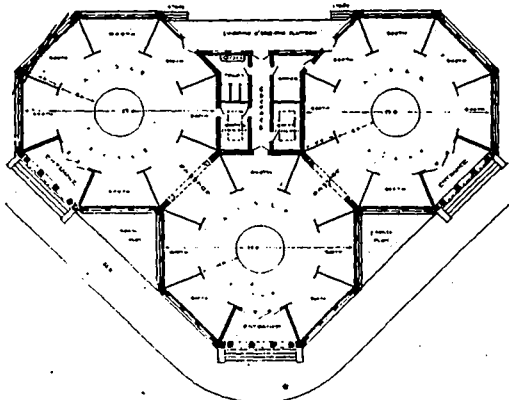


Railway Exhibit Building, Canadian National Exhibition Grounds, Toronto. A structure that is unique in design and arrangement, being in the form of a trefoil and removed from the conventional style of Exhibition buildings. Mr. Geo. W. Gouinlock, Architect.

having large, bold Ionic columns the entire height of the two stories, which are surmounted by an entablature and pediment. The building has a frontage of seventy-two feet and a depth of thirty-eight feet, and is constructed of red pressed brick and art stone. The ground floor is divided into several offices for the use of the various newspapers. There is a rotunda in the centre, from which these offices open, and from which the stairs ascend to the upper floor, which is divided into committee rooms, cloak and toilet rooms.

EXHIBITION OF ARCHITECTURAL DRAWING.

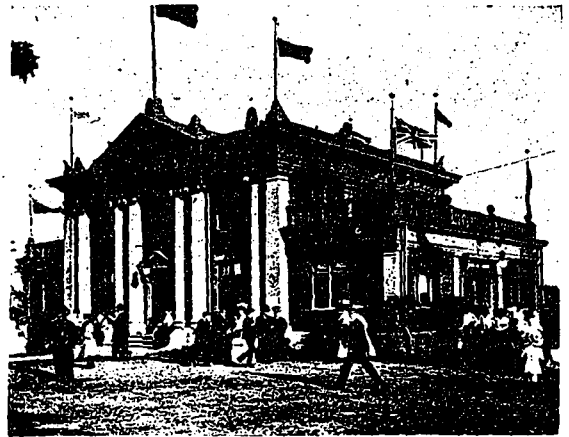
One of the new features this year, and it may be said a most important one, will be an exhibition of architectural drawings: and for the first time in the history of the Canadian National Exhibition, the public will have an opportunity of viewing a collection of the best work of Canadian architects in this respect. This exhibit



Floor plan, Railway Exhibit Building, Canadian National Exhibition Grounds, Toronto. Mr. Geo. W. Gouinlock, Architect.

is to be held in the building of Fine Arts, where Room 2, generously assigned by the management for this purpose, has been completely re-decorated, so as to consistently give atmosphere to an exhibit of this nature. The importance of this event cannot be over-estimated, as it means much to the profession and layman alike, in that

the latter will have an opportunity of studying the work of Canadian architects, and of realizing how capable they are of meeting our architectural needs, without the assistance or employment of foreign practitioners. Furthermore, it will exercise an influence in educating the public to understand, appreciate, and desire good architecture in the erection of their buildings. The Exhibition authorities have liberally set aside a sum sufficient to pay all cost of transportation, and in order that the affair may be representative in every way, they have placed the entire matter into the hands of the Ontario Association of

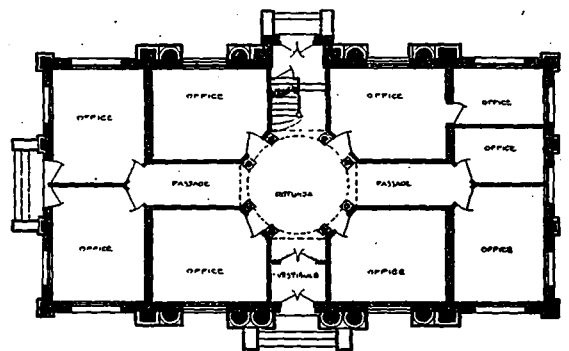


Press Building, Canadian National Exhibition Grounds, Toronto. Designed in Modern Classic and built of red pressed brick with art stone trimmings. Mr. Geo. W. Gouinlock, Architect.

Architects, whose committee is at present sparing neither time nor effort to make it an unqualified success.

If the architects will rise to the occasion as they should, and lend their support and co-operation, there is no reason why this exhibit should not develop into a national salon, at which the drawings of Canadian architects will be annually hung, and which thousands of people will find their greatest opportunity to attend.

The exhibit in the main will consist of well rendered colored and pen and ink drawings, although a limited



Floor plan, Press Building, Canadian National Exhibition Grounds, Toronto. Mr. Geo. W. Gouinlock, Architect.

space will be available for the display of photographs of noteworthy buildings. Owing to the somewhat limited space at their disposal, and the desire to make a presentable exhibit, the committee reserves the right of selection, but an effort will be made to give every work of merit a place upon the walls.

Undoubtedly the importance of this event will fully impress itself upon the architects throughout the Dominion and influence them to exhibit their work, and render every effort to assist the committee who are spending and will spend many hours of voluntary labor in order to do their part towards making the exhibition a success.

IMPERIAL TRUST COMPANY'S NEW BUILDING—A recent Adaptation of Renaissance Style in Bank Building Design—Facade Built Entirely of Manufactured Stone—Character of Structural Parts—Interior Practical in Plan.

BOTH FROM THE VIEW POINT of design, and as a building in which the use of manufactured stone as a medium of architectural expression is seen to advantage, the new home of the Imperial Trust Company, Toronto, located on the south side of Richmond street, just west of Yonge, is a structure that is particularly worthy of note.

The facade of this building, which is massive in character, is designed in the Renaissance style, with columns of the Ionic Order supporting the entablature, which in turn is surmounted by a stone balustrade having an elongated stone panel at the centre; upon which is carved the year in which the institution was founded. At either side the walls are carried forward to the sidewalk line, and decorated at the ends with simple and direct panelling, which together with the large columns, gives the building an appearance which is at once dignified and reserved. The main entrance, which is effectively detailed and has bracket electroliers on either side, also exhibits this feeling, and has been designed so as to be in keeping in scale with the dimensions of the whole; while the heavy cast iron grilles and wrought iron gates of the windows and doors result in a sense of security which is necessary and befitting to a building of this kind.

The construction of the front, in that it is composed entirely of Roman stone, is especially interesting, as it shows how admirable artificial stone, in skilful hands, meets the most exacting architectural requirements. The particular stone used in this building is composed of a special grade cement and marble, moulded in sand, and is re-carved after the final set, thus revealing the aggregates. Throughout, the material is rich and uniform in texture, and the arrises of the columns and detail in general, are executed in a sharp, clearly cut, and superior manner.

The height of the columns are 33 ft. 9 in. over all, and their diameter is 4 ft. at the base. The sections are 3 ft. high, and are hollow, an 18-in. hole running from top to bottom, thus making them considerably lighter to handle, but without in any way sacrificing their strength. The lower column sections weigh two and a half tons

each, and the weight of the cap two tons. Heavier stones than these are the two end pieces of the cornice, which are over three tons each, and the column bases which weigh slightly less. The main architrave is not solid, the front and back having ledges, formed by the mouldings on the inner sides, which carry the panelled scffit. These front and back pieces span the distance between the centres of the two middle columns, and are each 20 ft. 2 in. long; they are reinforced by a light "I" beam, cast in the stone. The architrave carries only its own weight, the frieze, cornice and parapet being supported by heavy "I" beams, resting on the column caps.

Inside the entrance is the main banking room, an interior 56 by 50 feet and 41 feet high, which obtains a well diffused light from a stained glass dome thirty-five feet in diameter, and framed with an enriched plaster frieze containing one hundred and fifty electric lights.

The lower part of the wall is finished in a tobacco brown, the middle portion in a strong buff, and the upper portion in cream, with all enrichments wiped in old ivory and the salient features picked out in gold leaf.

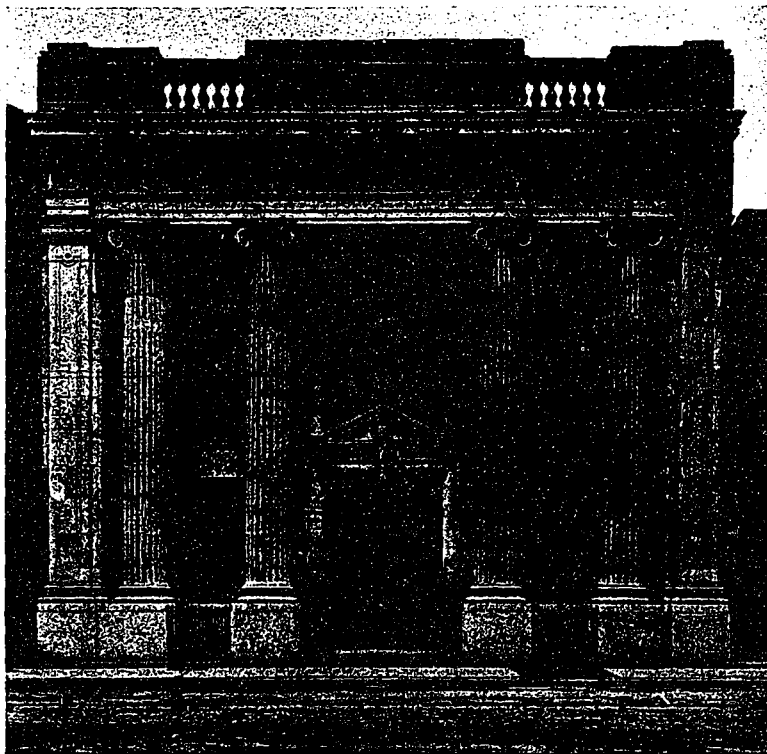
The floor is of marble mosaic, with a richly designed border, and the counter, which is of Flemish oak and semi-circular in shape, extends from the rear wall and occupies the entire centre space. The grill work of the counter is bronze metal, and the wickets of the vari-

ous departments are separated from each other by square, panelled, sectional posts surmounted by electroliers.

At the back, the upper portion of the wall is divided by Ionic columns or pilaster into bays having windows or openings, which gives a mezzanine effect to the second floor.

In the rear of the main room are the manager's room and private offices, while on the floor above are the board rooms with woodwork and furniture in San Domingo mahogany, together with modern lavatories and janitor's quarters.

The basement contains a steel safety deposit 50 by 8 feet and 16 feet high, together with silver vault and offices and waiting rooms.



New building of the Imperial Trust Company, Toronto. Note the general detail of the facade, which is built entirely of manufactured stone. Messrs. Chadwick and Beckett, Architects.



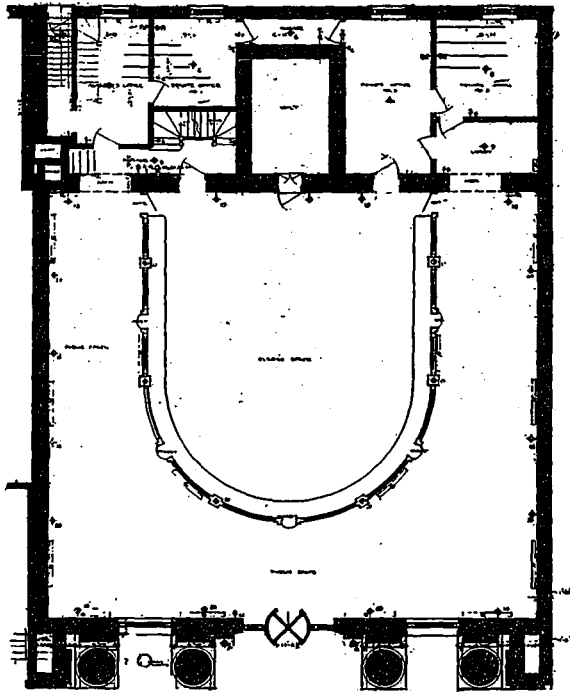
Interior view, Imperial Trust Company's Building, Toronto, looking towards the entrance. The floor is of marble mosaic with rich border design, and the walls up to the moulding are done in a tobacco brown with a strong buff tone above and cream color finish at top, all enrichment being wiped in old ivory and the salient features picked out in gold. Messrs. Chadwick and Beckett, Architects.



Interior view, Imperial Trust Company's Building, Toronto, looking towards rear and showing location of banking counter and detail of back wall. Messrs. Chadwick and Beckett, Architects.

The building was designed by and erected under the supervision of Architects Chadwick & Beckett, Toronto, and the various branches of the work were executed by the following firms: Mason work, Aldridge & Son; carpenter work, John McKerracher; roofer, G. M. Bryan; plastering, A. Petrie & Co.; painting and decorating,

be utilized to make this tower an attraction as well as a striking feature of the eastern metropolis. Some might urge that the multiplicity of advertising signs on the tower would prove a serious objection, but in refutation of this charge it is declared that the arrangement will be such as to render the display attractive and pleasing to the eye, and will constitute a beautiful architectural effect by day and a tower of light by night.



Ground floor plan, Imperial Trust Company's Building, Toronto. Messrs. Chadwick and Beckett, Architects.

