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CONSTRUCTION

A · JOURNAL · FOR · THE · ARCHITECTURAL ENGINEERING · AND · CONTRACTING INTERESTS · OF · CANADA

OFFICE OF PUBLICATION

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A Frank Statement

about

Ideal Concrete Machinery

This is a frank statement to business men who want to make a profitable investment and who appreciate the relation between Price and Quality.

As pioneers in the manufacture of Face Down Concrete Block Machines, we have spent years of continuous effort perfecting a factory organization to build Concrete Machinery as nearly mechanically perfect as materials, skilled mechanics and supervision will permit.

The Ideal Line

Block Machines

Automatic Power Tampers

Sill and Lintel Machines

Proportioning, Continuous and Batch Mixers

Brick Machines

Water Proofing and Colors

Metal Wall Plugs

Our business has been a success from the start. **First,** because we refused to market anything not up to the highest standard or which would not stand the test of practical service. **Second,** because we have always been frank in our advertising and have taken the purchaser into our confidence, openly revealing to him every fact which he should know.

As a result the largest amount of our business comes from those sections where Ideal Machinery has been previously introduced and has been given the opportunity of time and service in which to prove its real merits in competition with all other makes. This shows conclusively that Ideal equipment is not only made right and priced right, but is a profitable investment to the purchaser.

Every good thing has its imitators. Every business has its parasites. Ours is no exception to the rule. Scores of infringers and cheap imitators have placed inferior, unsatisfactory equipment on the market at any old price, claiming that they were "just as good as the Ideal." Some have been misled, but the test of service and the United States Court decisions sustaining our patent rights have opened their eyes. Today the Ideal is the only Block Machine that has an established value. We recognize neither competition nor competitors—there are none—our line is in a class by itself.

The Ideal Block Machine, as originally designed, has proven so efficient, simple, practical, rapid and easy of operation that its adoption has become universal.

The addition of the Ideal Automatic Power Tamper and the Ideal Scraper and Finisher has brought the manufacture of concrete blocks to a high plane, securing thereby the endorsement of architect, contractor and builder.

Our Tycrete process enables the enterprising Block Maker to successfully compete with the highest grades of building material, such as pressed brick, faced brick, cut stone, granite, etc., etc., and to produce a wide variety of artistic effects, giving ample opportunity for architectural expression. We license its use to well-equipped Ideal plants.

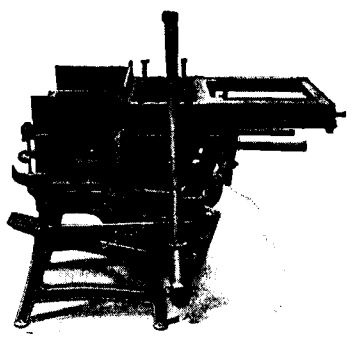
The Ideal **stucco block** surpasses all other materials as a base to which to apply stucco —being cheaper, stronger, more enduring and absolutely fire and water proof.

Thus Ideal Equipment has taken a tremendous stride in advance, reducing the cost of block manufacture to a minimum, insuring absolute uniformity and perfection.

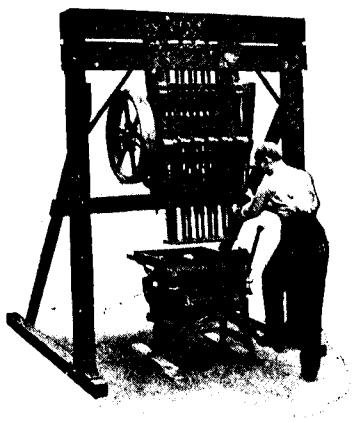
The Ideal Line

Attachments for Chimneys, Water Tables, Course Blocks, Octagons, Circles, Face Designs of All Kinds and Stucco Sets

Special Molds for Columns, Bases, Capitals, Balustrades, Balls, Piers, Porch Columns, Vases, Steps, Sidewalks, Tile and Fence Posts



The Ideal Block Machine
With Scraper and Finisher Attachment



The Ideal Automatic Power Tamper

Ideal Concrete Machinery Co., Ltd.

Dept. 221 King St., LONDON, ONT.

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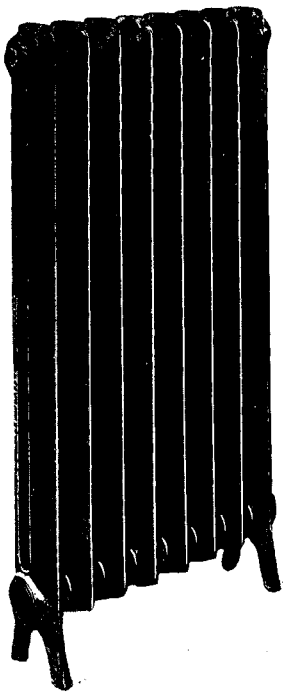
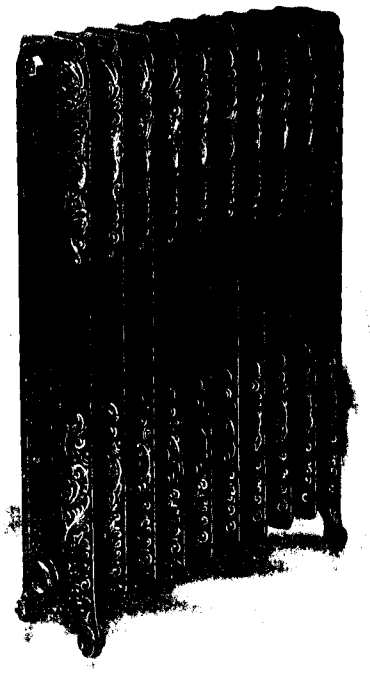
SAFFORD RADIATORS



Zenda Plain Single Column.
The Narrowest Radiator Made.

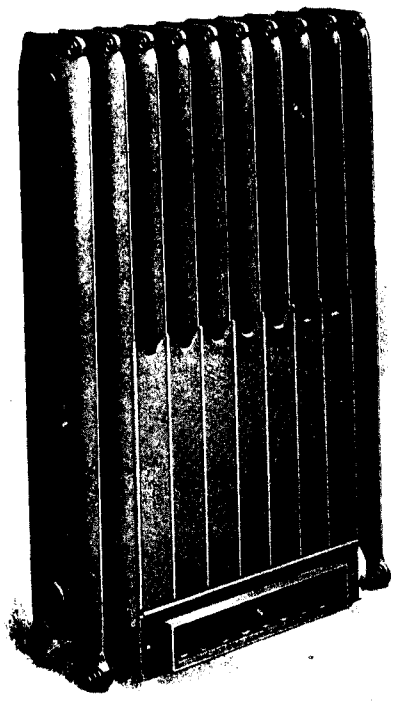
The outstanding feature of the "Safford" line is the magnificent assortment of styles and patterns. There is no requirement in either heating or ventilating apparatus that cannot be fully satisfied by the installation of "Safford Radiators."



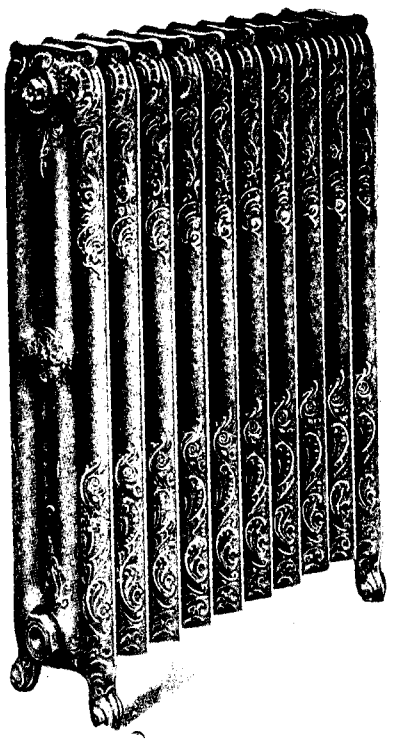
Regina Ornamental.
Two Column.

Not only in the perfect symmetry of outline, but in absolute mechanical accuracy, does the Safford excel.

Safford Radiators emit a greater number of heat units, per square foot of catalogued radiating surface, than any Radiators manufactured.



The New Adjustable Box Base for ventilation work.



Trident Ornamental.
Three Column.

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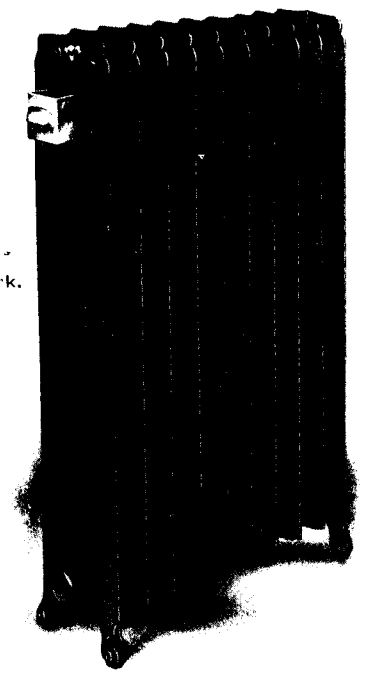
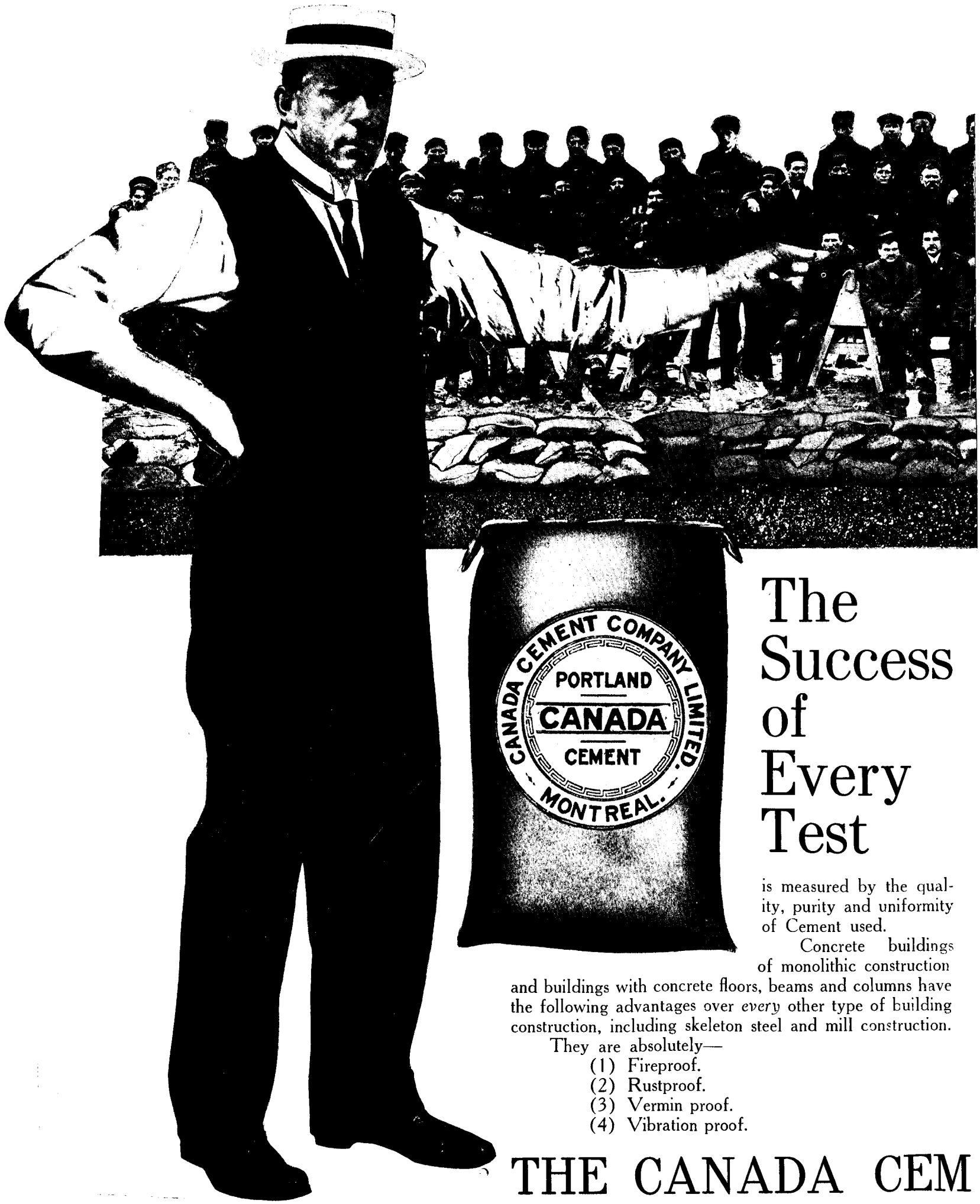


The Empress Humidifying, with Vapor Pan.