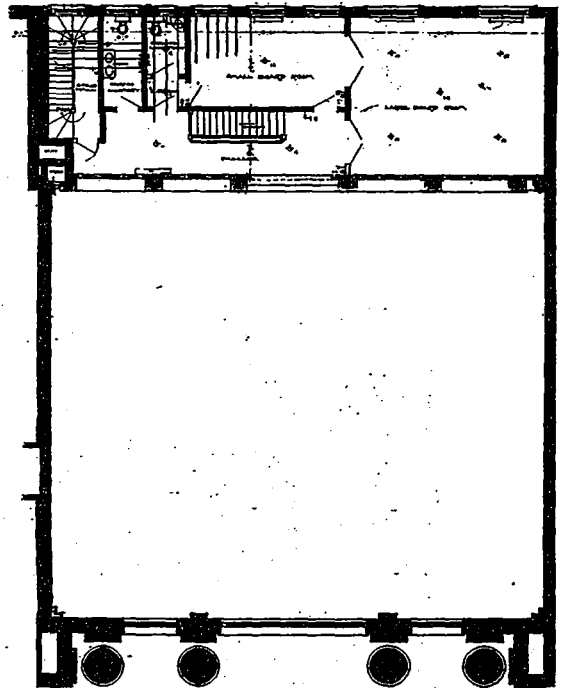
Faircloth Art Decorating Co.; plumbing and heating, Purdy-Mansell & Co.; stone work, Roman Stone Co., Ltd.; steel work, McGregor & McIntyre; mosaic floor, H. M. Robertson Tile Co.; wiring, C. S. Anderson & Co.; electric fixtures, Oxley Enos Co.; grilles, Canadian Ornamental Iron Co.; vault doors, J. & J. Taylor; wrought iron gates, Geo. B. Meadows & Co.

NOVEL HOTEL BUILDING.

NEW YORK CITY is rapidly gaining a reputation for architectural novelties of interest to the designer, the builder and the engineer, and the list of attractions for members of these professions is constantly growing. One of the latest novelties in the architectural line is the new building which will soon rise on the present site of Hotel Metropole, now in process of demolition, at the junction of Broadway, Seventh avenue and Forty-second street, Borough of Manhattan, New York. The unique feature of the structure that is to occupy this site is not so much in its size as in its peculiar construction, the design calling for a building only six storeys in height, but from the centre of it will rise a tower of 30 ft. square and extending 200 ft. above the level of the street, covered by advertisements of various kinds and illuminated at night with such brilliancy as to make the "Great White Way" even more dazzling than at present. The building is designed in English perpendicular Gothic, with long lines to emphasize the height, and with an ornamental cornice with corner pavilions and high battlement. The top of the tower is to be treated in a similar manner, and from the extreme peaks will flutter numerous banners and streamers. The plans have been prepared by Henry Ives Cobb, a well-known New York architect, and every effort will be made to have the structure completed by the end of the current year. All of the skill of the electrician will

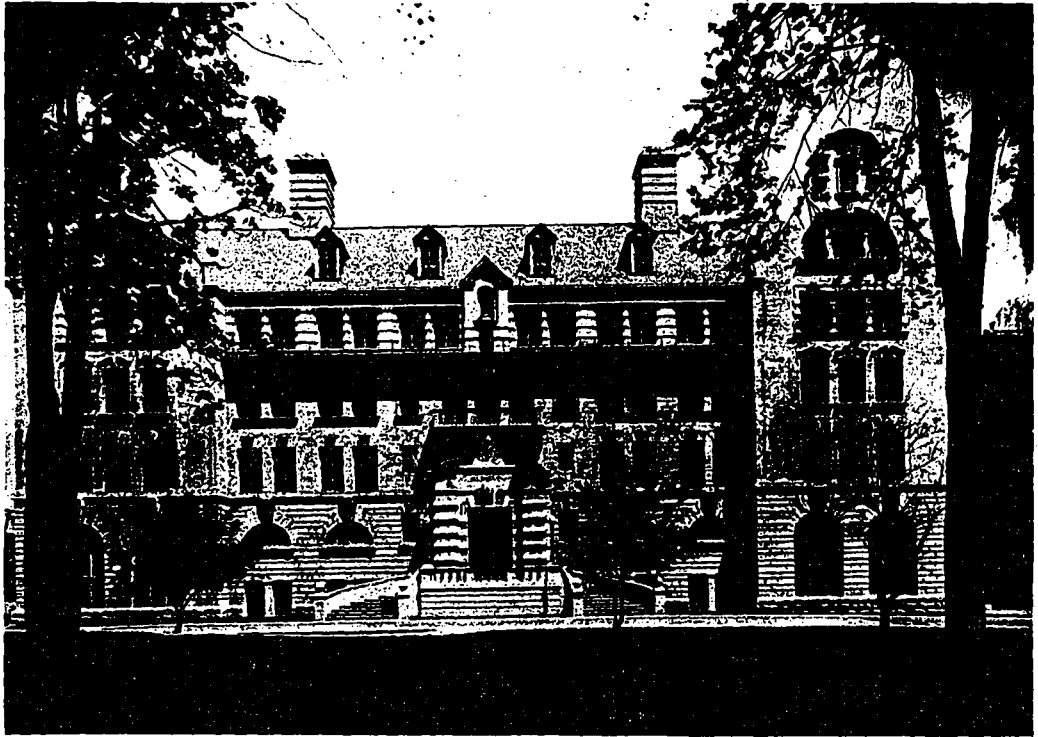
ARCHITECTURAL DRAWINGS.

IT IS SURPRISING what a number of architectural drawings—especially perspectives—are spoiled for want of artistic treatment, by bad judgment in the management of light and shade, figures drawn badly and out of scale, impossible trees and general accessories all wrong, says a writer in a recent issue of LONDON STUDIO. Some architects, whose work is otherwise splendid, will put in absurd little figures, apparently with an idea to enhance the height of their buildings. And when the building is completed, one often notices a chance natural effect of light and shade, whereas, had the perspective been drawn by an artist familiar with these effects, a fine result would have been obtained, as well as a drawing worth keeping as a work of art. Special "features" of a building often require prominence, and this can only be done by keeping

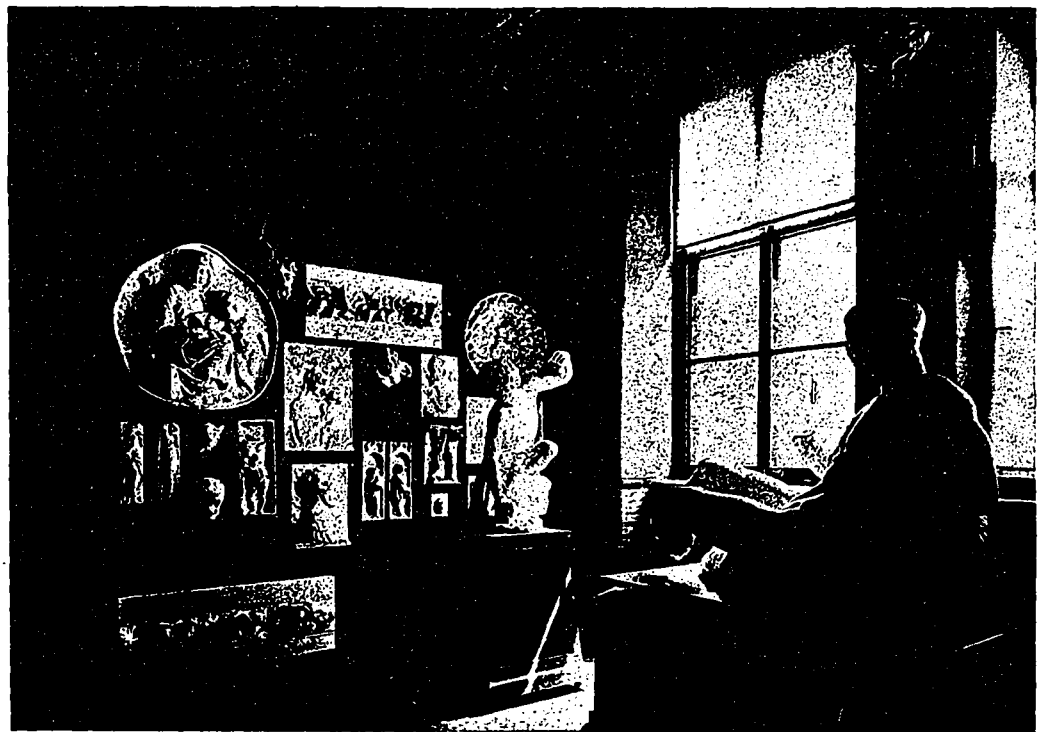


Second floor plan, Imperial Trust Company's Building, Toronto. Messrs. Chadwick and Beckett, Architects.

the surroundings quiet; but only an artist will understand how to do this. One has only to see the exhibition of architectural drawings at the Academy any year to see how insipid and wanting in artistic treatment most of the perspectives appear. The general average is "stodgy," with what is known as the "Academy treatment." There are a few architects who treat drawings very finely, but they are the rare exceptions. It seems a pity that many excellent designs are spoiled or fail to have justice done to them for want of artistic management. Architects generally suppose that an artist would spoil their details, but this is not so where proper judgment is considered and an artist of proved ability given the work to do. It is to be hoped that the subject will receive the careful attention which its merits would seem to deserve to the end that better results will be reached.



Macdonald Engineering Building, McGill University, Montreal, the south portion of which (located on the right) is now occupied by the Department of Architecture.



Section of Museum of Sculpture, Department of Architecture, McGill University, showing plastic models of life figures and architectural decorative work.

DEPARTMENT OF ARCHITECTURE, MCGILL UNIVERSITY

—New Quarters in Macdonald Engineering Building—Accommodations and Equipment—An Institution Worthy of the Material Support and Co-operation of the Profession—Views of Its Museums, Etc. . .

ONE OF THE MOST IMPORTANT TOPICS for discussion before the various architectural associations in Canada, has been the matter of architectural education. It would be impossible to review the condition of the architectural profession generally in Canada at the present time, without being confronted with the necessity for increased educational facilities in architecture. The Toronto University has in their School of Applied Science, established a limited course in architecture, which is conceded by authorities to be entirely inadequate. McGill University, Montreal, has gone a point further, and have established to-day what may be considered the most thorough course in architecture to be obtained in the Dominion.

For a higher education in architecture, it has been necessary for Canadian students, to a great extent, to go abroad, which condition is generally deprecated by Canadian practitioners. Two reasons have been given for the apparent inadequacy of our institutions which aim to furnish architectural education: first, that the Universities have not had sufficient funds to develop this branch of education; and the second, that it seems to have been impossible to secure a sufficiently large number of students to warrant the further extension of this branch of University education.

The Department of Architecture of McGill University entered its new premises in the south wing of the Macdonald Engineering Building, at the beginning of last session. The total loss of architectural equipment, suffered in the fire of April 5, 1907, has been made good to the extent shown in the accompanying illustrations, and, while the accommodation for this department has been greatly improved and increased in the new premises, it has not yet been possible to bring the equipment in slides, casts, diagrams, etc., up to the point at which it was before the fire, for lack of funds.

Immediately after the fire, the Governors voted the sum of \$5,000 for re-equipping the department, which, in view of the serious financial position in

which the University found itself, was an extremely liberal expenditure. In view of the work now being done in this department, it would not be unreasonable to expect some assistance towards equipment, in the way of subscriptions from members of the profession, who appreciate the importance of the development of this branch of University education.

During the last six years, the expenditure in the teaching staff of this department of McGill University, exclusive of the professor's salary, has been increased from \$700 to \$2,500, every dollar of which has come out of the general funds of the University. In this connection, it should be remembered that these salaries are little more than nominal honorariums. At present there are twenty students in the department, who come from various parts of the Dominion, and at present the teaching staff consists of the following:

Percy E. Nobbs, M.A., R.I.B.A., A.R.C.A., Design, Aesthetics, Ornament and Decoration.

C. S. Burgess, A.R.I.B.A., History of Architecture, Architectural Drawing.

Philip Turner, F.R.I.B.A., Professional Practice, Building Construction.

E. S. S. Mattice, B.A.Sc., M.Can.Soc.C.E., Structural Design.

M. Beullac, B.Sc., A.M.Can.Soc.C.E., Structural Engineering
Henry F. Armstrong, Assoc. R. Coll. of Art, Descriptive Geometry.

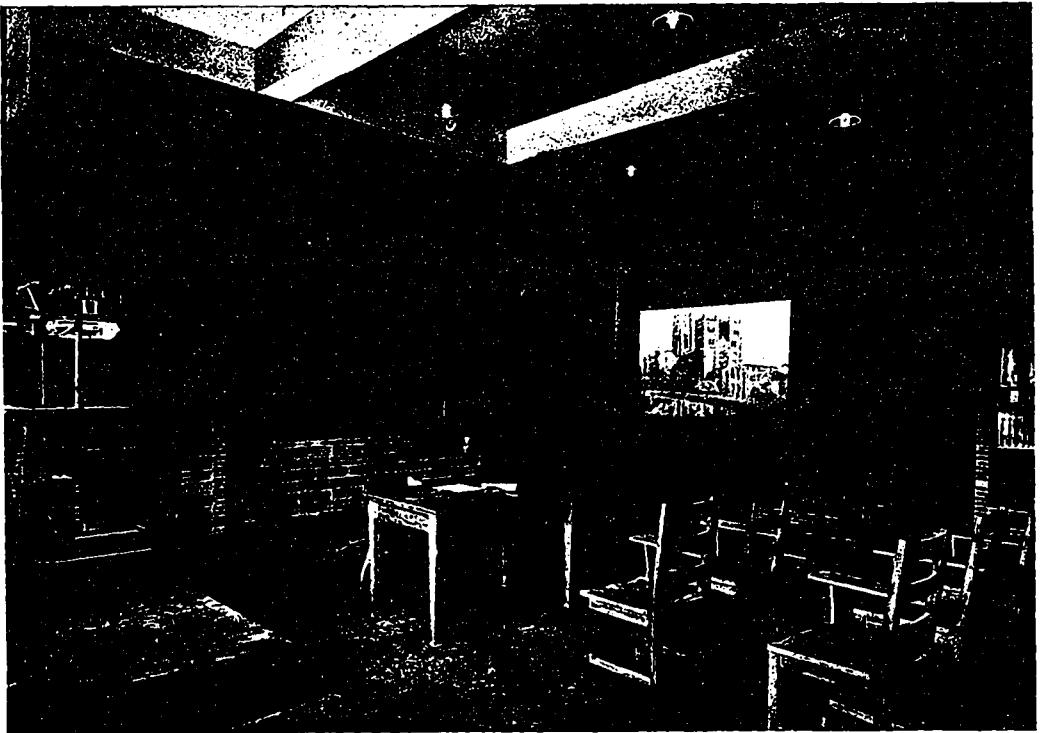
It is most important, if we in Canada wish to develop architects who are equal to the tasks imposed upon them in the building up of so rapidly a growing country as Canada, that considerable more attention should be given to the matter of education. Architects can not only assist by monetary contributions, but by the encouraging of their draftsmen to attend these institutions. It is altogether probable that more money should be contributed by our Universities for the promotion of architectural education, but, until such time as a pertinent demand is made for increased facilities from the



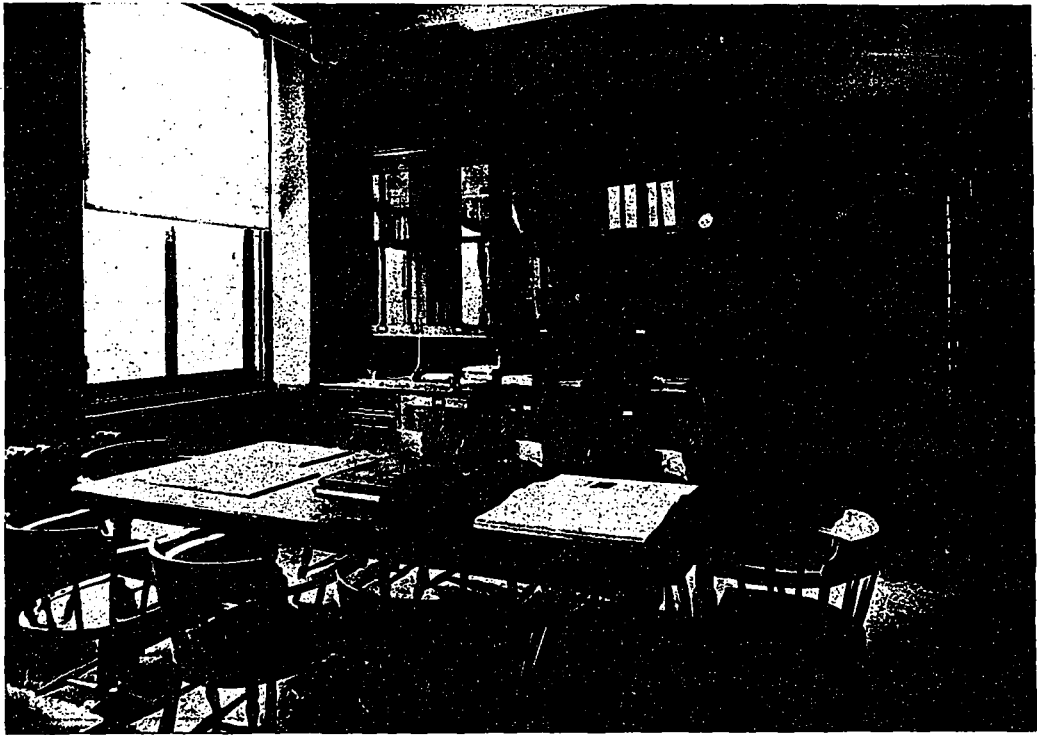
Section of Museum, Department of Architecture, McGill University, in which the student can observe and acquaint himself with the various Orders of Architecture.



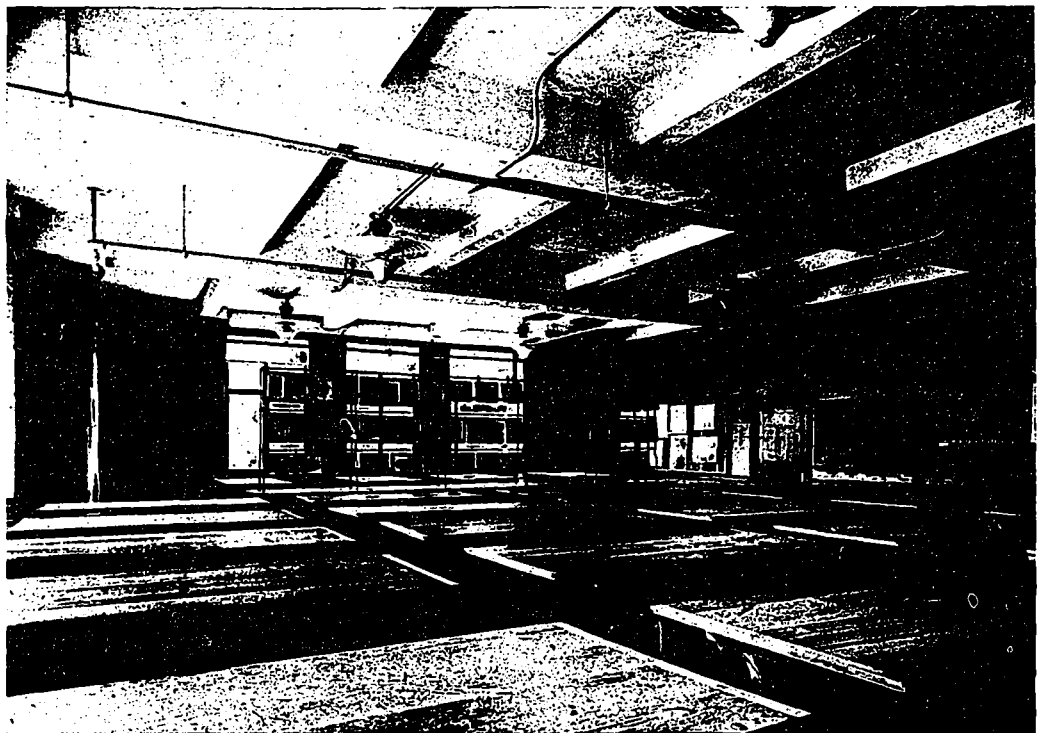
Museum of Gothic Art, Department of Architecture, McGill University, in which plastic reproductions enable the student to closely observe the decorative characteristics of the particular style.



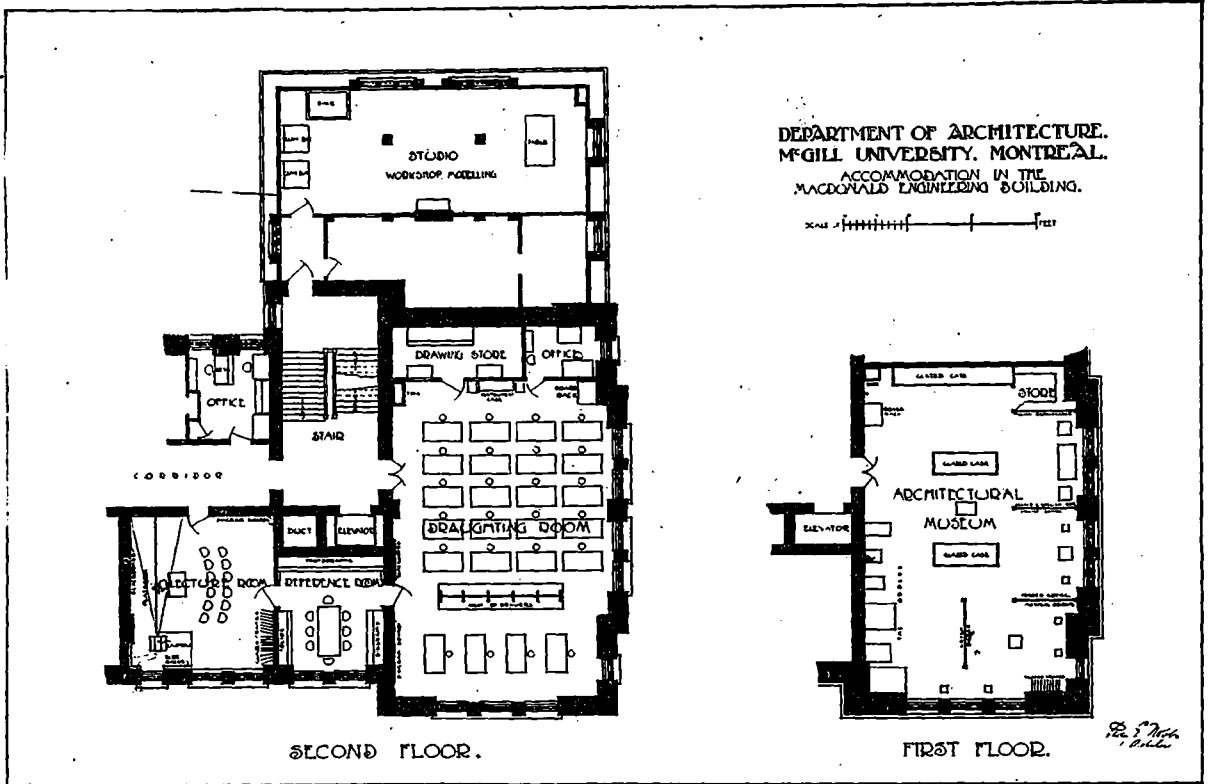
Lecture room, Department of Architecture, McGill University, showing detail of brick walls. The cathedral projected on screen by stereopticon lantern shows one of the methods employed in order to enable the student to familiarize himself with the world's best work.



Section of Reference room, Department of Architecture, McGill University, where works on architecture and building construction are provided for reference purposes and supplemental study.



Draughting room, Department of Architecture, McGill University. Here the student is taught the principles of designing and planning, and given an opportunity for practical draughting experience.



First and second floor plan of section devoted to the Department of Architecture, Macdonald Engineering Building, McGill University, Montreal.

application for admission by a larger number of students, it is improbable that anything definite of a material nature may be accomplished.

We have stated that the facilities offered in either Toronto or Montreal are not ideal. 'By this we do not mean to belittle the efforts put forth by the University authorities, but point out this fact simply to show that much additional support is required by these organizations before we can hope to develop this important branch of education, where it will compare at all favorably with the efforts of universities in other countries. We believe that the appeal made by Prof. Percy E. Nobbs, for additional assistance and support from the architectural profession in Canada, in the further development of the Architectural Department in McGill University, is worthy of the consideration of every practitioner in the Dominion.

TO EXCAVATE ANCIENT CITY. . . .

THE EARL OF VERULAM, who owns the land upon which was built the ancient Roman city of Verulamium, has given permission to the Society of Antiquaries to undertake excavations, which will shortly be commenced. The site of Verulamium lies a mile or so from the centre of St. Albans.

Verulamium was one of the most important cities in England at the time of the Roman occupation. With Eboracum (York) it enjoyed the dignity of being a municipium, which meant that all who were born within its walls could claim Roman citizenship. It was situated in Watling street, and the British insurrection under Boadicea culminated here in the massacre of 70,000 Romans.

In 303, or perhaps earlier, St. Alban, the first English martyr, was beheaded on the site of the present St. Albans Abbey. Not long after the ancient town was forsaken, and the new one—St. Albans—grew up on the hill which had shadowed it.

In the centre of the site of the old city is the Church

of St. Michael, the vicarage of which stands in the middle of what was the forum. A few old walls and other fragments are to be seen here and there, but the Roman city lies for the most part buried under a considerable depth of soil.

In the course of centuries earth has been washed down from the hillside and earth worms have been busy, and where once lay the proud and splendid city is now the quiet, flower-filled garden of the vicarage, the fields of the glebe and other pastures and plough lands.

The stones and Roman bricks of Verulamium were of course, much used for later buildings elsewhere. St. Albans Abbey is very largely built from them. But a great deal still remains under the soil. About sixty years ago, and again in 1869 the theatre was partly and temporarily uncovered, and some fine frescoes, pavements and marbles were found. It is the only Roman theatre in Britain, and its dimensions are almost exactly the same as those of the theatre at Pompeii.

In fact, the whole town of Verulamium singularly resembles Pompeii as regards shape—an irregular oval—dimensions and arrangements and positions of streets and buildings. It is slightly larger, its walls inclosing an area of 190 acres. Its excavation ought to provide extraordinary interest. If it is done thoroughly, as no doubt it will be, we shall have within a few miles of London an object lesson of surpassing educational and antiquarian value as to how the Romans lived in Britain two thousand years ago.

THE NEW BUILDING by-law, which has been in course of preparation at Victoria, B.C., for the past three months, has been drafted by the special committee of the city council appointed for that purpose, and the eighty type-written pages of regulations decided upon are now in the hands of the building inspector for revision. The new measure will be confined strictly to building construction, and will not contain the extraneous matter in the present by-law.

NEW PUBLICATIONS.

THE ARTS CONNECTED WITH BUILDING.

Lecture delivered at Carpenter's Hall, London, (Eng.), by R. Weir Schultz, E. Guy Dawber, F. W. Troup, A. Romney Green, C. F. A. Voysey, M. H. Baillie Scott, Chas. Spooner and J. Starkie Gardner. Edited by T. Raffles Davison, and published by B. T. Batsford, 94 High Holborn, London, with the consent of the Worshipful Company of Carpenters. 224 pp.; 98 illustrations. Cloth bound. Price 5s. net. Postage 5d.

The objects of the lectures contained in this admirable little volume is neither antiquarian, literary or academic. Their institution by the Carpenter Company and their publication aim to stimulate the ambition of the craftsman towards a higher ideal of attainment, and also, incidentally, to awaken a broader appreciation in others as to the possibilities of modern craftsmanship.

The text throughout dwells upon the importance of the arts which contribute to the creation of beautiful buildings, and their proper relation to each other; and it points out that if properly encouraged by the public and rightly directed, these arts should occupy the hands and thoughts of thousands of people, and do much to materially add to the vitality and interest of modern architecture.

The gentlemen who have given these lectures are prominently connected with the architectural profession in England, and are well known for their study of practical craftsmanship and the right use of material in building construction. These men are actuated solely by an earnest desire to see a revival of the best traditions of craftsmanship, believing that beautiful brickwork, plaster, woodwork and metal work can and should be brought within the reach of thousands of comparatively poor people who have now to be content with characterless, commonplace and mechanical productions.