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is measured by the quality, purity and uniformity of Cement used.

Concrete buildings of monolithic construction and buildings with concrete floors, beams and columns have the following advantages over *every* other type of building construction, including skeleton steel and mill construction.

They are absolutely—

(1) Fireproof.
(2) Rustproof.
(3) Vermin proof.
(4) Vibration proof.

THE CANADA CEM

Skeleton steel structures, fireproofed with concrete, and with concrete floors, are more thoroughly fireproof and vibration proof than skeleton steel structures fireproofed with hollow terra cotta and with terra cotta floors.

Skeleton steel structures, fireproofed with hollow terra cotta, with concrete floors, are more fireproof and vibration-proof than skeleton steel structures fireproofed with terra cotta and with hollow terra cotta floors.

It has been proven by thousands of tests, *under every conceivable condition*, that reinforced concrete floors are stronger, more durable, more practicable and more economical than any other recognized type of floor that is used in modern building construction.

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"The Canadian Standard."

The fireproof qualities of concrete construction and its ability to resist the ravages of the elements has been demonstrated in every great conflagration of recent times.

In the tests which have been made of concrete construction of which Canada Cement formed the basic material, results have shown conclusively that it reached 100 per cent. standard as regards quality, purity and uniformity.

Both in point of a thoroughly uniform and satisfactory product and peculiarly advantageous facilities for prompt shipments, we are able to render to the architect, engineer and contractor, a service that might almost be termed co-operative in its import.

We aim to secure the business of every architect, engineer and contractor, who wants just that kind of service and will do all in our power to deserve it.

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Turnbull Elevators

The cut below shows one of our new car designs, No. 115. Note the high sheet panels around the sides. When finished in bright electro-copper, with electrolier to match, this makes a fine car for a closed-in hatchway, hiding the bare walls from the passenger. The solid sheet dome or top affords protection to passengers from any oil or material falling from above.

We make all types of Passenger and Freight Elevators. Send us your specifications. It will pay you to get our tenders. It will pay better to instal our machines.

THE TURNBULL ELEVATOR MFG. CO.

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MONTREAL **WINNIPEG**

A Straight Talk to Architects on Cold Galvanized Metal Lath

SO many conflicting statements are being made on the subject of galvanized metal lath and so many of these statements are misleading, that I believe it is incumbent upon me to put a few plain truths before the architects of Canada.

I am not going to mince matters; I am going to talk straight from the shoulder—going to call a spade, a spade.

Until ten years ago, metallic lathing used in Canada, was sold and used in an unpainted condition. Naturally enough, it did not last, and metal lathing came to be considered a doubtful proposition.

When the Pedlar People decided to go into the business of manufacturing metal lath, they not only paid the largest price for equipment, but purchased the most modern and reliable machines procurable and immediately turned out the best work of this kind that had yet been made.

Incidentally, we cut the market price in half.

From our forty years' experience in the sheet steel business, we decided that if metal lath was to be a permanency, it was absolutely necessary that it should be protected against varying atmospheric conditions. We decided to paint our lath with the most elastic and non-corrosive paint we could procure. After numerous tests, we decided on Sherwin-Williams Paint for this purpose, and we have continued its use to this day.

About five years ago, after an analysis of the properties of all standard and patented plasters, we found that, in order to make our lathing absolutely everlasting in every case, and especially to meet conditions existing in some sections of the Canadian West, it would be advantageous to manufacture a galvanized lath.

The next step was a careful investigation of all the known processes of hot and cold galvanizing, sherrardizing, etc.

As we investigated the hot galvanizing process, we found it unsuitable; for, as metal lathing is extensively used to form profiles of cornices, etc., we found that when the lath is bent to sharp angles, the hot galvanizing scaled off and left the metal unprotected.

Next we investigated the sherrardizing process. We found this even less efficient than the hot galvanizing, inasmuch as sherrardizing only means the driving of zinc particles, in a dry state, against the surface of the metal—just as aluminum or bronze powder is applied for size. We also found, on testing samples submitted to us, that the life of the sherrardized surface was very short. Unquestionably, then, sherrardizing would not do. Finally, we made a searching investigation into the merits of cold galvanizing.

Cold galvanizing is an electric process of attraction, whereby the smallest microscopic particles of zinc are drawn to the steel surface, filling all the pores of the metal and covering it absolutely with the preserving element.

We ultimately decided that slow, laborious and expensive as the process was, it was the best in the end and the proper process for us to employ.

We adopted it—cold galvanizing!

The result has been, that wherever our cold galvanized lath has been used, the architect has continued to specify it exclusively.

Of course, other manufacturers who are working along different lines, have advanced all kinds of claims for their own methods. In fact, about a year ago, one young man, who is more or less engaged in this business, went through the country decrying Pedlar Cold Galvanized Lath. He went so far even, as to say it was not cold galvanized at all, but only sherrardized—virtually branded it as a deception.

But this did not stop the sale of Pedlar Cold Galvanized Metal Lath—it acted as advertising and the consumption steadily increased.

Imitation was the next step of other makers.

But did they follow Pedlar and galvanize by the cold process? They did NOT!

To-day, these same imitators are talking about the wonderful merits of sherrardizing—the process which they, themselves, were so loud in condemning but a short twelve month ago.

Right here and now, I want just to say that if Pedlar Cold Galvanized Metal Lath were not absolutely all we claim for it, no other manufacturer would bother about it for a moment, nor make any effort to imitate it.

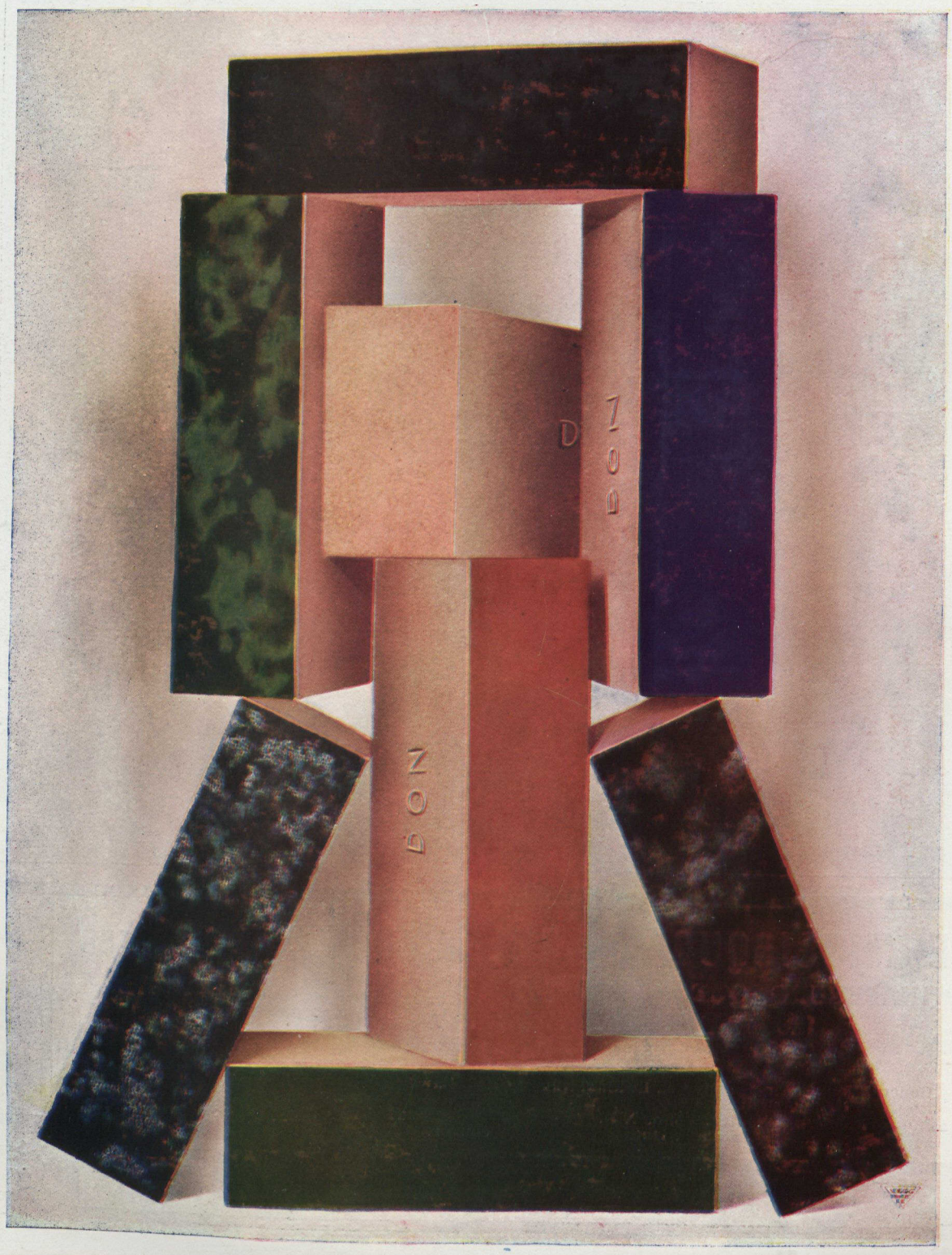
And they do try to imitate—sincere flattery, no doubt!

I WOULD like to tell this story to every architect. But I cannot do that. Therefore, I want every architect to read this as carefully as if it were a personal letter. I believe it will be found interesting.

(Signed)

F. A. Pedlar

THE USES OF ENAMELLED BRICKS in modern buildings of come manifold, and even in smaller and less pretentious structures, is particular about specifying the most suitable materials, they have The many outstanding superior features of DON VALLEY BRICKS have made them highly popular with the Architect and the In them is combined Beauty, Utility and the advantage of being absolutely our large variety of shades and colors (as illustrated in the accompanying



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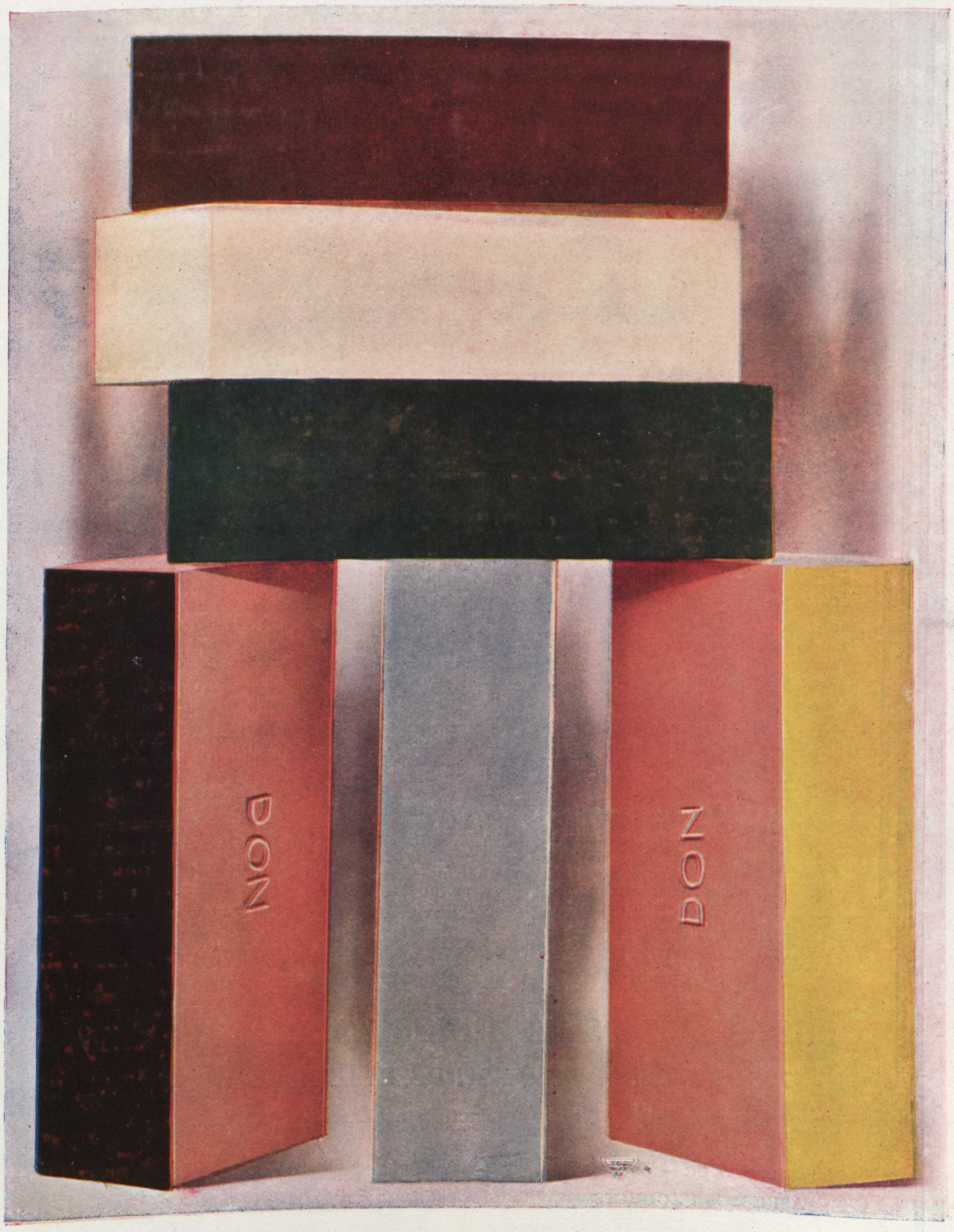

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The roof of a building is traditionally its weakest spot.. It suffers more from exposure than any other part of the structure. It is almost invariably through the roof that a building is ignited by exposure to a nearby fire. In every recent conflagration, the spread of fire was almost wholly due to defective, combustible roofs. This was especially so with the Toronto, Three Rivers, Hull and St. John fires.

ASBESTOS SHINGLES produce an absolute fire resistive roof. They are fireproof in themselves; they do not rot, blister, crack or split; they require no repairing or painting; are indestructible, and produce a roof that outlasts the building.

ASBESTOS CEMENT SHINGLES are dense and elastic, made of hydraulic cement—reinforced in every direction with interlacing asbestos fibre — dampness (rain and snow), freezing and thawing—hasten the maturing of the cement and make the shingles tougher and harder.

ASBESTOS BUILDING LUMBER is recognized as the ideal fire-proof sheathing material. It is composed of Portland cement reinforced with asbestos fibre, and is largely used for partitions and interior walls in place of ordinary wall plaster; also for siding. It can be painted, grained, veneered or otherwise treated to conform with the interior decorative scheme of any room.

ASBESTOS CEMENT SHINGLES may be obtained in numerous shapes and sizes to fit any architectural scheme.

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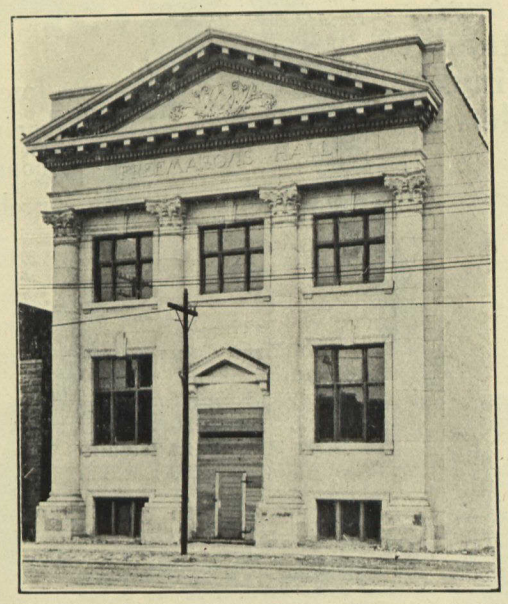
(TRADE MARK REGISTERED)

Same Quality Throughout

Merchants Fire Insurance Co., Church and Adelaide Sts. Beaumont Jarvis, Architect

NO FACING MATERIAL



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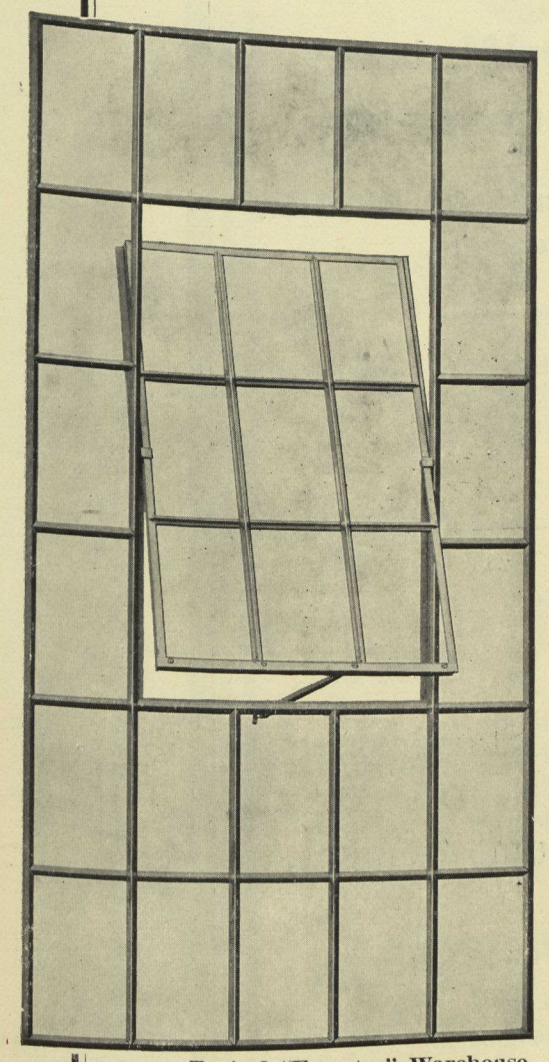

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Fenestra Construction affords the greatest lighting and ventilating facilities, combined with absolute weather and fire protection.

No good building can afford to be without them.

Our Catalogue F-2 gives complete information. If not in your file, you should get one at once.

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Light,
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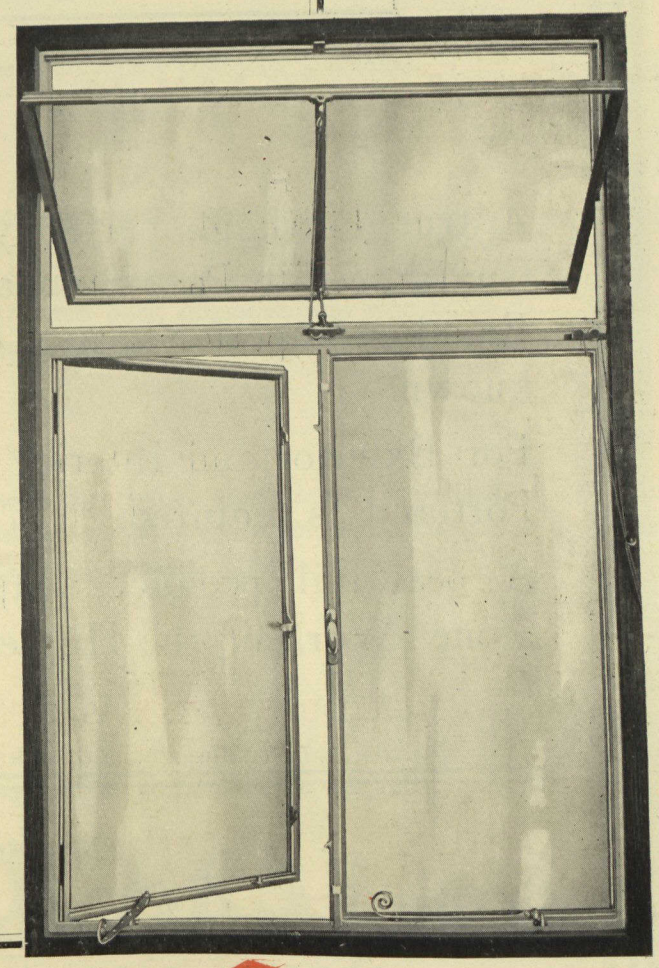
Finish,
Weather and
Fire
Protection.



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Watch for new "KING" Boiler in next issue.

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Our mills are thoroughly equipped and have an ample capacity and good storage, which enables us to ship all orders promptly. They are so distributed as to have every advantage of railway and water connection. We are particularly well situated to supply Ontario and Western Canada.

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Throughout the entire manufacture of our cement the greatest care is exercised to keep the product at its high standard. The care exercised in this regard has created a reputation for reliability among the users of cement who do not have the time or opportunity to test each shipment, and who consequently rely largely upon the manufacturer.

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Our cement is adapted for all purposes where a high grade cement is desired, such as in foundations or buildings and heavy machinery, tunnel work, cisterns, cellar floors, sidewalks, pavements, curbing, artificial stone, conduits, sewers, reservoirs, bridge piers and concrete work of all kinds.

Information

Architects and Engineers will be assisted with any further information desired and we will co-operate in making any tests of our cement on request.

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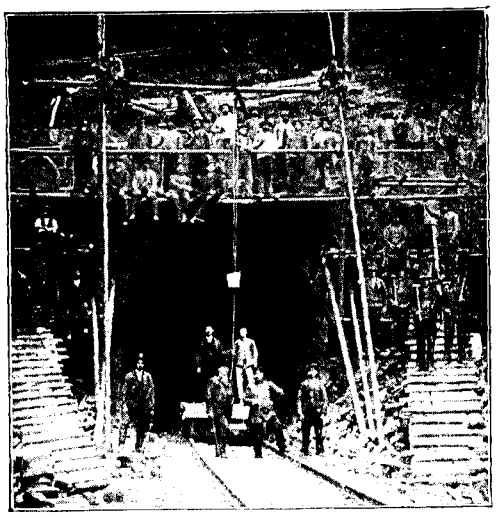
Travelling Western Representative W. C. Huff, Winnipeg



Ruppertsberg Tunnel, 1 mile long, constructed by the German Government, waterproofed with Ceresit. (This is only one of the many tunnels which have been waterproofed with our material.)

CERESIT

is a milky paste which is simply added to the water used in mixing concrete and mortar. With the water Ceresit penetrates to all parts of the concrete and mortar and assures a permanent water and damp-proof job.

No expert help required; no scientific and expensive mixing.

CERESIT is not an experiment, but has been used with complete success on hundreds of tanks, pits, foundations, dams and bridges. It has been employed by practically all Governments in the civilized world. MORE THAN 5,000,000 CUBIC FEET of concrete and mortar have been waterproofed with CERESIT in 1909. The use of Ceresit is complete insurance against the penetration of moisture or dampness, even under a pressure of more than 70 pounds per square inch.

Ask for our free book. It is money in your pocket to know all about this excellent material.

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It has been severely tested for years, and has conclusively proved that the remedy can be specified. "BITUNAMEL" is an ideal coating for foundations of buildings, rendering them absolutely waterproof. Write us for information, booklets and samples.