In no way do these lectures convey the impression that either design or craftsmanship in itself is sufficient for good results, but rather that the design and the craftsmen must work in unity of belief as to the right and appropriate use of materials; and it is in the particularly interesting and comprehensive manner in which the importance of this relationship is touched upon in each of the many subjects, which make this complete little volume of immeasurable value to both the architect and craftsman.

Among the subjects treated are: Reason in Building; Influence of Material in Design in Woodwork; The Influence of Tools on Design; Ideas in Things; Ideals in Building, False and True; House and Church Furniture; Decorative Plasterwork; External Woodwork; and Decorative Ironwork.

All in all, the book is complete, thorough, instructive and entertaining. It is a volume which no architect's or craftsman's library is complete without, and yet one which, from the wide and important range of its subjects and splendid illustrations, is a complete library within itself.

BUILDING CONSTRUCTION AND SUPERINTENDENCE. By F. E. Kidder, C.E., Ph.D., Architect Fellow of the American Institute of Architects. Author of Architects' and Builders' Pocket-Book. Revised and enlarged by Thos. Nolan, M.S., A.M., Fellow of the American Institute of Architects, Assistant Professor of Architecture, University of Pennsylvania. Part I., ninth edition, revised, Mason's Work. 628 illustrations; pp. 985. One 8vo vol. Cloth. Price, \$6. New York: William T. Comstock.

The first edition of this work was brought out in 1896 and had 421 pages and 260 illustrations, and since then

as the different editions have been issued slight revisions have been made and occasional pages interpolated, but meanwhile the art of masonry has advanced until just before his death Mr. Kidder determined that it was necessary to reconstruct the whole work.

His health failing and feeling that his end was drawing near, he requested Prof. Nolan to undertake the work.

This the latter on account of his intimate knowledge of Mr. Kidder's plans and his own personal study of the subject was specially fitted to take up.

For more than a year past Prof. Nolan has devoted his entire time outside of college duties to gathering the material and putting the work in shape for publication, and as a result we have before us the most complete encyclopedia of masonry that has ever been offered to the architect and builder.

As the years have gone by since Mr. Kidder first brought out this work, masonry has grown both as an art and a science, and many new methods, new materials and appliances have been brought to the hand of the builder.

The work when first issued was the most complete representation of masonry that had up to then appeared, and the present edition in like manner represents the latest and best modern practice and all the new ideas and their application as developed up to this time.

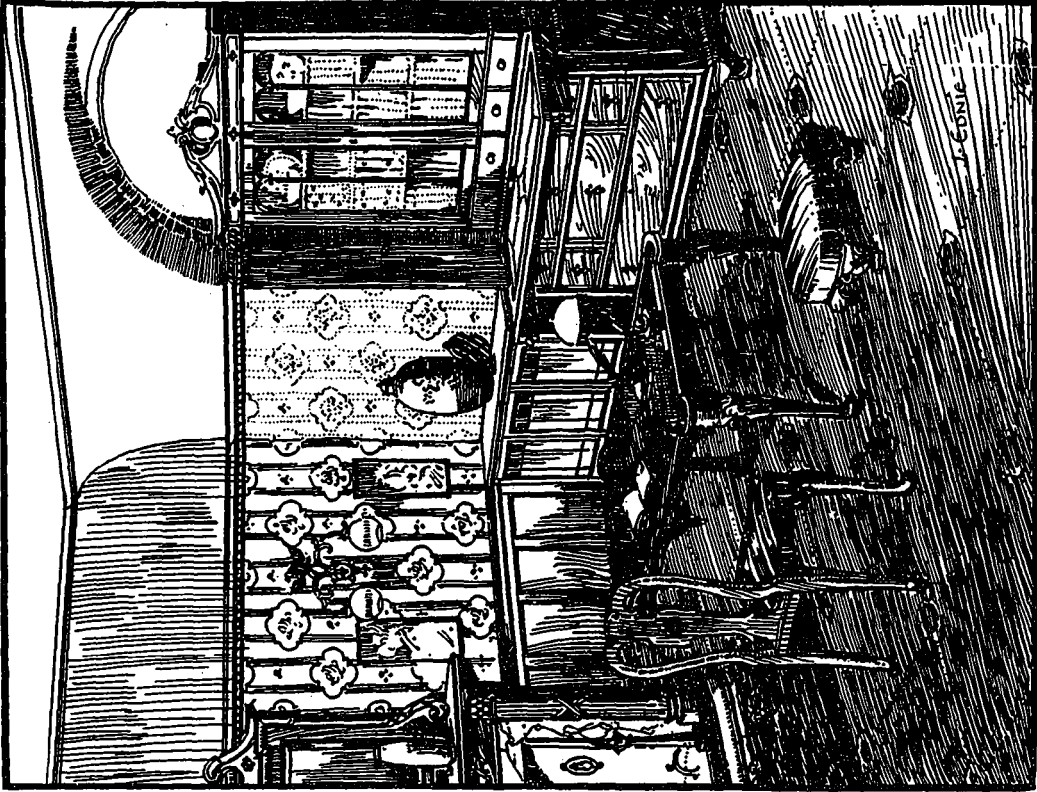
The work bears evidence of the time, labor, thought and persistent effort that has been put forth to collate, arrange and properly classify all the data that belongs to the latest and modern accepted practices.

To quote from Prof. Nolan's preface, "The new edition includes in general a careful examination of every article in the book and a revision of every one in which changes, omissions or additions of data or methods of procedure are deemed necessary or advisable; the omission of some articles and the additions of many new ones, the recruiting of some chapters and the addition of one entirely new chapter, the addition of nearly four hundred new illustrative constructive drawings; the addition of many new tables and formulas . . . and a new and comprehensive index."

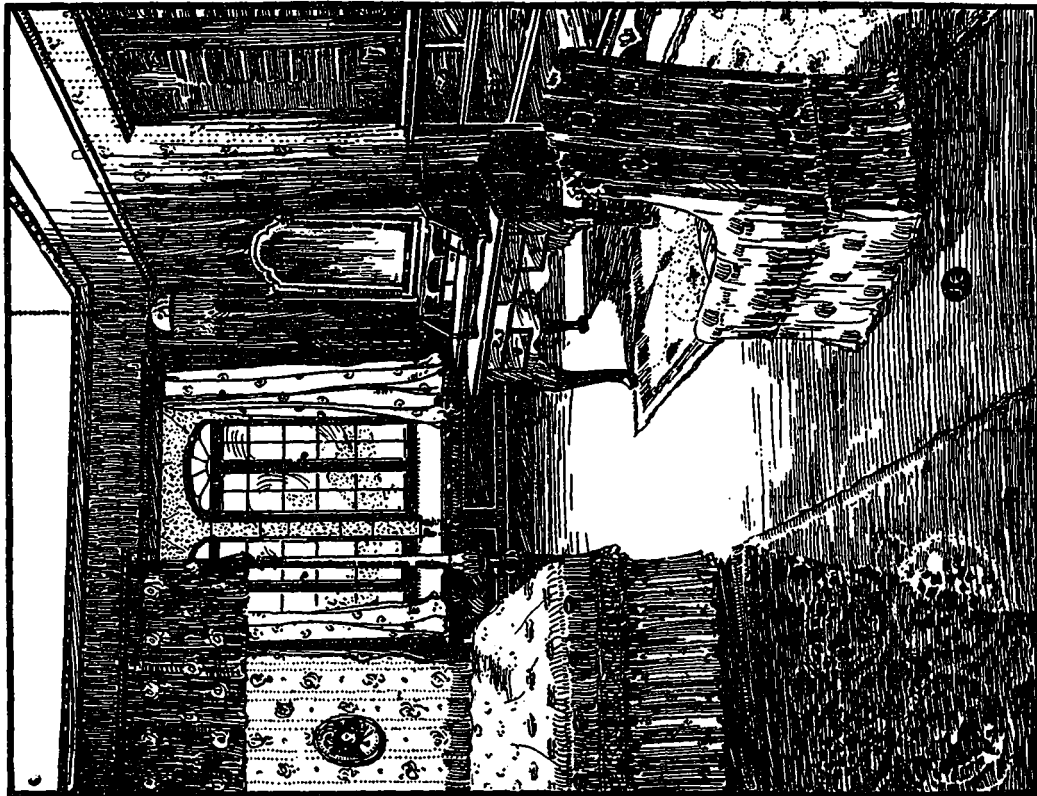
The chapter on "Concrete and Reinforced Concrete Construction" is entirely new and contains much more detailed information than many books on the subject. The chapter on "Fireproofing" is substantially new and has over 200 illustrations. Even in the old stand-by brick great changes have taken place, sand-lime brick being a new building material since Mr. Kidder's day. The chapter on specifications shows many and important changes, such as those on cement and concrete construction, where new specifications are given.

To enumerate the many and important changes that have been made would much exceed the space at our command. Suffice it to say the book will be found thorough and complete, a manual no architect, builder or engineer can afford to be without.

THE GRADING OF THE LAST SECTION of the extension of the Nanaimo Railway, owned by the C.P.R. interests on Vancouver Island to Abernethy, will shortly be under way. This section passes along the shores of Cameron Lake over the divide and into Alberni, and calls for considerable heavy rock work. It is estimated that in some parts the work will run up to \$60,000 a mile, and it may take 12 months to complete the grade. The tenders have all to be in by September 6. At present the grading of the work is practically completed from Wellington, the present terminus, to French Creek, a distance of 24 miles. A heavy rock cut, not far from Wellington, is the only portion remaining incomplete. Eight miles from the one hundredth milepost to the one hundredth and eight milepost at Cameron Lake was recently let. The section which is now to be let takes the remaining 27½ miles of the route.



Queen Anne Library, showing a high secretaire with writing flap at table height, and dwarf bookcases around the walls. The centre table with leather top and cabriole legs and claw feet is decidedly characteristic of the period. The floor is covered with an Eastern carpet, the wall hung in striped fabric, and the ceiling plain.



Queen Anne Bedroom. A most refreshing interior. Note the grace and beauty of the four post bed with its slim, symmetrical pillars, open end, and old English chintz furnishings. The woodwork is all dark polished mahogany, and the grazed fabric of the furnishings is repeated on walls and in window curtains.

QUEEN ANNE FURNITURE—Decorative Style that Bears Name of Eighteenth Century English Queen—Its Characteristic Feature, and the Strong Influence which it Exerts Over the Furniture of To-day—By J. Taylor.

POLITICAL movements have powerfully affected the course of art. The Roman Conquests carried the arts over Europe; the Arab invasion of the Byzantine cities led to the creation of the Saracenic style; religious and political persecution scattered the artists and draftsmen of the Southern States in Europe, many finding a ready asylum in England, where, under the patronage of an alien prince they influenced the whole character of the domestic arts, until, on the restoration of the native dynasty an effort was made to give expression to the national temperament.

The "Queen Anne" regime is memorable, for the lustre of arms that, like a nimbus reflected the crown; for an illustrious chapter in science and literature, Newton standing on the shore of time with visions of the truth of Eternity; Pope and Swift, Steele and Addison making contributions that have added to the joy and knowledge of every succeeding generation. But the one episode of the reign that for far reaching effect stands out from all others is the union of the crowns of England and Scotland, and the substitution of the arts of peace, for the profession and practice of war. The style that bears the name of the eighteenth century English Queen, dates from about her accession till toward the close of the reign of George II.

It may be described as the beginning of the Mahogany Age, for while walnut was yet vastly popular, the rich-toned timber that was to play such a prominent part in the history of furniture a hundred years afterward, was being freely imported from the West Indian Islands.

Queen Anne, a daughter of the Stuarts, succeeded a foreign prince, and the effort to get away from the paramount Dutch influence becomes apparent. There comes greater refinement, more ingenuity of construction, with fertility in design and freshness in detail. Comfort and convenience become the order of the day, sumptuously upholstered furniture, cunningly contrived desks and escritoires with spring locks and secret drawers date from this period. Other features are the folding card table, quaint mirror frames, interesting four-post bedsteads, and the old Dutch spoon-back chair with an unfamiliar splat, lower and more elaborately carved. The "tall-boy" is likewise introduced, and the chimney piece assumes an aspect familiar to all students of the style.

Let designers turn back to the year 1904, and think of the Trollope Parlor at the St. Louis Exposition; it was a carefully worked-out scheme in the Queen Anne style, down to the smallest detail! The silk paneled walls, with pilasters of dark wood, on which the lime tree "Grenling Gibbons" carving in high relief, showed to advantage. The richly upholstered furniture with superb Lyons velvet, the artistic hangings in Spitalfield silk, with all the accessories of a period in which furniture was beginning to assume a greater significance and usefulness, all contributed to the making of perhaps the most notable room at the World's Fair.

In the bedroom illustrated, the most striking feature is the four-poster, with slim, symmetrical pillars, open end, old English chintz furnishings; the glazed fabric being repeated on walls and in window curtains. Compared with the "Elizabethan" bedstead there is a grace and beauty here that is refreshing, and it is to the credit of the new world designer that he draws inspiration from the later period when his mind runs in the direction of the four-poster.

The wood work here is all dark polished mahogany, carefully stained to the mellow tone assumed by early

Eighteenth Century furniture, as seen at Hampton Court in England.

We have outgrown the period of elaboration, the simple life induces the simple taste; gathered valances and curtains terminating at the sill have taken the place of folded drapery, and hangings with half a yard of superfluous length for the questionable privilege of tucking them up.

The "Queen Anne" style denotes a return to sanity, if personally conducted by the Dutch artist and craftsman, what matters it? Note also the fine dressing table with cabriole legs, the chest wardrobe with flush framed doors and restrained inlay, the plain, deep fringe on wall, and the general "Colonial" suggestiveness over all.