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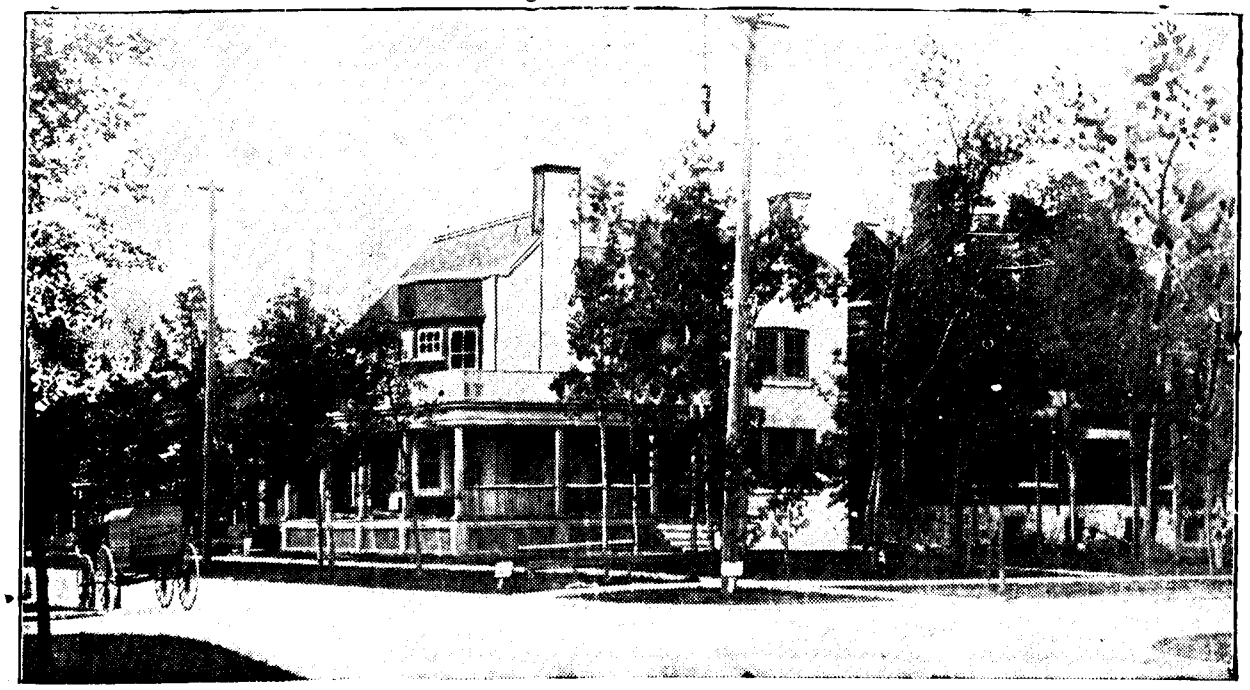
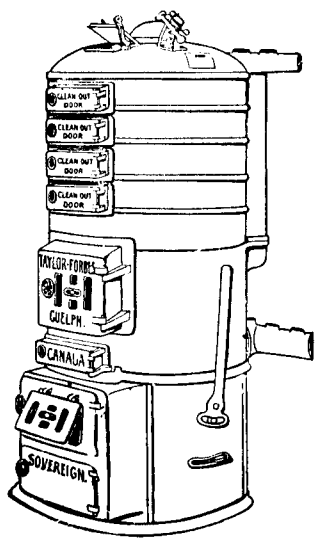


A Winnipeg Home heated by the "Sovereign."

"Sovereign" Boiler

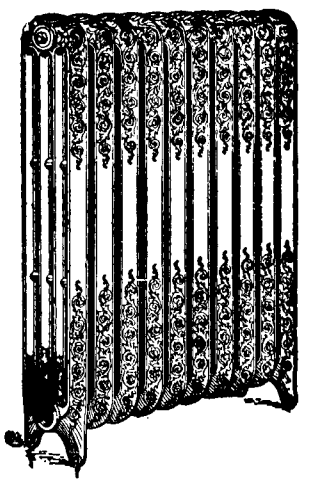


The boiler with the Larger First Section

When you go calling, dining or visiting during the winter season, make a note of it and you will find that the most comfortable homes are heated by the "Sovereign" Hot Water Boiler and Radiators.

If the experiences of this present winter suggest the necessity for an improvement in the heating of your own home, remember the "Sovereign" before winter comes around again. The "Sovereign" costs no more than the inefficient heating apparatus that will burn more coal, and it is made in all sizes for large houses and small houses.

"Sovereign" Radiator



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Vancouver—1040 Homer St.
Winnipeg—The Vulcan Iron Works.
St. John, N.B.—H. G. Rogers, 53½ Dock St.
Quebec—The Mechanics' Supply Co.
Halifax, N.S.—General Contractors Supply Co.
Calgary—The Barnes Company.

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Equipped with three OTIS Hydraulic Plunger Passenger Elevators and one Hydraulic Plunger Freight Elevator

WITH THE KNOWLEDGE and experience gained in the successful manufacture and installation of elevators of all types during the last half century, we are prepared to recommend, furnish and install the very best elevator equipment for any and all elevator requirements.

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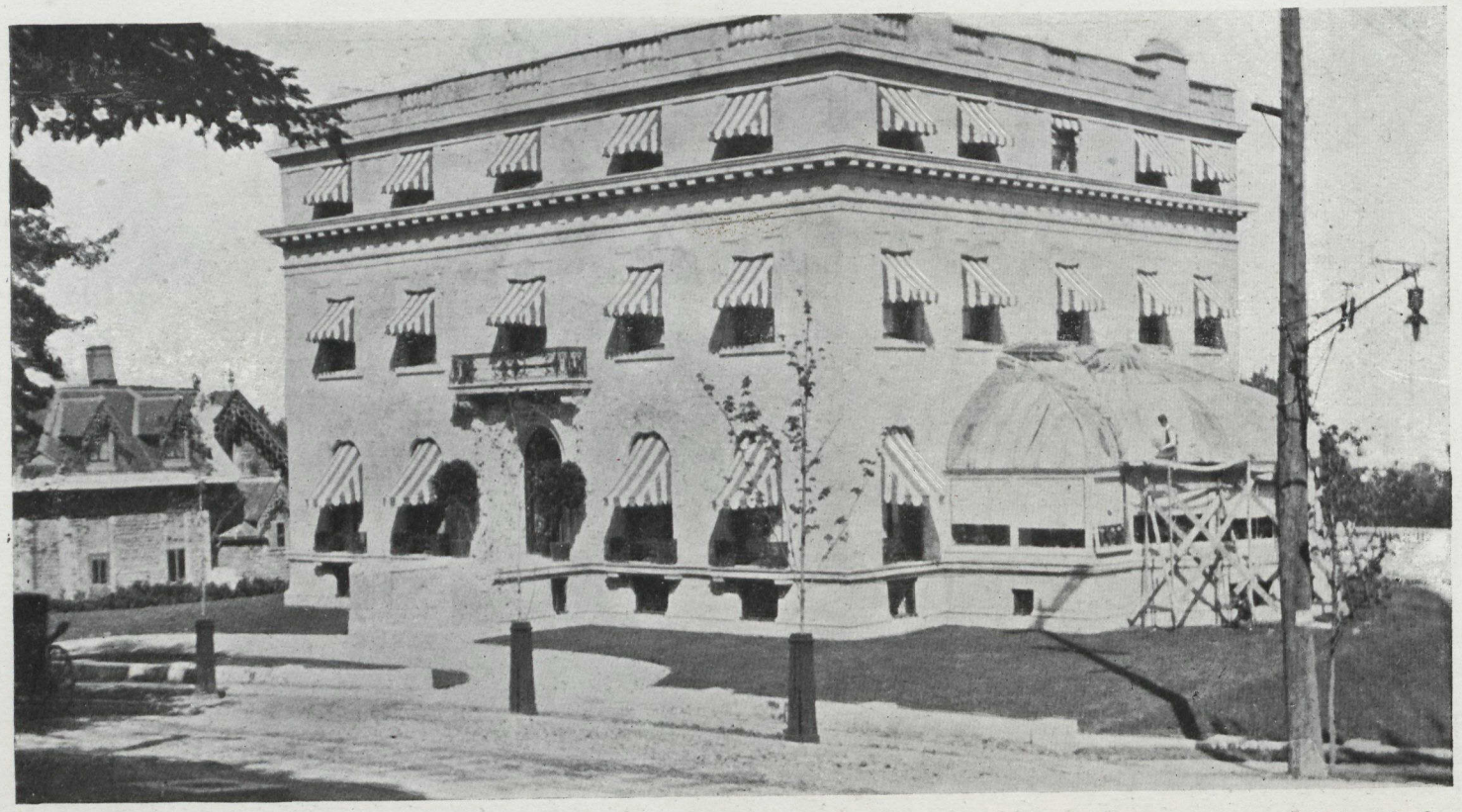

Residence of M. B. Davis, Montreal. Equipped with "Standard Ideal Ware." E. & W. S. Maxwell, Architects. W. J. McGuire & Co., Plumbers.

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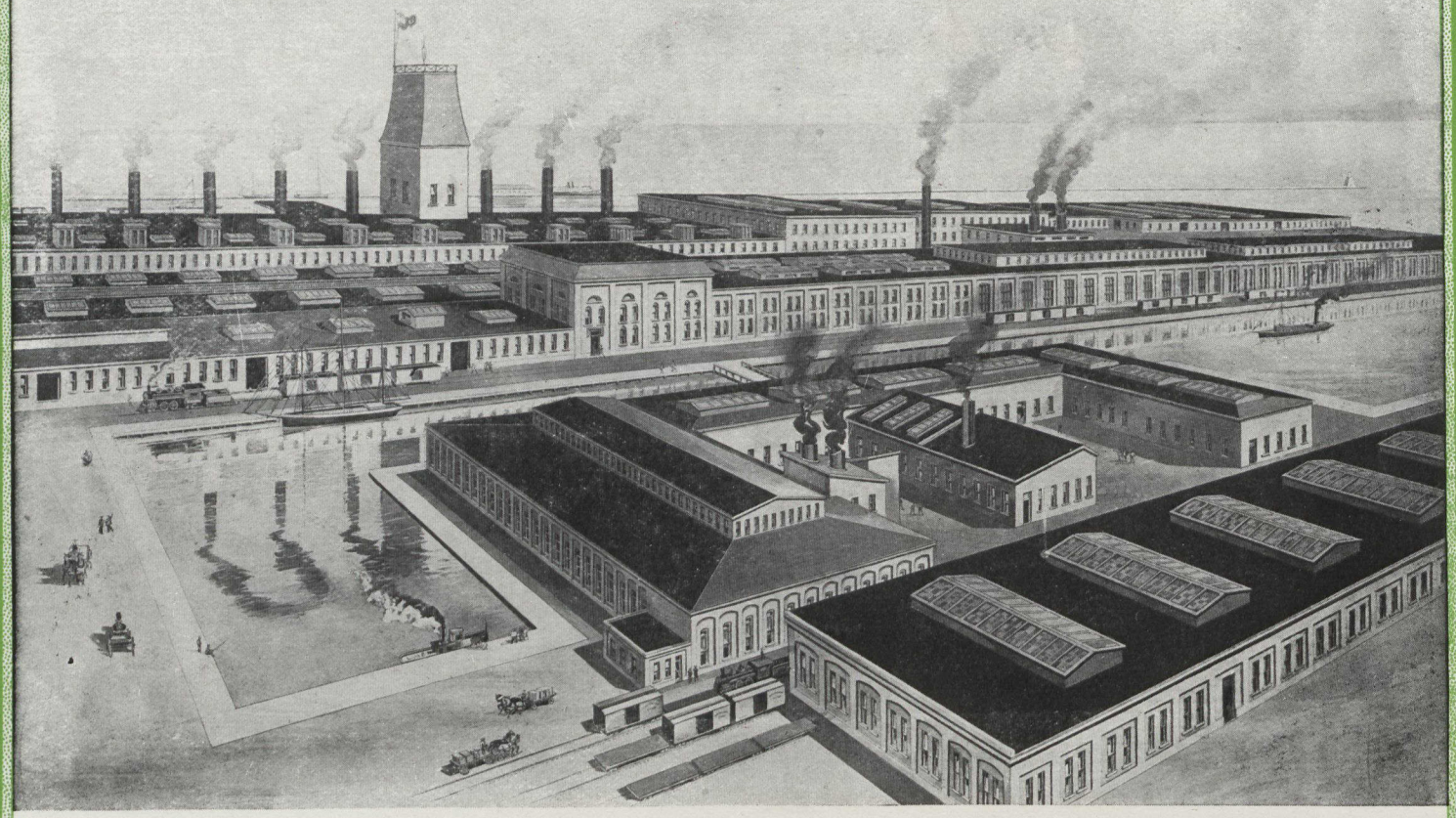

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CONSTRUCTION

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CONTENTS

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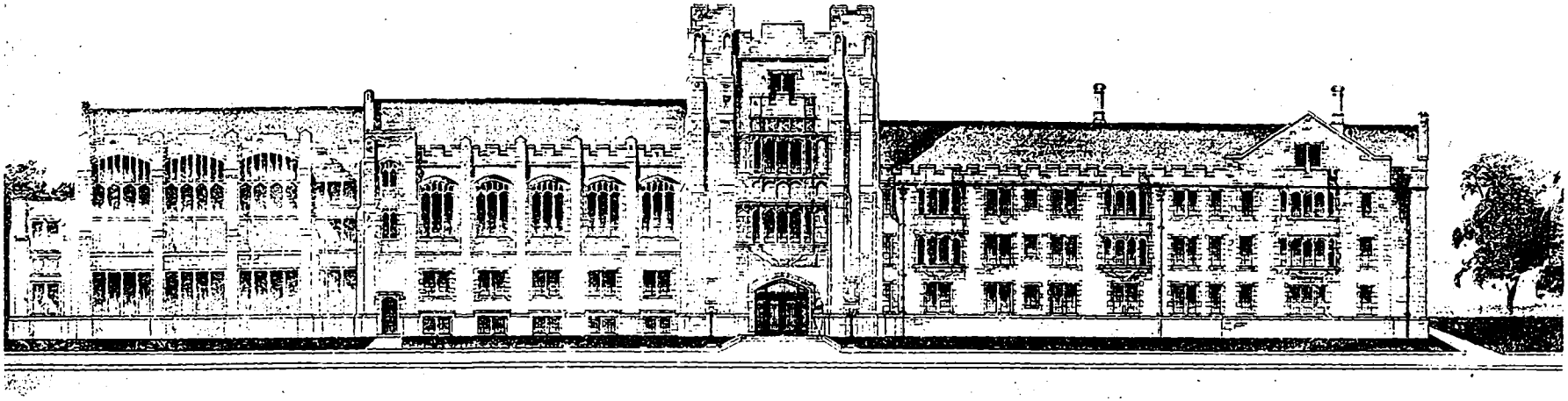
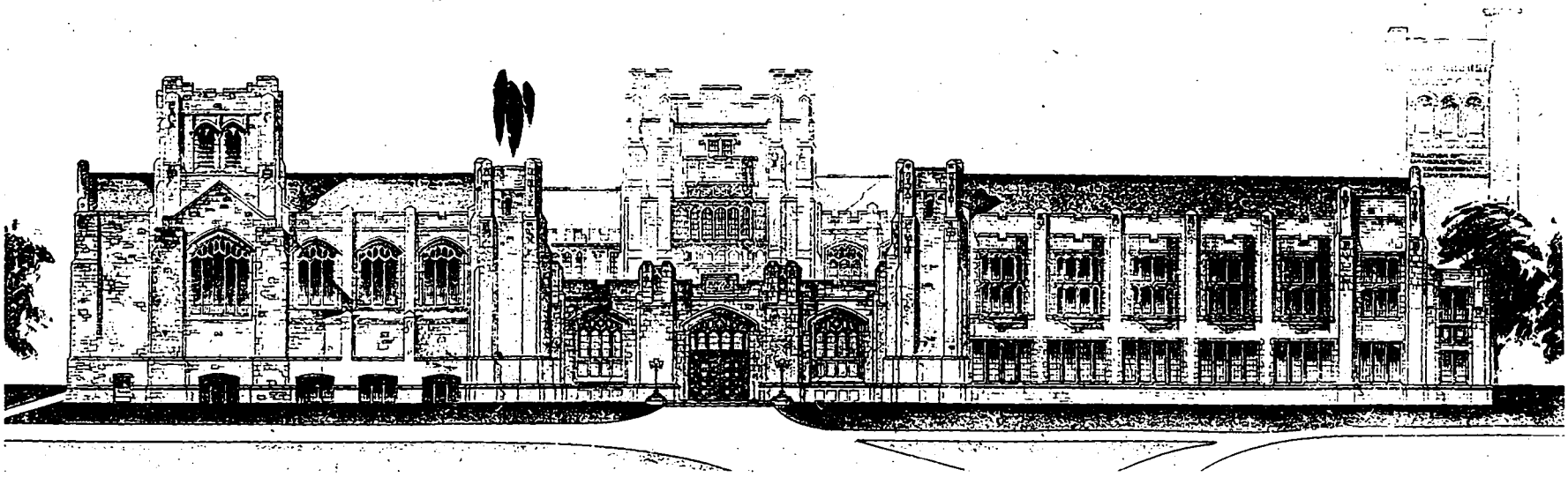


Elevation Facing St. George St. Accepted Design for the Proposed New Knox College, Toronto. Chapman and McGiffin, Architects.



Elevation Facing University Lawn. Accepted Design for the Proposed New Knox College, Toronto. Chapman and McGiffin, Architects. (See Page 49)

¶ Review of Building Operations for 1910—Comparative figures show a period of unparalleled progress—Big gains made in practically all sections.

THE GRAND TOTAL for building operations in 1909 recedes to a position of secondary importance, when compared to the enormous investment made in 1910. There is every reason to believe that the year 1911 will be a still greater and more widespread period of activity in every way than the one which has just come to a close. At no time in the past has the country experienced a more satisfactory mid-winter season, nor at any time has it looked forward to so heavy a volume of important work as it scheduled immediately ahead. The turn of the calendar witnessed precisely the same accelerating tendency which obtained a year ago, with all sections pushing steadily onward in a growth and development which far overshadows the records of progress made in any previous corresponding period.

Official returns submitted to CONSTRUCTION from twenty-four cities located in every province and section of the Dominion record an aggregate total for permits issued, amounting to $94,129,423, as against $64,509,620 in the year of 1909. This represents an average gain of 45 per cent., or a volume of work nearly half again as great as was carried out in the preceding twelve months. Although a few more losses are recorded than were noted in the last annual report, the figures in a number of instances fail materially to reflect the full extent of prosperity actually enjoyed. This is equally true concerning many of the cities which registered gains. Vancouver for instance, where the volume of new building amounted to $13,150,365, reports that in territory contiguous to the city and which should in every way come within the scope of its jurisdiction, operations were carried on to the extent of $4,000,000, of which no record has been kept. Montreal likewise has a valid claim in this respect, and if the work in the suburbs of the city were included, it would substantially add to the handsome total of $15,815,859 otherwise attained. Montreal's gain as it stands, is 103 per cent. a most splendid showing to say the least, while that of Vancouver (63 per cent) is no less remarkable when one considers the big advance made in the previous year.

All in all, Canada can regard its accomplishment for the year with no little degree of satisfaction. Toronto's mighty total of $21,127.782 in itself, which is approximately three millions more than was noted in her previous figures, attests eloquently to a growing commercial and industrial importance, such as possibly cannot be duplicated by any city of like size on the entire continent. Ontario on the whole, prospered exceedingly well, although the majority of decreases noted, fell in this province. Ottawa failed to equal her previous figures by 32 per cent.. Fort William is behind by 19 per cent., and Windsor and London are in the arrear to the extent of 5 and 7 per cent in order named. The amounts registered in all these places, however, are almost double the totals recorded in 1908. On the other hand, Hamilton undertook new work aggregating in cost $2,604,605 as compared with $1,623,100 in the year before. Berlin surpassed its former mark by 81 per cent.; Brantford shot forward 55 per cent.; Peterboro made a gain of 50 per cent.; and Port Arthur and St. Thomas advanced relatively 81 and 9 per cent. In all cases, the results noted are gratifying to the extreme.

In Manitoba, Winnipeg made good the early forecast of a fifteen million dollar year. Her amount in fact, is just a trifle better, and judging from the splendid showing made in the final month when the aggregate value for permits amounted to close onto a million, operations in the next twelve months will be proportionally greater

	Permits for December, 1910.	Permits for December, 1909.	Increase, per cent.	Decrease, per cent.	Permits for 1910.	Permits for 1909.	Increase, per cent.	Decrease, per cent.
Berlin, Ont.	.....	.....	.....	.....	$347,546	$191,000	81.96	.....
Brandon, Man.	$7,000	$25,000	.....	73.08	1,224,385	350,120	249.70	.....
Brantford, Ont.	62,500	121,350	.....	48.50	681,030	439,335	55.01	.....
Calgary, Alta.	354,300	151,550	133.78	.....	5,589,594	2,420,450	130.93	.....
Edmonton, Alta.	141,321	9,780	1,345.00	.....	2,161,356	2,128,161	1.09	.....
Fort William, Ont.	404,135	247,800	63.09	.....	2,381,125	2,970,365	.....	19.84
Halifax, N.S.	18,770	33,550	.....	44.06	471,140	630,379	.....	25.27
Hamilton, Ont.	49,550	69,300	.....	28.50	2,604,605	1,623,100	60.47	.....
Lethbridge, Alta.	25,450	33,885	.....	24.90	1,210,810	1,268,215	.....	4.53
London, Ont.	63,085	32,155	96.19	.....	805,074	850,134	.....	5.31
Montreal, Que.	856,800	167,885	410.34	.....	15,815,859	7,783,621	103.19	.....
Ottawa, Ont.	174,350	104,125	67.44	.....	3,040,350	4,527,590	.....	32.85
Peterboro, Ont.	9,240	2,095	341.05	.....	517,958	343,489	50.79	.....
Port Arthur, Ont.	76,800	.....	.....	.....	1,062,616	584,810	81.70	.....
Prince Albert, Sask.	3,000	4,680	.....	35.90	662,475	141,810	367.15	.....
Regina, Sask.	20,625	9,025	128.53	.....	2,351,288	744,479	215.83	.....
St. John, N.B.	12,800	4,800	166.66	.....	520,275	368,550	41.17	.....
St. Thomas, Ont.	10,150	5,700	78.07	.....	286,650	261,600	9.57	.....
Sydney, N.S.	12,800	7,700	66.23	.....	347,554	160,470	116.58	.....
Toronto, Ont.	1,353,265	1,593,365	.....	15.07	21,127,783	18,139,247	16.47	.....
Vancouver, B.C.	958,775	512,919	86.92	.....	13,150,365	7,258,565	81.17	.....
Victoria, B.C.	129,800	71,700	81.03	.....	2,271,095	1,673,420	35.71	.....
Windsor, Ont.	22,700	[illegible]	808.00	.....	392,040	423,885	.....	7.52
Winnipeg, Man.	970,250	[illegible]	2,802.76	.....	15,106,450	9,226,825	63.72	.....
	$5,737,466	$3,245,289	76.79	.....	$94,129,423	$64,509,620	45.91	.....

Brandon, also, with a total of $1,224,385 to her credit, representing a gain of 249 per cent. flourished to an unusually marked degree. These figures reflect in a fairly accurate manner, the high tension of activity throughout the west in general. Saskatchewan forged ahead at a lively clip as is evidenced in Regina's total of $2,351,288, and Prince Albert's advance of 367 per cent., the highest percentage increase noted for the year. The only loss in the entire west occurred in the case of Lethbridge, which failed to equal its former figures by 4 per cent, a decrease considering the heavy investment made in 1909 of very slight proportion indeed. Calgary on the other hand has $5.509,594 to her credit, and Edmonton a total of $2,161,356, the increase in either case being 130 and 1 per cent. respectively. Another gain worthy of note is that of Victoria, (35 per cent.) which in addition to Vancouver's big increase previously mentioned indicates a most wholesome state of affairs in the Pacific Coast district.

In the Maritime Provinces, both St. John and Sydney topped their previous figures, although Halifax is in the arrear by 25 per cent. St. John and Sydney's increase is 41 and 9 per cent. in order named, and the amounts noted show a steady and consistent growth, which is quite representative of the east in general.

Considering the remarkably sound manner in which the year closed, and the larger volume of important work immediately ahead, 1911 will be a hummer in every respect. Of course, the Reciprocity Pact is something to be reckoned with; and as to what effect it might exert on manufacturing and industrial improvements, remains to be seen. Aside from this one uncertain feature, however, the country has never before beheld such a promising outlook, and architects, contractors and material firms can well prepare for a period of unparalleled activity and development.

¶ Proposed Reciprocity Pact a vote-baiting political trick—Advantages to be gained outweighed by concessions made and loss of fiscal independence.

DESPITE THE CLAMOR OF a party ridden press in support of the proposed reciprocity pact now before Parliament, a careful dissection of the long list of proposed changes in the Canadian schedules, makes it evident to every broad-minded Canadian, whose judgment is free from political prejudice, that the Government has been made a "catspaw" of by a United States Government that is madly grabbing at "a straw" in an effort to preserve its very existence. With all due deference to the Hon. Mr. Fielding, and with all reasonable consideration for his ability as Canada's Minister of Finance, it is plain that the proposal he has asked the Canadian Parliament to acept is one arranged and intended as a political trick to secure votes rather than an equitable tariff arrangement designed to promote the national and industrial welfare of Canada.