The library, in English walnut, waxed, is worthy of some notice. It indicates a high secretaire, and dwarf bookcases round the walls. The secretaire has book cupboards above, with flaps to pull down at table height, lower part with chest of drawers, automatically locked with spring catch attached to the writing flap. The centre table is characteristic of the period, with leather top, cabriole legs and claw feet. For the rest the floor is covered with an eastern carpet, the walls are hung with striped fabric, on the chimney piece there is Venice marble, a convenient footstool is in an inviting position, and overhead there is the best of all ceilings, an absolutely plain one.

There can be no more interesting furniture period for the designer than the "Queen Anne" and early "Georgian," for these styles have influenced the best that is to be found in our furniture of to-day.

If to ramble through the historic palaces of France is a revelation of the Eighteenth Century art of that country, to study carefully the well preserved furniture and accessories at Hampton Court, is the best evidence that all the genius of the decorative arts was not confined to the southern side of the English channel.

Queen Anne may have sympathized with the revolutionary spirit that banished her unhappy father from the English throne, but during the twelve years in which she held the reins of power she encouraged and cultivated the domestic arts in a way that did credit to the successor of a Dutch monarch. And after two hundred years the fact is significant, that the style designated "Queen Anne" is more powerful in influencing the furniture of to-day than any since the time of Elizabeth.

All over England, in fine old mansion houses, genuine examples of Queen Anne furniture are carefully treasured to-day, while reproductions are in Eighteenth Century styles of architecture, that are making interesting the face of rural England.

HARDLY LESS IMPORTANT than the destruction of property, in considering the danger of loss by fire, is the factor of risk which cannot be covered in apolicy. When a shop is burned with complete loss the insurance companies make good the property destruction. But they cannot make compensation for the loss of business and the inability to fill orders or to accept them; the destruction of patterns and drawings; and the handicap which this all means in keeping a footing in the trade. The investment of an additional 10 per cent. on buildings, less the saving in insurance premiums and possibly in cost of maintenance, is a small matter as compared with immunity from crippling loss. A great deal of industrial building is contemplated which will materialize this year and next. The men upon whom the responsibility rests might do well to investigate thoroughly the subject as it is now presented by those who contribute to the improved construction.—CARPENTER & BUILDER.

WATERPROOFING CONCRETE.*—Modern Methods of Rendering Block and Monolithic Construction Impervious to Moisture.—The Membrane, Superficial, and Electrolyte Systems.—Experience and Knowledge of Conditions and Locality Necessary in Applying Treatment.

By LUCIUS E. ALLEN, A.B., Chemical Engineer

WHILE THE PRESENT METHODS of waterproofing have been developed within the past few years, it is of interest to know that to the Romans must be given the credit of first successfully manufacturing cement as well as initiating the first methods of waterproofing. Of the early history of waterproofing there is little known, as the literature on the subject is very meagre and therefore it must be taken on faith, and later information. It resembles the question asked of a small school boy: "Which is the largest city in Canada?" "Toronto," replied the boy. "Who told you so?" asked the teacher, and the boy promptly replied, "A gentleman from Toronto."

When the Romans invaded Gaul nearly 2,000 years ago, they discovered the mineral cerusite, from which they obtained lead. They soon found that if the lead was rolled into thin sheets and exposed to air and water it soon became coated with a white coating, or white lead, which retarded further corrosion and in many of the foundations of ancient Roman structures these thin lead sheets are to-day found. But this method of waterproofing was too expensive to ever become practicable and other methods were adopted.

Remarkable advances have been made in the past five years in the use of cement and concrete, and with its increased use, new problems of construction have arisen which have been successfully met. As the ultimate success or failure of any article used for construction or building purposes, to meet all requirements under various conditions, depends largely upon the thoroughness with which economical and practical methods have been worked out to meet these conditions, it behooves all those interested in the use of concrete to quickly adopt those methods that have proven successful in practical work. As a famous American has said, "It is a condition and not a theory which confronts us."

One of the most important questions which confronts many concrete workers is that of rendering concrete water and damp proof, and it is this question which I desire to briefly discuss. Bearing in mind that it is a condition and not a theory to be evolved, I propose to consider first the composition or make-up of concrete itself, in order to gain a better understanding of the character of the material to be waterproofed. Concrete is a term which covers many forms of building construction, but may be defined as a solid mass which may be composed of an aggregate of sand, gravel, crushed stone and Portland cement, mixed in a wet or semi-wet condition and placed in forms or moulded into blocks, brick or other monolithic forms. As there are so many varieties of aggregate used in various localities, it is difficult to specify or to define the exact relations in which these elements exist in the finished concrete, and while, with certain materials, the concrete will be porous, water easily permeating through it, with other materials the concrete will be more dense and more nearly waterproof. There is also the question of the proper proportioning and mixing of the materials which in many cases is the cause of poor concrete, and should not be taken as evidence against the use of concrete itself.

Sand.—It is important to use a graded sand of uniform character, neither too fine nor too coarse, and while it has always been said that sand, which contained any appreciable amount of loam or clay, was exceedingly detrimental to good concrete, many good authorities now claim that a certain amount of clay, if properly mixed with the sand, is not injurious, and in fact will make a more impermeable concrete than with clean sand.

Crushed Stone.—As the aggregate may be made up of fine or coarse crushed stone or gravel, the proportions of sand to the aggregate should be properly made, always bearing in mind to obtain as low a percentage of voids as possible. It is also important that the crushed stone be clean and that the amount of dust be as small as possible. As an instance of the injurious effect of any considerable amount of limestone dust in crushed stone, the speaker had occasion to inspect an important job where the contractors were making complaint that there was a fine white dust in the cement which rose to the surface of the concrete after work was stopped at the close of each day. In this particular job the concrete was mixed very wet, and there being such large porportion of limestone dust of lower specific gravity than the cement, the limestone dust rose to the surface and left a scum which it was necessary to remove in order to secure a good bond.

Cement.—It is very important also to use a well seasoned and high grade Portland cement in all work where it is desired to obtain a damp proof wall. It is especially desirable that the Portland cement be as finely ground as possible, as the finer the cement is ground, the more dense the concrete will be, and will also carry more sand than the coarser ground cement.

Classification of Processes.—It can be no longer denied that concrete may be rendered waterproof, and that structures built of that material may be made dry, and as comfortable to live in as those made from brick, wood or stone. In discussing the various methods now in use, I propose to follow the classification usually made, as the classification adopted logically determines the treatment to be followed. The classification may be based, first on the method or mode of construction, second the nature

or kind of structure, and third, the nature of the material employed.

The first classification may, for convenience, be subdivided into three methods: First, "The Membrane System"; second, "Superficial Coverings"; third, "Integral" or "The Electrolyte" system.

The Membrane System consists of an unbroken shield of bituminous material, which may or may not be reinforced with a fabric of felt, burlap or other material, and is particularly intended for that part of the structure beneath the ground level, i.e. for foundation work, also for floors of bridges and dwellings and for roofs.

The second, or "System of Superficial Coverings," may consist of one or more layers of damp resisting or waterproof material, and is adapted particularly to the super-structure of buildings, to prevent percolation through lining of sewers, conduits, etc.

The third, or "Integral or Electrolyte System," is that in which the concrete mass is itself impregnated with any substance which renders it impermeable to water and dampness and may be employed more generally than any other system.

It is possible and is many times advisable to combine one or more methods in the same work wherever the expense warrants it, and the character of the waterproofing is absolutely essential and desirable.

Mr. Myron H. Lewis, C.E., has tersely outlined the materials used in the "Membrane Method." The materials employed are coal tar pitch, asphalt, and bituminous compounds made in special formulas. The reinforcing materials consist usually of wool felt saturated with coal tar, asphalt, or special compound, or treated burlap, which may be used either singly or supplementary to each other. The materials are placed in the walls or floor to be waterproofed, in one or more layers, the number to be determined by the character of the work and the hydrostatic pressure to be resisted. Where the waterproofing is thoroughly protected from the changes of temperature and no danger of cracking from this cause is anticipated, coal tar may be used owing to cheapness. Where the waterproofing is situated in a structure near extensive sewers or polluted tidal waters, asphalt may be attacked and coal tar indicated. Asphalt, however, is more elastic. Special compounds are on the market which are acid, alkali, and gas proof, and may be applied in a cold liquid form. It is also most important that the waterproofing layer or membrane be continuous. During the construction this class of waterproofing should be protected from the heat of the sun, until it is thoroughly hardened. To sum up the use of the Membrane Method the following rules should be carefully followed:—

1. No waterproofing, especially for difficult and water-pressure work, should be undertaken when the temperature is below 25 degrees F.

2. Allow sufficient time, room, and accommodations in which to properly apply the materials.

3. Design the structure to properly receive waterproofing for the design will either make impossible proper waterproofing or will invalidate the best materials after they are in place.

4. Specify always that the waterproofing shall be done only by experienced and skilled labor.

5. Thoroughly protect the waterproofing during and after application.

6. Inspect waterproofing at all times during application.

7. Do not depend upon guarantees.

8. Do not use a set or standard specification.

The second method of waterproofing, which may be termed a method of Superficial Covering, may consist of one or more applications or layers of a damp resisting medium on the surface of the concrete mass. This application may consist of a wash or liquid, which may be brushed over the concrete surface and which is gradually absorbed by the concrete filling up the pores in the same manner as white lead covers and fills a wood surface. While there are many compounds on the market based on this method, some of which are quite satisfactory, the best concrete engineers do not consider this to be as lasting as either the Membrane Method or the Integral System. The reason for this is that a large number of these coatings if exposed to severe weather conditions, will gradually become chipped or will scale off, leaving the concrete nearly as porous as it was before being treated. In many cases also the compound used is detrimental to the concrete itself, as a large number of these compounds depend upon some chemical reaction between the compound itself and the concrete. Profs. Hauenschild and Kessler, well known German chemists, invented Fluosilicate of Magnesia, technically termed Fluate. It has been used in Europe quite extensively and the Paris Opera House, the Kaiser's Palace in Potsdam and many other buildings have been treated with Fluate with marked success. It requires, however, a year or more to become entirely efficient.

The "Integral Electrolyte" system can, I believe, be more generally used than either of the other two systems, and if

*Paper read at Toronto before the first annual convention of the Canadian Cement and Concrete Association.



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properly used will give the best results. This system of waterproofing depends entirely upon the use of a medium which may be mixed with the concrete itself, filling the voids in the mass, and rendering the concrete impermeable to dampness and water. There is only one way to both insulate and damp proof a building constructed of concrete, whether it be of blocks or solid concrete, and that is to render the concrete absolutely impervious to moisture. If this be done, not only is moisture prevented from entering the block, but the air contained in the cells of the block or wall is protected against pressure from the outside; that is confined in small cells, which is acknowledged by all authorities to be the best known conductor possible to obtain. If we attempt to waterproof from the inside alone and allow the dampness to pass through the outer wall and thence through the air space and reach the back side of the waterproofing membrane, we do not secure the efficiency that may be possible by rendering the entire mass absolutely impervious to moisture. The absorption of moisture by stone, brick, cement or concrete ultimately results either in decay or disintegration so that if the concrete can be made impervious, it prevents the mechanical action of water passing through and among the particles of concrete, thereby disintegrating the mass and also the action of chemically charged moisture, which is responsible for the ultimate decay of all building material. In the case of concrete blocks, if it were possible to trowel and finish off the face of the block the same as a sidewalk is finished, there would be very little penetration of moisture, but this is in many cases impractical. It seems, therefore, that the simplest, most practical and least expensive method is to impregnate the mass either with a liquid or solid substance which will render it absolutely impervious to moisture. It must also be borne in mind that whatever material is used, it must not be of such a nature as to discolor or injure the concrete. I desire to take up briefly some of the various methods and materials that are now being used for this purpose. There are many excellent waterproofing compounds, some in liquid form and others in a powder which may be easily mixed with the concrete and which if properly used will give very good results. Care should be taken in the selection of waterproofing compounds, so that no compound which has not proven successful by long usage be used. The base, or principal component, of many of these compounds is some organic resinous acid which combines with the free lime liberated and in solution to form a resinate of lime. There are also many compounds containing paraffine or bituminous bases hydrated lime, etc.

Mr. Richard H. Gaines, of the New York City Board of Water Supply, has secured excellent results in waterproofing concrete by the substitution of five to ten per cent. of the cement by weight of dry and finely ground colloidal clay, using a small percentage of alum solution in the water used for the mixing. He has shown that the permeability reduces almost to zero by increasing strength of solution to five per cent. and an increasing strength up to two and a half per cent. solution, and a decrease for greater strength of solution. The addition of colloidal clay shows a reduction in permeability to zero and material increase in strength for 5 to 10 per cent. of clay. The use of both produces similar results. In this case the clay acts as a colloid, and is of a jelly-like nature, coating the grains of sand and filling all voids. The compressive strength of one to three mortar briquets at 28 days was 1,635 pounds per square inch. The substitution of five per cent. of colloidal clay in the cement increased the compressive strength to 2,350 pounds. The tensile strength was increased from 205 pounds without clay to 258 and 335 pounds with 5 and 10 per cent. of clay respectively. There are doubtless many classes of work where it would be possible to use a good clay, which would be much cheaper than some other kinds of waterproofing material. There has been a large amount of work done both experimentally and in actual work with the use of hydrated lime as a waterproofing medium and for many kinds of concrete work this is undoubtedly one of the simplest and most efficient methods of waterproofing concrete. It has long been known that if small proportions of lime putty were thoroughly incorporated in concrete that the resulting mass was much more waterproof than with cement and sand alone, but until the last few years it has not been possible to secure lime in a commercial hydrated form suitable for this work. It is not only difficult but disagreeable to secure a good mixture of lime putty and concrete and the best results are obtained when the lime is mixed with the Portland cement dry before the water is added. I desire to show herewith the results of some long time tests made with the use of various mixtures of Portland cement, sand and hydrated lime which were made by Dr. E. W. Lazell, Consulting Engineer, Philadelphia, Pa., and these tests show conclusively that there is gain in tensile strength with the use of hydrated lime and the porosity is reduced to zero under a water pressure of 30 pounds per square inch. An excellent example of waterproofing concrete with the use of hydrated lime is given by Mr. Bertram Brewer, City Engineer, Waltham, Mass., in the construction of a two million gallon re-inforced concrete reservoir. Five per cent. of Hydrated lime was added, rendering the reservoir waterproof. Mr. W. Purvis Taylor, Engineer of Tests, City of Philadelphia, Pa., also corroborates the results of the use of hydrated lime for waterproofing concrete. For the manufacture of concrete blocks, walls, reservoirs, cisterns and concrete dams, there is no better or cheaper method of waterproofing than the use of a reasonable amount of high Calcium hydrated lime properly and thoroughly mixed with the Portland cement. The principle upon which the hydrated lime renders the concrete impervious to moisture depends largely upon the physical action of the hydrated lime in filling up the voids and rendering the concrete mass so dense that water or moisture cannot penetrate through it. On the other hand there is little, if any, chemical action between hydrated lime and concrete and wherever the surface is exposed to the action of air or water there is a gradual carbonization of the lime to carbonate of lime, so that its waterproofing qualities increases with age instead of diminishing, as with many other superficial coatings.