A careful examination of the proposed changes demonstrates very plainly that it was the agricultural interests, especially of the West, that Mr. Fielding and his colleague, Mr. Paterson, kept before them. The interests of the manufacturer, the laborer and the consumer were subverted to those of the farmer. It is perfectly right and proper that all reasonable encouragement should be given the growth and development of agriculture, especially in a vast undeveloped country, rich in its enormous areas of uncultivate productive lands. And where this industry is to be materially benefited it is reasonable and fair that certain sacrifices should be made by the other industries of the country for the general upbuilding of the nation.

A cursory glance over Mr. Fielding's proposed schedules would lead one to believe that slight unimportant decreases in the tariff on a limited number of manufactured articles that would not materially affect our industrial interests were conceded in consideration of great, sweeping reductions in the United States tariff on our farm products, such as would be of material benefit to the Canadian farmer. However, a careful examination of the prices of farm produce in both countries, together with market conditions under existing tariffs, shows very plainly that the acquisition of the United States market will not enhance prices one iota. Much emphasis is laid upon the importance of free wheat into United States and the Government press is shouting loudly about the increased prices that the grain growers of the West are to receive for their wheat. The facts of the matter are that the United States exported, during our fiscal year ending March, 1910, over 75 per cent. as much wheat to the British Isles as did Canada. If the United States were a better market for wheat than England, why should they export to that market. Great Britain is the greatest wheat importing country in the world, and the prices are controlled from England, not Chicago. It is true that speculation in the Chicago wheat market, ever so often, abnormally raises the price of wheat for a brief period, but these high prices seldom reach the producer. The dependence upon the speculative Chicago market is not a desirable condition. The consuming market dictates the prices of wheat and that market is Great Britain, which Canada now enjoys and which is prepared to consume all the wheat we have to export, or would have for exportation if we produced five times the amount we send to that market to-day. In consideration of these facts, it is perfectly clear that the much boasted concession wrung from the American negotiations of free wheat will not affect the price of wheat to the producer in Canada one iota.

With other grains similar conditions prevail, and it is difficult to find where any material benefit will accrue to the farmer. It has been declared that free barley will be a great boon to the Ontario farmer, while the truth of the matter is that practically the only purpose for which barley is used to any great extent is distilling and malting, and we find that malt barley is debarred by a duty of 45 cents per cwt. In the matter of garden stuff, live-stock, meats, fruits, etc., the market prices of this class of farm products is practically the same in the consuming centres of the United States as they are in Canada. Free traffic of these commodities, therefore, cannot affect prices to any appreciable extent in either country.

While it is not the policy of CONSTRUCTION to enter into the discussion of agricultural matters, a careful review of the proposals as they will affect the farmer is necessary in the discussion of a proposed trade agreement, which promises to shake our whole industrial fabric for the supposed benefit of the agricultural interests of the country. The whole plea of the Government in favor of the pact is based upon their contentions that it will benefit the farmer.

Thus for the purpose of securing to itself the support and votes of the Canadian farmer through a dangerous, misleading series of changes in our already inadequate tariff, the Canadian Government has committed itself to an agreement that in its effect will destroy Canadian trade independence, and place it at the mercy of the fickle and panicky propensities of its greatest commercial competitor.

It has approved of an arrangement that will destroy our fiscal independence and tie our hands in such future legislation such as we might find it expedient to enact, either for the protection of our natural resources or our manufactured products.

It has made itself a party to a policy that will carry away the wealth of our natural resources to give employment to a vast army of American laborers, and thus rob us of the chief value of our natural wealth, that of converting our materials into finished products for the markets of the world. This is one of President Taft's chief arguments for the acceptance of the pact by the United States Congress.

The changes will divert the traffic north and south. This will inevitably be a great blow to the trade between

the East and West. It will retard the growth of many Canadian ports and shipping centres and will affect very materially the great trunk lines that have been so heavily subsidized by the country to bring the West closer to the world's markets. These great railway systems were financed and built at great expense to the country at a time when the United States stood obdurate in its determination to either force annexation or complete commercial isolation upon Canada.

The reduction in duties on certain lines of manufactured goods though apparently slight places additional weight to the present burden upon our striving industries in their efforts to grow and develop in the face of the ruinous competition of the highly specialized manufacturers of the United States. However, the greatest evil in these reductions is not so much in the direct effect upon the industries concerned as the uncertainty that it creates with American and English capitalists and manufacturers who have been contemplating the investment of large sums of money in the establishment of plants in Canada. The reduction shows a tendency toward a downward movement in our protective tariff, and capitalists and manufacturers will be loath to erect plants in Canada with the prospect that in a few years the "entering wedge" will be driven a little farther and the protection bars will be thrown open to the United States.

Another feature of the effect of the pact, which must appeal to every far-seeing Canadian, is the inevitable check it will have upon our trade relations with the mother country. We have worked hard and diligently for many years to cultivate the British market. Vast sums of British money have flown into Canada for the development of our country, and now while we are enjoying unbounded prosperity it is proposed to compete an arrangement with the United States that will prejudice our commercial relation with the mother country and divert our trade toward the country that a few years ago would have seen us starve on their own doorstep.

When the proposed legislation comes before the House for discussion, it is difficult to presage what the position of the Opposition will be. Recently we have not been accustomed to expect much from Mr. Borden and his colleagues. Nobody seems to have sufficient backbone to declare a policy. The Opposition seems, recently, to have reduced itself to a lot of croakers that follow the tail end of Government legislation without any preconceived policy. Instead of preparing a policy based upon the national welfare of the country, apparently a canvass is made of dissatisfied or disgruntled interests, opposed to Government measures, and a vote baiting policy is adopted. It is to be hoped, however, that this opportunity will be seized by the Opposition and that they will formulate a policy designed to best promote the national welfare of the country, and thus sanely and honestly oppose this blow at the National Policy and at Canada's integrity as a part of the British Empire.

Proposed Changes in Building Materials—Spirit of Pact a check on the establishing of manufacturing plants in Canada by foreign interests.

THE PROPOSED CHANGES, so far as they affect building materials, are but few and not highly important. However, as outlined above, in most cases they serve to give an increased advantage to the dumped products of the highly organized and specialized manufacturers of the United States.

There are six lines of products affected by the proposed reductions. Cement is reduced 5½ cents per barrel; freestone, granite, limestone, sandstone, etc., 7½ per cent.; roofing slates, 20 cents per hundred sq. ft.; vitrified paving brick, not ornamented, 5 per cent.; manufactured asbestos, 2½ per cent.; plumbing fixtures, 2½ per cent.

The reduction of 5½ cents per barrel on Portland cement, on the face of it, does not appear to be a very disastrous change as far as the Canadian cement manufacturer is concerned. But when the very unsatisfactory and unsteady conditions of cement prices that prevailed up to a year ago brought about by the ruinous conditions imposed by the dumping of the surplus products of large United States mills are taken into consideration, it can readily be seen that any change that may tend to give the United States manufacturer a further advantage in the Canadian market cannot be viewed with favor by the cement manufacturers in Canada.

The cement mills operating in the United States today have an aggregate capacity considerably in excess of the country's consummation, due principally to the rapidly increasing popularity of concrete as a structural material. As a result of this much advertised fact, a large number of cement projects have been promoted and many large plants have been erected and placed in operation during the past few years. The outcome was inevitable. The total capacity of the mills grew more rapidly than the consumption increased. Cement is one of the commodities that the United States cannot export except to Canada, and if it were not that we maintain a reasonably fair tariff on cement the American mills would dump their over-production at times when, because of building conditions in the United States, the consumption would fall below normal, thereby crippling the cement industry in Canada, temporarily, if not permanently ruining it.

Again, it must be remembered that the Canadian cement manufacturer has several other conditions to contend with that operate in favor of his American competitor. Coal, which is one of the largest items of expense in the production of cement, costs him from 20 to 25 per cent. more than it does at the American mills. Labor costs from 30 to 35 per cent. more in Canada and our freight rates here are, in some instances, more than double those generally prevalent in the United States. Conditions in the Canadian West are still worse. The cost of the production of cement there is more than double that in our Eastern mills.

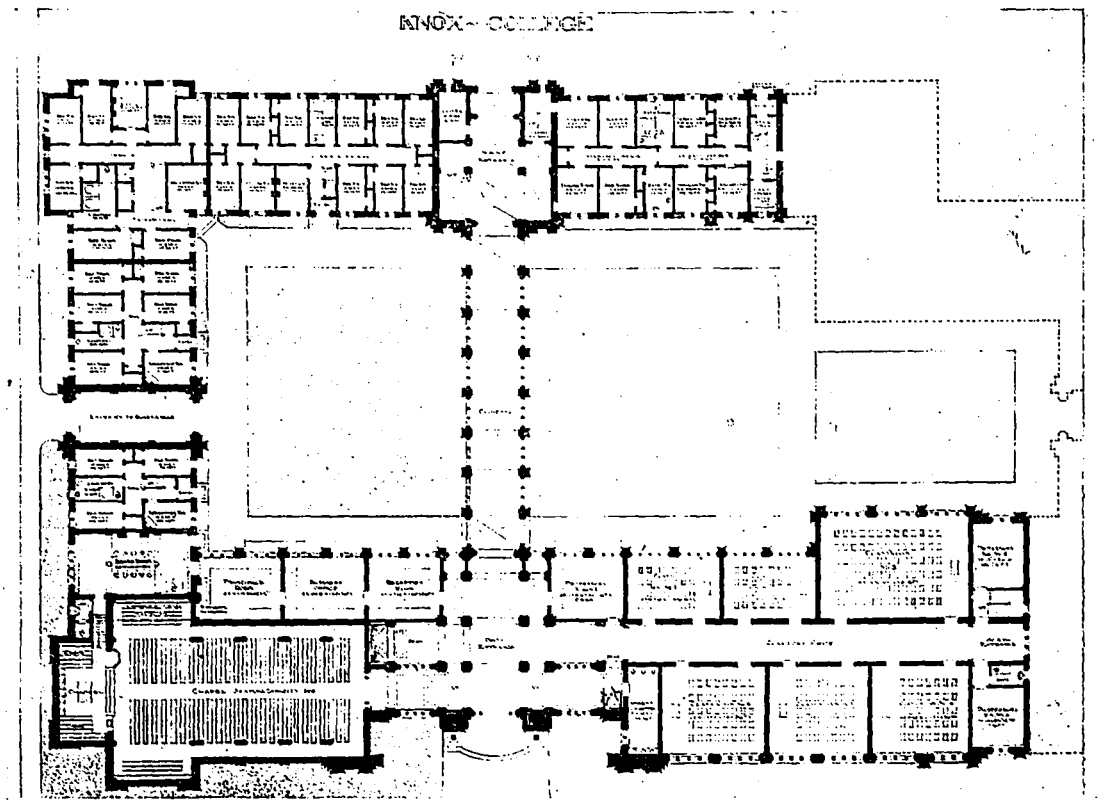
So it may be seen that this very important industry, which up to a year ago was almost hopelessly demoralized, has every reason to protest against any further reduction in the tariff on cement. While it is right and proper that cement, a material that of recent years has entered so largely into all kinds of construction work, should and must be supplied at a reasonable and fair price, conditions must not be created whereby the periodical dumping of foreign mills during times of depression is permitted to demoralize the industry in Canada.

The reduction of 7½ per cent. on granite does not seem to be either necessary or expedient. Our granite quarries in Quebec are producing some of the finest stone quarried in America, and the reason for this change is not evident.

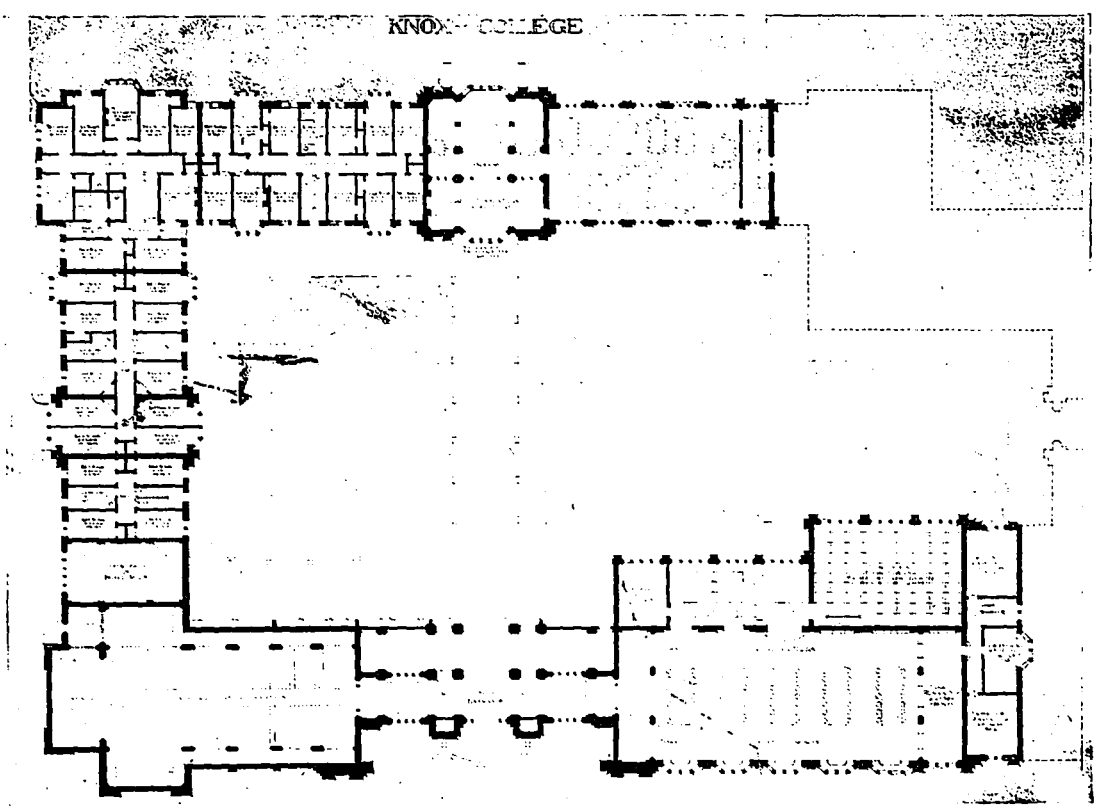
The reduction on roofing slates and vitrified bricks will affect considerably our existing British preference and will have a tendency to give the United States a stronger hold on this market.

The reduction of 2½ per cent. on asbestos products sounds ridiculous. Canada produces 95 per cent. of the commercial asbestos in the world. All the raw asbestos used by United States comes from our Canadian mines. It is manufactured there and returned to us. Until recently practically every article in the manufacture of which asbestos entered was imported from the United States. A large new plant is in operation now in Montreal and Mr. Fielding proposes to reduce the duty of 2½ per cent.

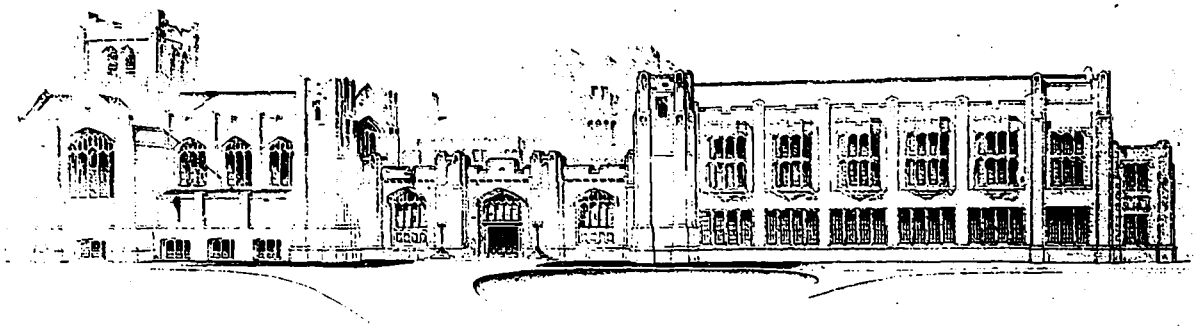
The reduction of 2½ per cent. on plumbing fixtures will simply open a little wider the Canadian market to the operations of the "bath tub" trust of the United States, the methods of which the U.S. Federal Courts now have under investigation.



Ground Floor Plan, Winning Design for Proposed New Knox College, Toronto. Chapman and McGiffin, Architects.



First Floor Plan, Winning Design for Proposed New Knox College, Toronto. Chapman and McGiffin, Architects.



Perspective View, Winning Design for Proposed New Knox College, Toronto. Chapman and McGiffin, Architects.

THE NEW KNOX COLLEGE COMPETITION

Conditions of Programme, and designs submitted in competition recently conducted in Toronto for important addition to University group.

CONSIDERING the many unsatisfactory phases and disappointing outcomes, within the immediate past, of several undertakings of a similar nature, the recent competition for the new Knox College, Toronto, stands out with no little prominence as an instance in which the architects who participated were able to compete under conditions which, if not altogether ideal, were at least most satisfactory in many respects. It was by far the most successful competition held in Ontario for some little time back, and especially can this be said in view of the recent Government House fiasco, and the marked dissatisfaction that made itself manifest in the prolonged and somewhat acrimonious controversy which followed the award in connection with the proposed Hamilton Library. With two eminently qualified assessors, acting in conjunction with the building committee in formulating the programme and making the award, it embodied a condition in the conducting of architectural competitions, which representative bodies of the profession have been demanding for some time as necessary for the best interests of all parties concerned. Further than this, the promoters did not break faith with the architects by rejecting their plans and calling for a new competition; nor did they underestimate the value of the services for which they asked, as is evidenced in the fact that the successful competitor was awarded the commission for the work, while three others were compensated to the extent of $500 each, for the time, trouble and expense which their services involved. Moreover, the programme was noteworthy in that it restricted the right to compete to architects who were *bona fide* residents of Canada, something which cannot be said regarding a number of competitions which have been carried out of late in connection with some of our more important commercial and semi-public buildings. Under circumstances such as these, the architects who submitted designs have much less reason to complain than they have had in many cases heretofore.

That the confidence of the building committee in the ability of Canadian architects to successfully design this important structure was not by any means misplaced, is amply attested to in the number of excellent designs submitted in addition to the one chosen, any of which if carried out would make a notable addition to the University group. Outside of the fact that the programme in the wording of its terms was possibly insufficiently clear on one or two points, there was very little ground on which it could be criticized. With a few modifications of a minor nature, it would admirably serve as a model for future undertakings of this character. The full text of the programme, together with the several illustrations and descriptions by the respective authors setting forth the features of their plan, published herewith, we believe will be of special interest to our readers.

Conditions for Competition

1. The Board of Management of Knox College, Toronto, are the Promoters of this Competition.

2. The Competition is restricted to Architects, or firms of Architects, practising in Canada for at least one year previous to the issue of these conditions.

3. The First Prize in this Competition shall be the Commission for the designing and superintending of the erection of the proposed building at such time as the same shall be proceeded with on the usual terms, One Thousand Dollars, to be paid to the winner within one week of the announcement of the award, this One Thousand Dollars being subsequently merged in the amount of the Commission when the work goes on.

4. The authors of the three designs which the Assessors consider the best after awarding of the First Prize (which designs are to be bracketted in their report as equal) shall be paid Five Hundred Dollars each within one week of the announcement of the award.

The Board of Assessors shall consist of the following:—

5. Frank Darling, Esq., of the Firm of Darling & Pearson, Architects, Toronto.

Percy E. Nobbs, Esq., Professor of Architecture, McGill University, Montreal, together with five others to be appointed by the Building Committee of Knox College.

The award of the Assessors shall be accepted by the Promoters.

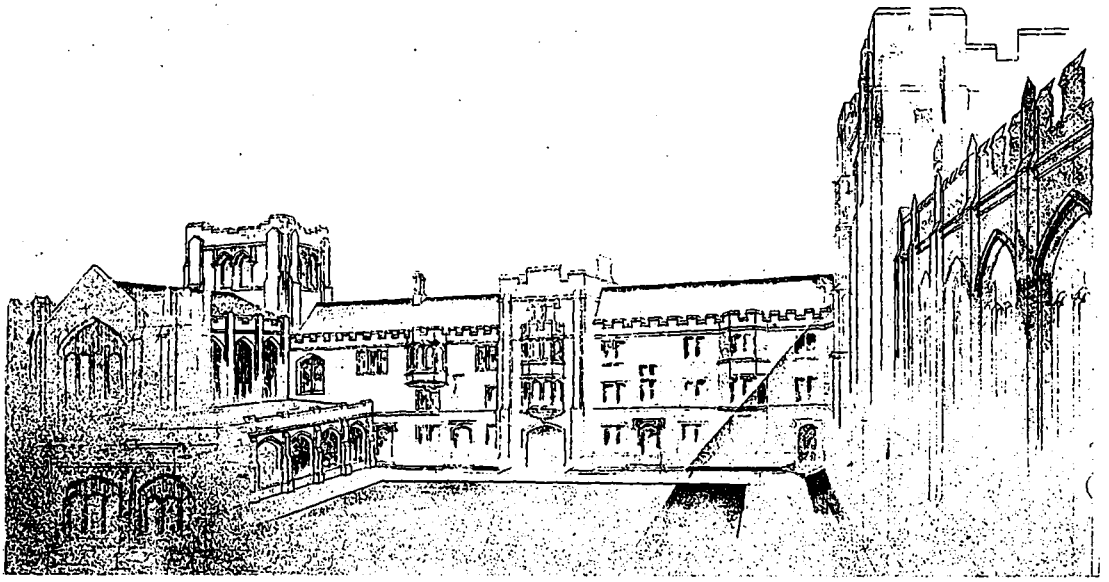
The Professional Assessors are responsible for the Conditions herein set forth, and in reporting their award shall make such recommendation to the Promoters as to improvements in the winning scheme as their study of the problem may suggest.

Any suggestions subsequent to the "award report" which the Professional Assessors may furnish will be given as honourary advice.

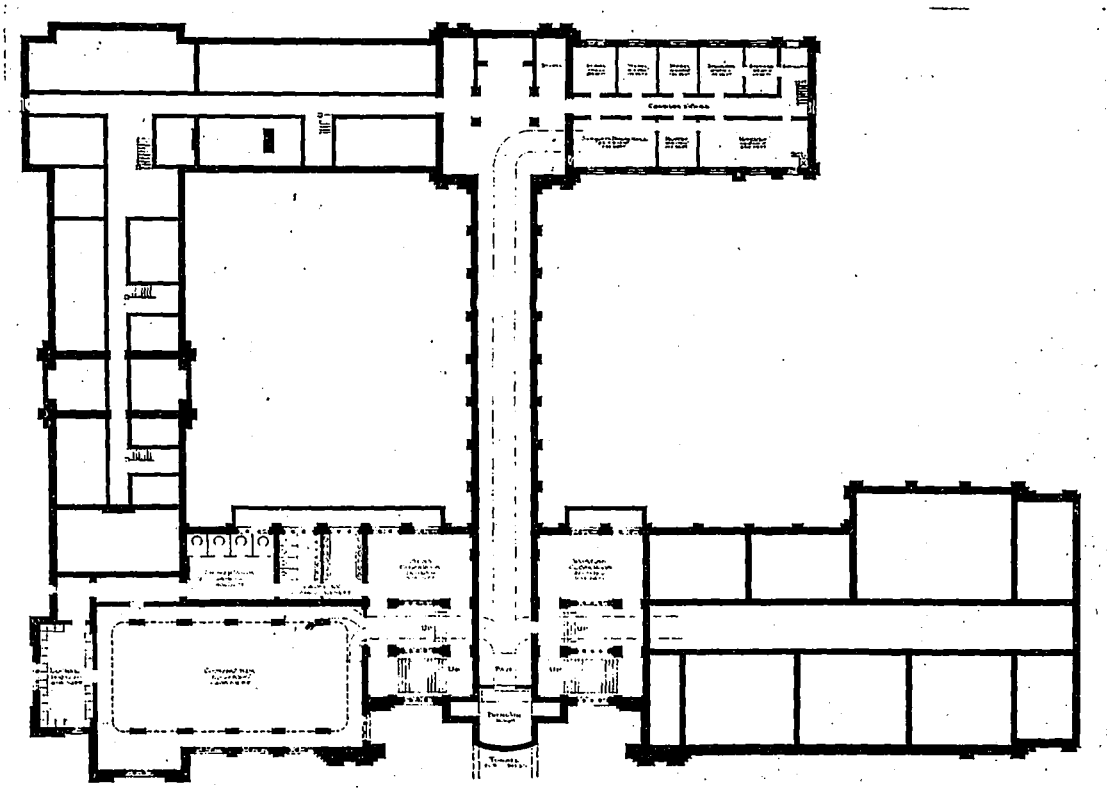
6. The award shall be made within thirty days of the date for the sending in of the drawings, and the drawings shall be exhibited in Toronto with the names of the authors marked thereon, for three or more days immediately subsequent to the award.