In summing up the various methods of waterproofing concrete, it must be borne in mind that there is no set rules to go by, neither could one waterproofing material be used under all conditions and in all places. On work of any great importance competent engineers should be secured to draw up specifications covering the class of waterproofing to be used for the building of the structure, and the resulting work should be carefully inspected, as much harm and expense may be caused by the improper use of the waterproofing material if improperly used. As the use of concrete is entering into so many new channels the modern user of concrete should adopt, and put into practice and become experienced in the use of such waterproofing methods and materials as his particular work may require. I desire to emphasize this fact, that as users of concrete in its various forms, we cannot ignore the absolute necessity of recognizing the vital importance to this industry of properly protecting and waterproofing concrete. As the construction of concrete houses and buildings becomes more common, the public will demand that they be as damp proof and healthful to live in as if constructed from wood, stone or brick. It therefore behooves architects, concrete engineers and builders to study this question carefully so they may be prepared to successfully meet the many problems of waterproofing concrete.

SPECIFYING SHEET METAL WORK.

MORE OR LESS DISCUSSION has recently developed regarding the manner in which the sheet metal work in connection with a building is often covered by the average architects' specifications, which in many instances are made to include in combination form tin, slate and galvanized ironwork, together with metal ceiling in either copper or steel, as may be desired. It has generally been recognized ever since metal ceilings, siding, wainscoting, etc., were first devised that they constitute a different line of sheet metal work from that regularly conducted in the average sheet metal shop. Manufacturers who specialize in the production of sheet metal products for the interior of a building have found that dissatisfaction frequently results from the custom of architects to combine sheet metal work in the manner indicated, and many who turn out artistic ceilings, siding, coves, friezes, etc., are endeavoring to induce architects and builders to separate the two classes of sheet metal work and specify them accordingly, so that separate bids may be tendered therefor. It is well understood that the average shop making a specialty of skylight work, the roofing, etc., is not always properly equipped to advantageously take up the business of installing metal ceilings and other sheet metal work now widely used for the interior decoration of buildings, whether they be intended for dwelling or for business purposes. On the other hand, many of the establishments making a specialty of interior sheet metal work are not always in a position to do outside metal work. It is, therefore, well not to lose sight of the fact that the metal ceiling industry stands by itself, and that specifying this class of work by a separate clause without any connection with the tin, slate, galvanized iron or gravel roofing feature would prove advantageous in many ways. It should be borne in mind, too, that there are establishments in the country which have made a special study of metal ceiling and copper work for interior finish and which would not be able to submit figures made up in the combination form to which incidental reference has been made. By recognizing the fact that while the material is sheet metal its application is a special division of the industry and entirely different from the ordinary sheet metal work as turned out in the roofing and skylight shop. Certainly the desired change in practice would still leave the one shop open to bid for both kinds of work, if such a course seemed desirable to the proprietor. There is always some friction on the line of cleavage, and it is probable that considerable energy must be expended before architects recognize the merit of the separation of the two classes of the work. Whether or not sheet metal workers generally will aid manufacturers of specialties to induce architects to separate these two classes may be a question, but it is certain that most of the labor will fall upon manufacturers of interior sheet metal decorative panels and ceilings in their visits to architects.—*Carpentry and Builder*.

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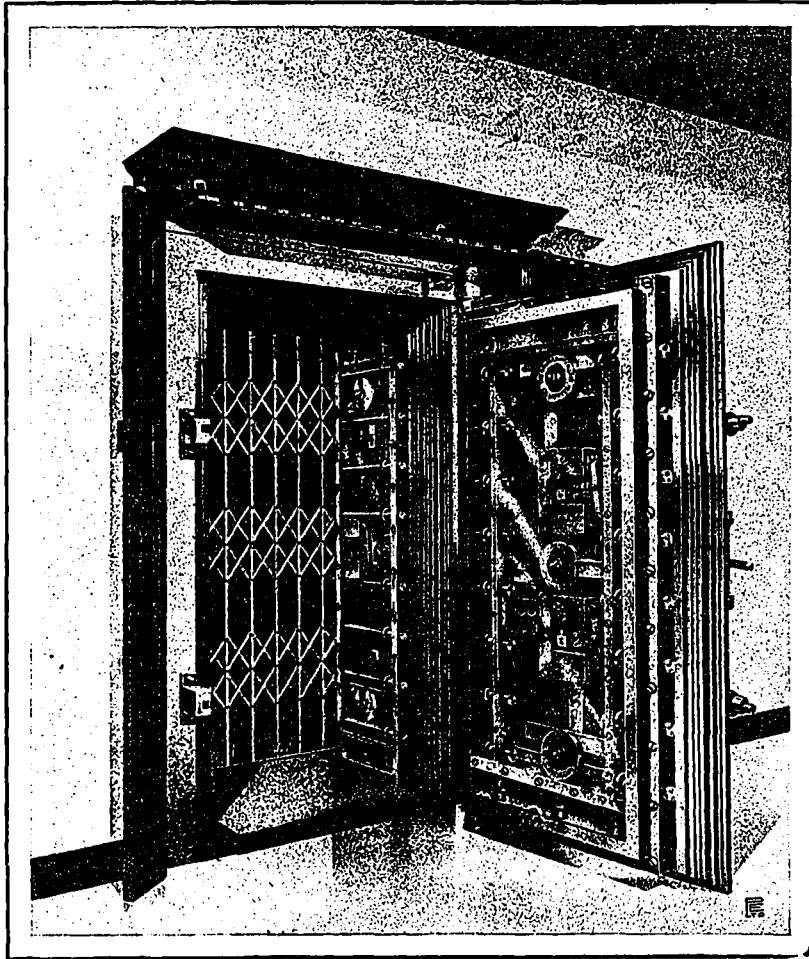


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LARGE GAS PRODUCER PLANT.

WHAT WILL BE by far the largest gas producer plant in Canada is shortly to be installed by the Colonial Engineering Company, 222 St. James street, Montreal, for the Dominion Light, Heat and Power Company of that city, the contract for the plant having just been closed. The contract provides for 1,000 h.p. Hornsby-Stockport gas engine equipment which will generate power for the purpose of public and private lighting and commercial uses, in accordance with the franchise granted to the Dominion Light, Heat and Power Company at the last session of the Quebec Legislature, by which the company is authorized to produce and sell electric current for all purposes.

The equipment will consist of three 250 h.p. twin cylinder Hornsby-Stockport gas engine units and two 125 h.p. units. The station will be the most modern one of the kind in the Dominion, if not on the continent, the building to be of concrete construction throughout, and 3-phase 60-cycle alternating current will be generated. Under the contract between the Colonial Engineering Company, Limited, and the Dominion Light, Heat and Power Company, this plant is to be in operation by December next, and considering the fact that the Colonial Engineering Company has already made fourteen very successful installations in the Dominion, it is expected that this plant will be a success in every respect, and, when completed, will attract the attention of the engineering fraternity not only in Montreal and Canada, but from elsewhere.

Anthracite pea coal, coke or charcoal will be the available fuels. There will be no unsightly chimney; no smoke nuisance, no unpleasant odors or disagreeable noises of any kind.

It is understood that a number of very prominent Montreal capitalists are behind the enterprise, and in view of the proposition which the Colonial Engineering Company has recently put before the City Council of Montreal concerning the cost of its street lighting and what the Colonial Engineering Company is prepared to do, the installation, operation and results obtained in this 1,000 plant will be watched with great interest.

The Colonial Engineering Company have also just secured a contract from the C. S. Hyman & Co., of London, Ont. (the Hon. C. S. Hyman, formerly Minister of Public Works) for the installation of 275 h.p. Hornsby-Stockport gas engines for their large tannery in London, and have guaranteed to produce the power, including fixed charges, for \$18.80 per year per h.p., which, it is said, will be \$4.70 per annum per h.p., less than the city of London itself will have to pay the Hydro-Electric Commission.

TO EXHIBIT INTERESTING MODELS.

ONE OF THE PROMINENT ENGLISH FIRMS who will exhibit at the Canadian National Exhibition this year is Major & Co., Ltd., of Hull, Eng. This firm are the manufacturers of "Solignum," the wood preservative and stain which is now being extensively used in this country. We learn from Mr. Sturgeon, the Dominion representative, that they are building a stand in the north-east corner of the Process building, where the various uses of this preservative for inside and outside work will be demonstrated. A feature of the exhibit will be three valuable models—an English residence, a farm building,

and a railway station—which are being imported from England for the occasion. These models will undoubtedly prove of great interest to the architects, contractors and builders who will be in attendance, as they not only show the successful and artistic results which can be obtained by the use of "Solignum," but also the additional advantage of its wood preserving qualities.

TEST OF CONCRETE BEAM.

AN INTERESTING TEST of a reinforced beam, one of 600 structural members of the same length and size, used in the construction of the power house of the Shawinigan Water and Power Company, at Shawinigan Falls, Que., and made in accordance with the "Siegwart System," by La Compagnie Alpha, engineers and contractors, 17 Place D'Armes Hill, Montreal, is shown in the accompanying illustration. This beam, measuring 9 ft. in length, 4 3/4 inches deep and 10 1/4 inches wide, was subjected to the test when it was thirty-five days old and, although designed and guaranteed to carry only a safe load of 100 lbs. per square foot, no manifestation of a fracture appeared until the superimposed load, which consisted of bags of cement, attained the weight of 490 lbs. per square foot.

Test of a Siegwart Beam.			
Loads.	Per sq. ft.		
9 Bags cement	100 lbs.	1-16 in.	deflection.
17 " "	190 "	3-16 "	" "
26 " "	290 "	13-32 "	" "
35 " "	390 "	5-8 "	" "
40 " "	445 "	29-32 "	" "
44 " "	490 "	13-4 "	" (beginning to break on under side)

After load was taken off deflection was 1-8 in.

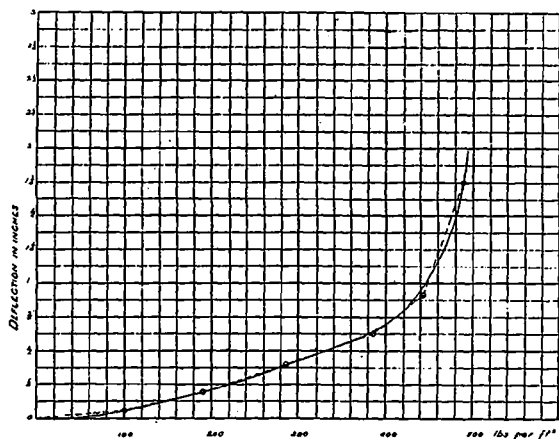


Diagram of Deformation of Siegwart Beam designed for the Power House of the Shawinigan Water and Power Company.

Although La Compagnie Alpha is a new firm in the field, they are fully prepared to estimate on important work, and to execute contracts in any part of the Dominion. Their staff of engineers is composed of men with a broad contracting experience, who are at the services of the architects and builders, and in view of the highly creditable manner in which they carried out the work at the power house of the Shawinigan Water and Power Company, the company bids strongly to become an important factor in the engineering and contracting field of Canada.

Information regarding the "Siegwart Beam and Method of Fireproof Floor Construction," together with estimates, etc., will be cheerfully furnished by La Compagnie Alpha to any interested party.

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EXTENSION TO PLANT.

IN ORDER TO MORE FULLY meet the requirements of their rapidly growing business, the B. Greening Wire Company have under construction at their works in Hamilton, a new building which is to be devoted exclusively to the manufacture of wire rope. This addition to their already extensive plant will be a one-storey concrete and brick structure, 124 ft. by 112 ft., with a roof of saw tooth construction, and foundation and flooring built of solid concrete, so as to adequately withstand the weight of the heavy machinery and large reels of cable which it will be required to bear. The company has placed orders for additional rope machinery of the latest design, and the equipment of the new factory is to be model in every respect. Architect W. A. Edwards, Hamilton, who has charge of the work, expects that the new building will be completed and the machinery installed by the first of November, when the present rope mill will be utilized as an extension to the wire working branch of the business. This arrangement will provide much needed facilities for this rapidly expanding department, and will enable the company to better take care of the increasing demand for their wire guards, garden fencing and borderings, factory lockers, and other kindred products which they manufacture. The company has recently issued a series of splendid catalogues which are of inestimable value to architects and builders in specifying or selecting materials of this kind, and which will be sent to any address upon request.

ACTION TO PROTECT PATENT RIGHTS.

AN ACTION HAS BEEN BROUGHT by the Trussed Concrete Steel Company in the United States District Court in Chicago, against the Monolith Steel Company of Washington, D.C., and one of their clients, a Chicago contractor, for alleged infringements of patent rights. This suit has been instituted by the company as a test case, with a view of prosecuting any firm or firms manufacturing or marketing reinforcing rods, having *rigidly connected shear members* in imitation of the "Kahn Trussed Bar." In order that Canadian architects and builders may properly protect their interests from any attempt to invade the Dominion with these infringements, the company has sent out notices relative to their action in the matter, together with a declaration of their intentions to hold to a strict accounting every contractor or owner who employs rods, which in any way structurally encroach upon the patent features of the Kahn System.

WELL KNOWN FIRM INCORPORATES.

THE EADIE-DOUGLAS COMPANY, Montreal and Toronto, owing to the large increase in their business, has been incorporated by Dominion Charter under the name of "Eadie-Douglas, Limited." The officers and directors being: H. P. Douglas, president; Shirley Ogilvie, vice-president; H. G. Eadie, secretary-treasurer, (all of Montreal); J. W. Woods, director, Ottawa.

CEILING MATERIALS IN SOUTH AFRICA.

PLASTERED CEILINGS are not common in South Africa, as in Canada, and to lath and plaster the inside of a building is unknown in that country. It was usual, until the introduction of metal ceilings, to use matched ceiling boards or leave the overhead beams exposed with only a coating of stain and varnish or paint to decorate them. The extent to which metal ceilings can be con-

sidered a boon to South Africa will be best understood when it is remembered that all timber suitable for ceiling boards must be imported from countries over-seas, as South Africa produces none which can be used for that purpose.

It is estimated by those in the trade that for the past five years the average annual importations by Cape Town merchants amounted to 4,800 squares of 100 sq. ft., or 480,000 sq. ft. It is also estimated that 500 squares, or 50,000 sq. ft., are consumed in the Transvaal per month. Metal ceilings are becoming more and more used in South Africa and are being put up in mercantile buildings, offices, schools, churches and many private houses. As they come into competition chiefly with ceiling boards, the aim of the firms handling them is to sell as near as possible to the price of ceiling boards. The advantages of metal ceilings over ceiling boards is now generally recognized, and where expense is not too closely considered the metal is being used exclusively.

Ceiling boards sell in South Africa at \$3.04 to \$3.65 per square of 100 sq. ft., and the landed cost of metal ceilings is \$3.41 to \$4.87 per square. The present customs tariff admits ceiling boards of British origin into the South African customs union free, and those from foreign countries at 3 per cent. ad valorem, while metal ceilings of British origin are charged 12 per cent. and foreign 15 per cent. ad valorem. This gives the ceiling boards a very considerable advantage, but it is thought that when the customs tariff is revised, the two will be placed on an equal footing, as both have to be imported and both are used in the erection of houses, to reduce the cost of which is believed by every one to be essential.

Metal ceilings have been imported from both Canada and the United States. U.S. Consul-General Julius G. Lay, Cape Town, is informed that Canada gets more than double the amount of the trade enjoyed by the United States.

PAINTING OVER CEMENT.

ACCORDING TO THOSE WHO KNOW, it is not safe to paint over the surface of cement until it has stood exposed to the weather for a year or so, unless the surface has first been sized with acid water to kill the alkali, and even then there is said to be some danger of bad results. A writer in a recent issue of *The Master Painter* points out a method, however, which has the sanction of many good painters. It is as follows:

Slack half a bushel of fresh stone lime in a barrel and add in all 25 gallons of water; when slacked and cold, add 6 gallons of the best cider vinegar and 5 pounds of the best dry Venetian red. Mix well and then strain through a fine wire strainer. Use it when about the consistency of thin cream. Give the cement surface a coat of this and after standing a day or so apply a coat of red lead and linseed oil paint. After this has dried the surface may be painted any color desired.

Some jobs require two coats of paint over the red lead paint. In this case make the second coat serve as filler and paint both. This second coat may be made with plaster paris and oil of the consistency of buttermilk. Then break up some white lead and oil to make a paint the same consistency as the plaster paint. Take equal parts of each of the two mixtures and "box" them together, and thin to a working consistency with turpentine. This second coat should be applied as heavy as possible, or as heavy as can be spread well. After this coat is dry, apply the next and finishing coat of paint, which should be quite glossy, or about the same as the last coat on outside woodwork.

The object in giving it this plaster paint is to prevent the running and wrinkling of the paint where considerable paint is to be applied to the surface. And it must be made to dry quickly.

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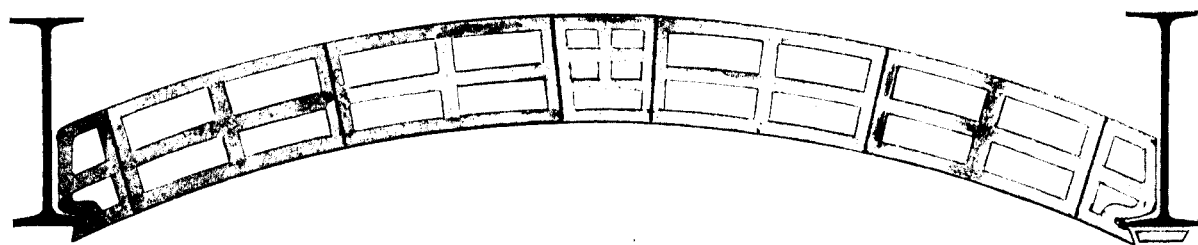
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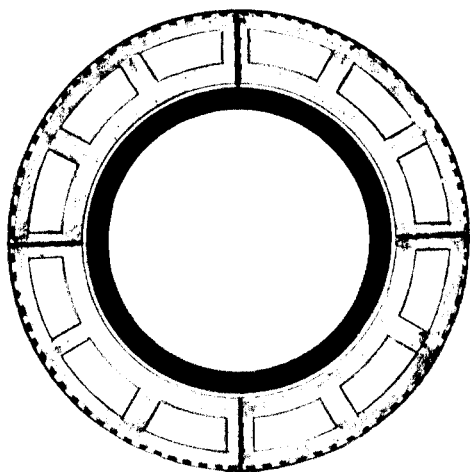
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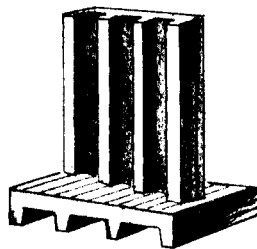
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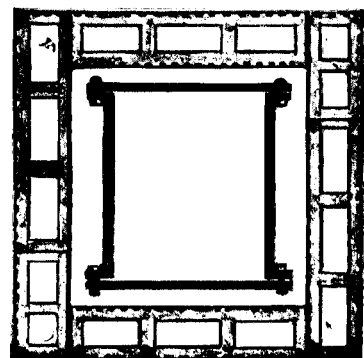
SECTION SHOWING STYLE OF SKEWBACKS AND KEY.



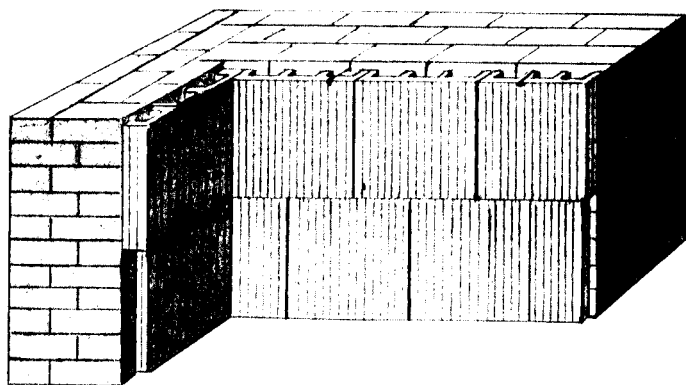
TYPE OF COLUMN COVERING.



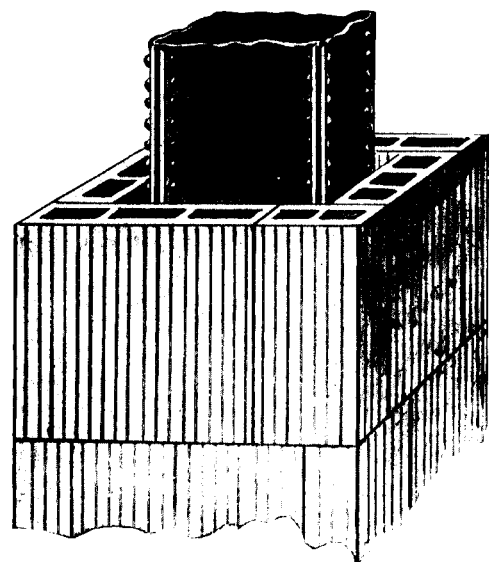
2 IN. FURRING.



TYPE OF COLUMN COVERING.



FURRING APPLIED TO WALL.



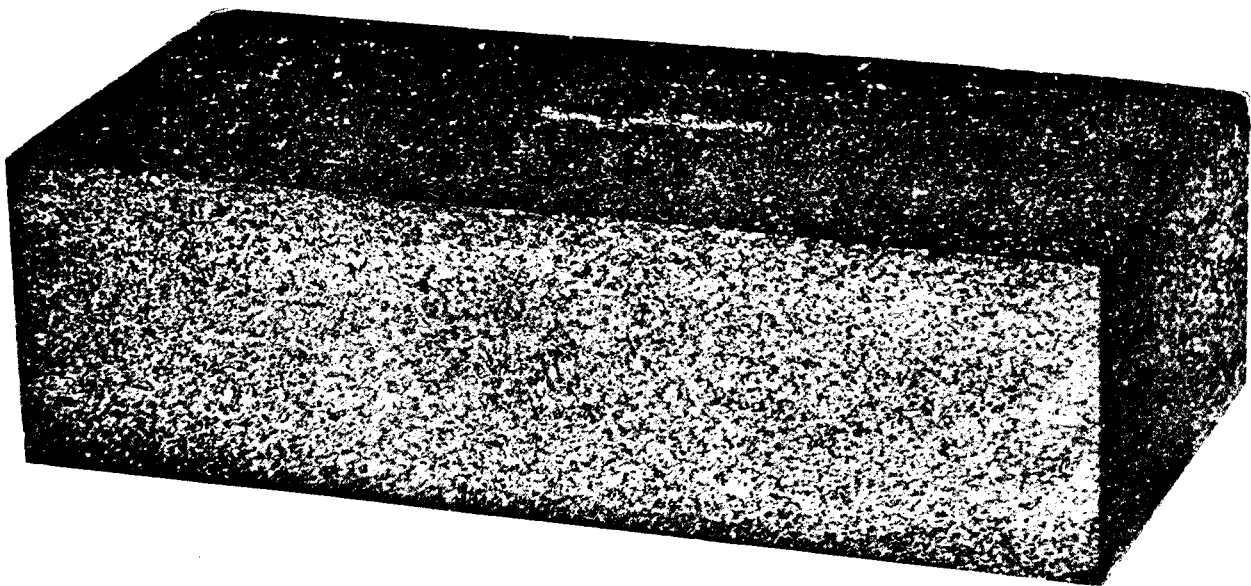
PERSPECTIVE OF COLUMN COVERING.

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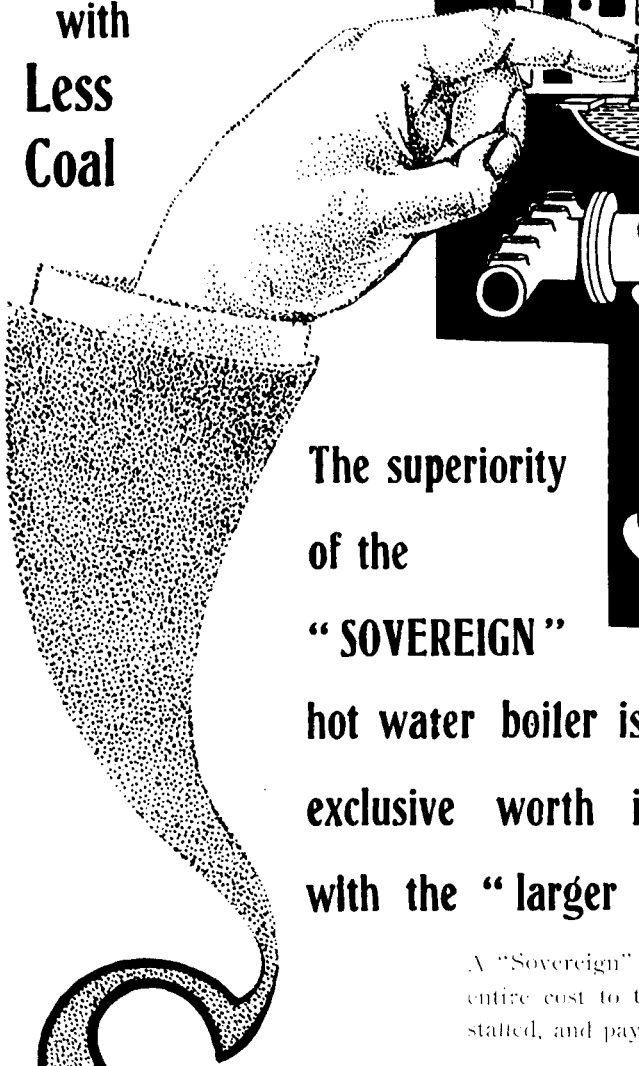
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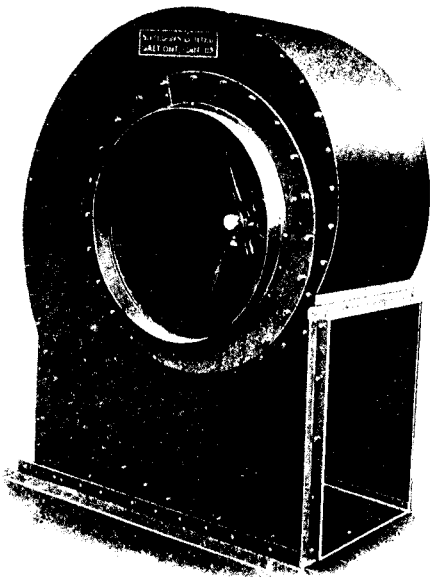
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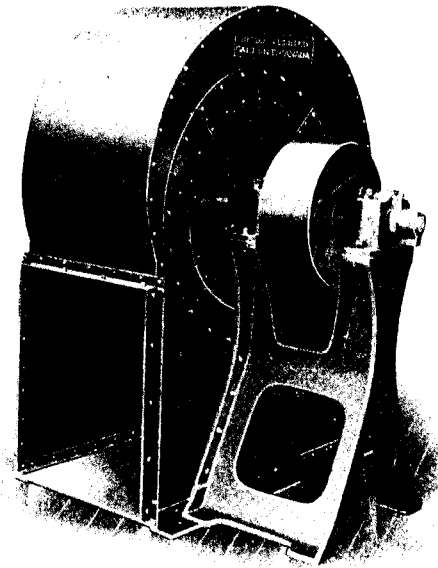
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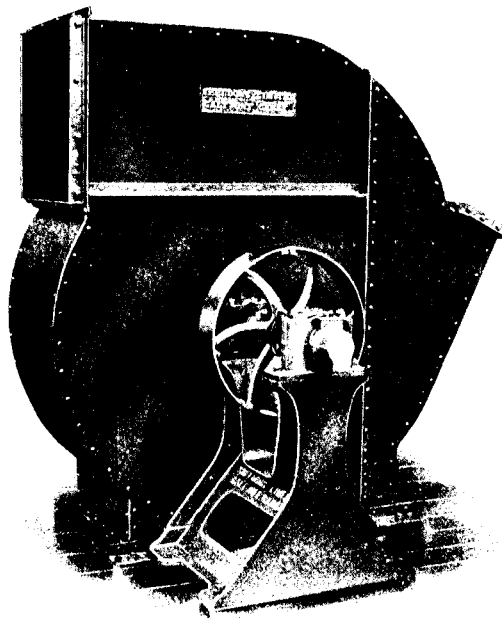
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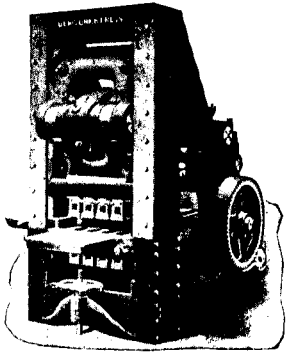
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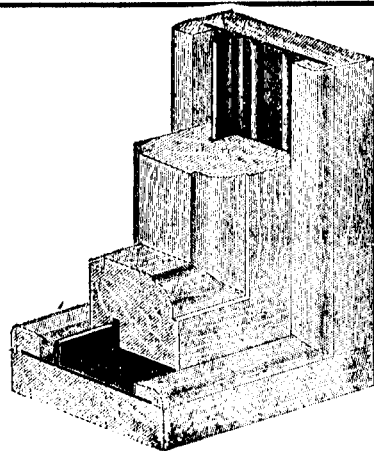
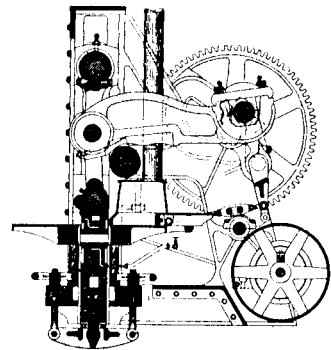
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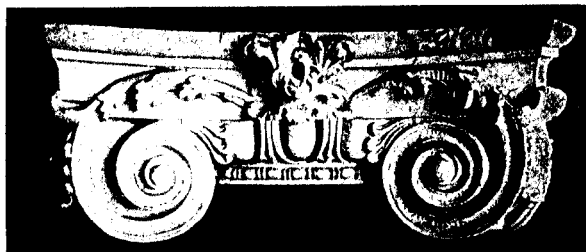
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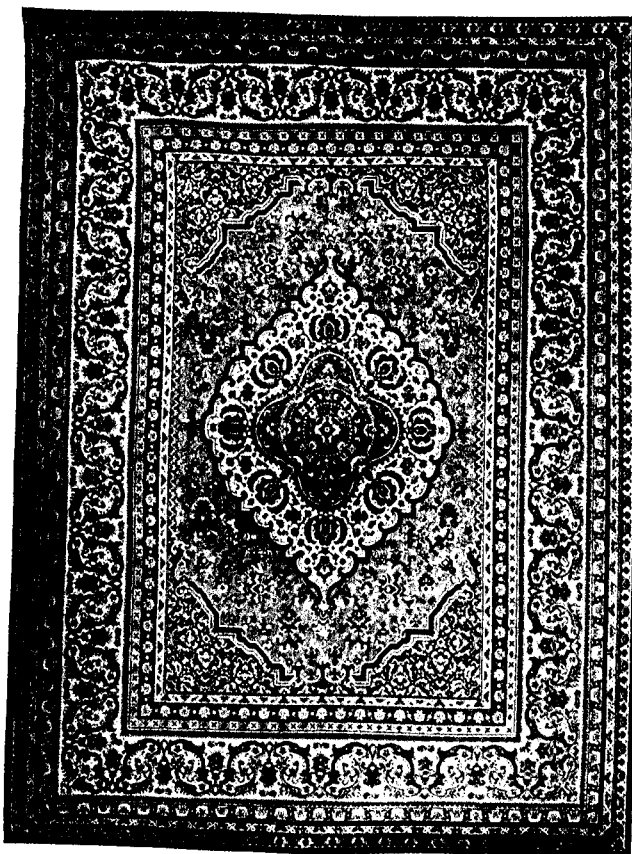
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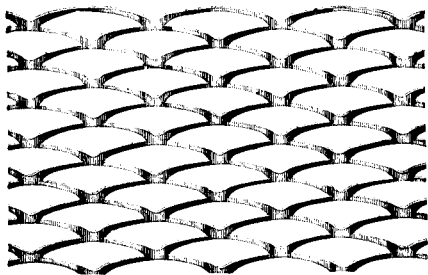
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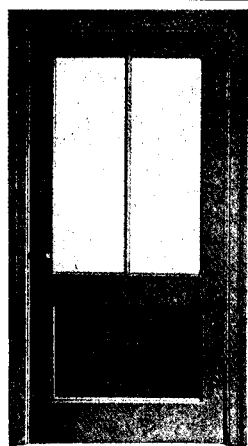
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Alumina and Iron	12.3
Lime	17.0
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Molsture and Carbon Dioxide	13.3

FUSION TEST OF WATER-WASHED SAND

Sample ground to pass 80 mesh and compressed in form of Segar cone.

Temp. C.	Temp. F.	Behaviour.
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1350°	2460°	Cone softened.
Unground material heated in crucible.		
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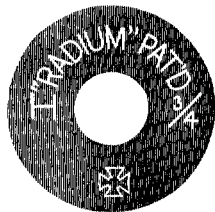
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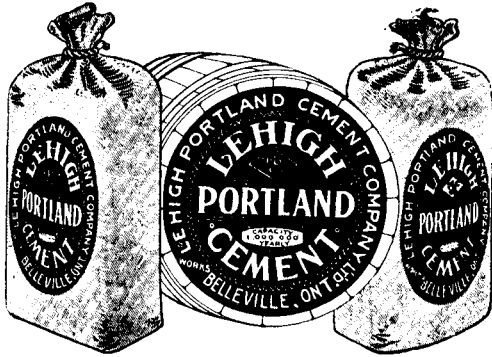
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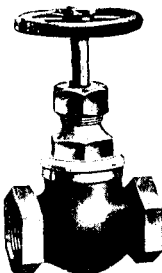
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INSTEAD OF LATH



Christian Bros. School, Longueuil, P.Q., recently completed. 18,000 square yards of SACKETT PLASTER BOARD were used in this building.

Architects in Canada are rapidly realizing the unequalled advantages of SACKETT PLASTER BOARD over both wood and metal lath, for various reasons:—

First—Walls and ceilings of SACKETT PLASTER BOARDS will be dry and ready in half the time required when lath is used, as less than half the quantity of water is needed.

The superior insulating qualities of SACKETT PLASTER BOARD makes a house warmer in winter and cooler in summer.

The first cost is no more than for good work on wood lath, and less than on metal lath. SACKETT PLASTER BOARD is an efficient and economical fireproofing.

Among the recent buildings in which SACKETT PLASTER BOARD has been used, might be mentioned the Christian Bros. School, Longueuil, P.Q., in which 18,000 square yards of SACKETT PLASTER BOARD were applied, and the Orphanage Building at Kingston, Ont., H. P. Smith, Architect, and Wm. McCartney, Contractor, in which 10,000 square yards of SACKETT PLASTER BOARD were used.

SACKETT PLASTER BOARD comes in sheets or slabs, 32 by 36 inches, ready to be nailed to studs, furring or beams.
For all kinds of buildings, its use is ideal. It speeds construction; it lessens building cost; it reduces fixed charges for insurance; it makes fire resisting walls and ceilings, and gives absolute satisfaction.

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FLAWLESS PLASTER

In prepared "FLAWLESS HARD" WALL PLASTER you have the ideal combination of a perfect plaster and a perfect sand. In its manufacture, true silica sand is used, washed, cleaned, screened, and made thoroughly dry. In fact, "FLAWLESS" HARD WALL PLASTER is made under ideal conditions, in a plant especially equipped for cleaning, mixing and testing plaster.

Nothing but water is required on the job, in mixing prepared "FLAWLESS." It requires only one-third the water that lime does. You can dispense with a "mixer man," which saving offsets the slightly extra cost of "FLAWLESS."

Architects who have specified "FLAWLESS" HARD WALL PLASTER will permit nothing else to be used on their work.

One ton of "FLAWLESS" HARD WALL PLASTER, when applied to "STANDARD" SACKETT PLASTER BOARD, will cover 120 square yards, while one ton will only cover 60 yards on wood lath, and 45 yards on metal lath.

For a perfect wall, there is no combination that can compare with SACKETT PLASTER BOARD and "FLAWLESS" HARD WALL PLASTER.

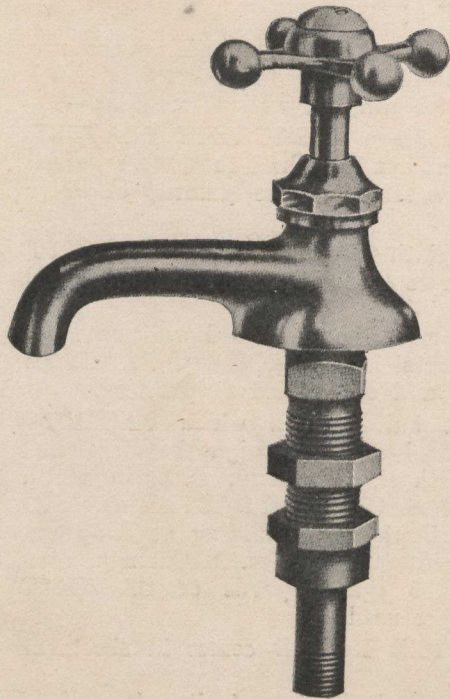


Corridor in Christian Bros. School, Longueuil, P.Q., showing SACKETT PLASTER BOARD before "FLAWLESS" HARD WALL PLASTER was applied.

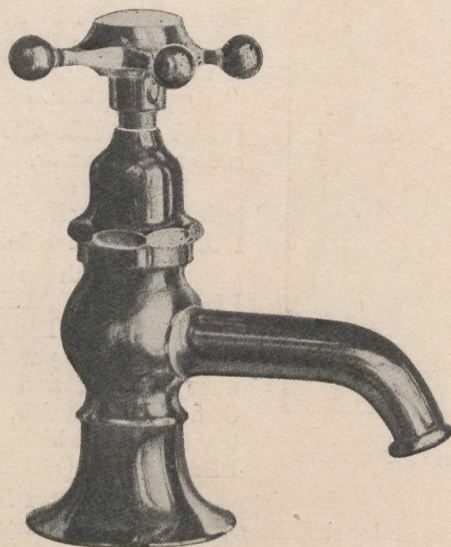
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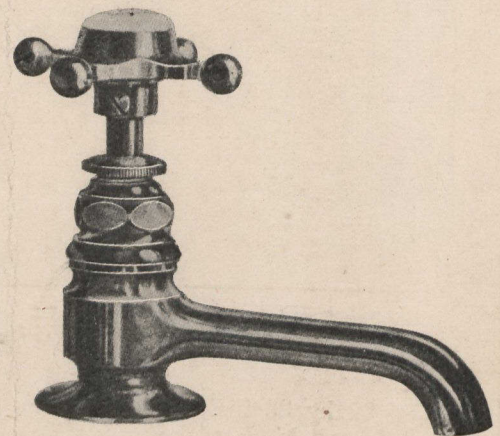
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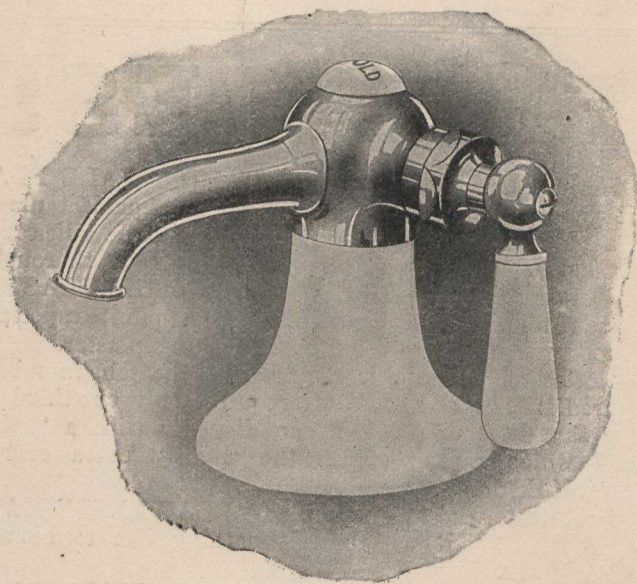
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