All drawings shall be returned to the various competitors immediately on the close of the exhibition.

7. The Promoters desire and expect to receive in this competition a carefully studied general scheme, whose complete character shall be intelligibly illustrated in the competition drawings, and whose execution would realize the requirements herein set forth.



Perspective, Looking South into Quadrangle. Winning Design for Proposed New Knox College, Toronto. Chapman and McGiffin, Architects.



Basement Plan, Winning Design for Proposed New Knox College, Toronto. Chapman and McGiffin, Architects.

PREPARATION AND DELIVERY OF THE COMPETITION DRAWINGS.

1. The drawings submitted (except Block Plan) shall be made to a scale of one inch to eight feet and shall comprise the following only:—

(a) A Block Plan drawn to a sixteenth scale.
(b) Elevations to illustrate the all frontages.
(c) Floor plan for each story, including basement and roof.
(d) Sufficient sections to clearly illustrate the scheme proposed.
(e) A perspective drawing is required showing principally the frontage of the Building towards the lawn with the horizontal line taken ten feet above the ground level. This drawing may be executed in any monochrome medium and in whatever manner the Competitor prefers. Should any competing desire to submit further perspective sketches no objection will be raised.

2. The scale drawings shall be made in India ink on white paper, delivered flat in portfolios and not framed, or mounted on cardboard or stretchers.

The walls and partitions to be blacked in solid.

The external elevations may be washed in with cast shadows.

Windows openings shall be rendered in dark grey.

Watered ink may be used to indicate different planes of distance and textures of wall materials.

All rooms and corridors shall be figured for dimensions and area.

The main titles shall be in Roman capitals, all other lettering, notes and figuring shall be in plain block type.

No colour is to be used in any of the drawings.

The size of each and every sheet of drawings submitted shall be thirty-six by forty-four inches; this to include all borders, titles, lettering, etc.; the portfolios to be made just large enough to comfortably hold them.

Perspective drawings may be set up from such scale as may be desired, so long as the size of the sheet mentioned is not exceeded.

Competitors are requested in the interest of the judges not to employ more sheets than are necessary to properly illustrate their design. Two elevations could very possibly go on each sheet—one above the other—and sections and elevations on others. Sectional drawings may be skeleton only, no elaborate detail being shown.

3. The Competitor shall submit with the drawings a type-written unsigned statement, briefly describing the arrangement of the building, its construction and materials, with an explicit statement of the rate at which the work is estimated to cube, (exclusive of equipment) together with a guaranteed computation of the number of cubic feet in the building properly worked out, with description as to what method is followed in working out the cubical contents.

The type of heating and ventilating proposed shall be taken up in this statement.

4. The drawings must have no mark or device of any kind, nor any hand writing, or other means of identification. With each set of drawings is to be enclosed a blank sealed envelope containing the name of the author, together with a statement that the designs and drawings have been prepared in his own office, under his own supervision. Envelopes will not be opened until after the award has been made.

5. Any infringement of these regulations or disclosures of identity may be held sufficient grounds for the exclusion of the drawings from the competition.

All questions asked by the Competitors must be addressed to Rev. Dr. John Somerville, Confederation Life Building, Toronto, not later than July first, 1910, and such answers as the Assessors give will be sent within fourteen days thereafter to all Competitors asking questions or who may have notified Dr. Somerville of their intention to compete.

7. The drawings and the descriptive statement shall be enclosed in a blank sealed package, which, together with the blank envelope, shall be again enclosed in a second sealed covering, addressed and delivered to Rev. John Somerville between 9 a.m. and noon on Tuesday, the 1st of November, 1910.

THE ARCHITECT AND THE WORK.

1. The Architect who shall be awarded the work, shall, if required, make such changes in plan and arrangement as shall be necessary to meet with the views of the Building Committee to be appointed by the Promoters.

2. After the plans have been finally accepted by the Building Committee and the Promoters, the Architect shall prepare working drawings and specifications and shall supervise the work during the construction of the building. Subject to the approval of the Building Committee aforesaid, he shall have control of all matters of arrangement, design and execution.

3. All drawings and specifications as instruments of service, are to remain the property of the Architect, but one record copy on tracing linen of the plans, elevations and sections of the work as executed, to the scale of one inch to eight feet, shall be furnished to the Promoters when the works are completed, together with a set of specifications amended to correspond with the works as carried out. And also a correct figured plan of all the drains inside and outside the building.

4. The Architect shall appoint a thoroughly competent Clerk of Works, approved by the Building Committee. The Architect shall regulate the duties of the Clerk of Works and shall have power to discharge him for cause.

Such Clerk of Works shall devote his whole time to the job and shall be paid by the Promoters.

5. The Architect shall appoint a qualified Professional Heating and Ventilating Engineer (not a Contracting Firm or a member of one) approved by the Building Committee. The fees of such Engineer shall be paid by the Architect out of his own commission.

6. For all these and such other services as are usual ond incidental and necessary thereto, the Architect shall receive the usual commission of five per cent. on the total cost of the works.

SITE AND CHARACTER OF THE PROPOSED BUILDING.

1. The site is bounded on the West side by St. George Street, on the East side by the University Lawn and lies between adjoining properties on the North and South, over which the Promoters have no rights of light.

The site measures 337 feet 9½ inches from North to South by 233 feet 5 inches from East to West.

The surface of the site is practically level.

No portion of the building shall be nearer to St. George Street than 20 feet, and all outside steps or vestibule approaches on the East side must be entirely within the figures given above.

2. An unobstructed open public passageway, six feet wide, is to be reserved across the South end of the property.

On the street frontage the buildings may, if necessary, extend approximately two hundred feet northwards from the Southern boundary of the property. On the lawn frontage no part of the building may extend more than two hundred and eighty-five feet northward from the Southern boundary of the property; the ground westward from this point may if necessary be occupied to a depth of seventy or eighty feet.

3. The remainder of the property to the north is reserved for future extension, and for the present cannot be utilized.

It is desired that competitors indicate on the block plan their suggestion for the future extension of the residential portions of the buildings over this Northern part of the property.

4. The scheme contemplates a group of connected buildings serving the double purpose of a Teaching, or Academic, Block and a Residential College—the former to have a main entrance from the University Lawn; the latter to be entered from St. George St.

These two blocks connected by a cross block, will roughly form a sort of irregular letter "H."

Care must be taken that the interior courts so formed shall have plenty of light, air and sun.

5. No part of the proposed buildings intended for residential purposes shall occupy any portion of the ground facing the University Lawn, while on the other hand no part of the buildings used for Academic purposes shall occupy any portion of the ground fronting on St. George Street.

6. The chapel and library shall be considered as being part of the Academic Block, the dining room as part of the Residential Block.

7. Persons entering the buildings from St. George Street must have easy, direct and dignified access right through to the Academic side; in other words, people anywhere in the buildings must be able to leave them equally conveniently, either by the University Lawn or St. George Street entrances. See that this intercommunication between the blocks is thoroughly well lighted, cheerful, and architecturally attractive.

8. The Main Building of University College, as well as the Library across the Lawn opposite the proposed new buildings for Knox College, are built of a light grey stone in a round arched Norman style of Architecture, and the Promoters consider that generally speaking, this character of design should be followed, and that any radical change from the colour, material or scale of the University College Building should be avoided as much as possible, at any rate so far as such portions of the new buildings as would be visible from the Lawn are concerned.

The elaboration of detail, ornament and carving which exist in the University College Building cannot of course be expected to be reproduced, but this omission will not prevent the general architectural feeling of the building being followed.

9. The Promoters desire that if possible, the whole of the building should be of grey stone, but if the cost of this is prohibitive, then at least the portion visible from the lawn should be of this material. They wish also that such attention be given to the Eastern facade that it may prove a worthy companion to University College. That care should be taken to make the interior courts distinctive architectural features, and that the Residential portion should be homelike in appearance, rather than Institutional. It is desired also that the Dining Hall should form an attractive feature of the Residential section.

10. That portion of the building devoted to Academic purposes must be fireproof throughout—while in the remainder of the building judgment must be used in the planning of fire walls, staircases, etc., to check the spread of fire as much as possible.

The buildings throughout must be designed and constructed in a thoroughly substantial manner.

11. With the exception of the distribution, and general outline herein mentioned, the whole of the planning and design, and to a large extent the style, is purposely left to the discretion of the competitors as it is desired to obtain as many independent solutions of the problem as possible.

12. The sum the Promoters expect to have at their disposal for building, exclusive of equipment, is Four Hundred Thousand Dollars ($400,000.)

ACCOMMODATION.

1. The following accommodation is required:—

Class Rooms:

	Superficial Area	
One Class Room of	1,200	
Three Class Rooms each of	750	
Two Class Rooms of	500	
		4,400
Board Room	500	
Business Office	300	
Principal's Room	350	
Reception Room	400	
Six Professors' Rooms each	300	
		3,350
Librarian's Office	300	
Magazine Room	450	
Private Reading Room	450	
		1,200

2. Provide a Professors' Lavatory convenient to their Pri-

vate Rooms—also a Lavatory for the Principal in communication with his own room.

Provide two coat rooms, 350 superficial feet each; one for men and one for women, with small lavatory connecting with each. These may be in the basement, if necessary.

All lavatories throughout must have windows opening directly into the open air.

3. Rooms in the Academic Block are to have good high ceilings and to be very well lighted. Special attention being given to ventilation.

4. The Library Department is to have a Stack Room with a capacity of 75,000 volume; a Reading Room with shelving round walls to hold 2,000 volumes, and accommodation for sixty readers comfortably seated at tables. Indicate on the plan the position of tables and stools, delivery desk, etc., also the stacks in the Stack Room.

Provide also a Librarian's Office, a Magazine Room and a Private Reading Room as before mentioned.

All the above are to be kept together and so arranged as to afford convenient intercommunication and supervision.

5. A chapel is required with seating capacity for from four hundred and fifty to five hundred persons. The chapel should be so placed that it may if found necessary, be omitted for the present and built when funds are forthcoming.

It is desired that the chapel should form a feature of the design both inside and out.

6. It is suggested that some portion of the basement should be so arranged that sufficient height can be obtained for a gymnasium well lighted, with dressing rooms, baths and lavatory in connection. This is not contemplated at present but it would be well if provision were made for it.

RESIDENTIAL BLOCK.

7. Accommodation is required for about one hundred students in residence, consisting of at least three or four separate houses or groups of rooms.

Each separate house or group of rooms shall have its own entrance staircase, etc., and shall in all respects be self contained.

The majority of the bedrooms are to be arranged for a single occupant and interspersed among them will be a few suites of rooms consisting of two small bedrooms with a study common to both.

Each house shall have a small reception room on the ground floor and on each floor adequate bathroom and lavatory accommodation, linen room, H.M. sink, etc.

All bedrooms must have closets.

8. There is no reason why each house should be a counterpart of the others or that each should contain an exact same number of rooms—a little variety would be an advantage and add to the homelike character of College.

9. One large common room, and also a Reading Room are required to be provided in connection with the whole Residential Block.

10. The Dining Hall is to be arranged so as to seat comfortably about one hundred and fifty people with a slightly raised dias at one end for the high table.

Connected with it must be adequate provision for serving room, pantry, scullery, kitchen, ice boxes, stewards' offices, servants' dining room, etc., commensurate with the work that will be necessary.

There would be no objection to everything but the Dining Hall and the Serving Room being in the basement.

Connection should be gained to each separate house from the basement in order to facilitate the housekeeping service.

11. Entirely cut off from the students' quarters provision must be made for Living Apartments for the Steward and his family and for eight women servants, with proper bath room accommodation.

Provide also bedrooms for Janitor and Fireman.

12. Somewhere in the residential section shall be a room, so arranged as to be easily isolated from the rest of the building, and capable of being fitted up as a small hospital ward with lavatory accommodation and accommodation for a nurse connected therewith.

The drawings reproduced in this connection, which includes the work of all but two of the competitors, whose designs were not available for this issue, will give those who did not view the exhibited plans an excellent opportunity to judge the relative merits of the designs submitted.

The Winning Design

The features of the design of Messrs. Chapman & McGiffin, Toronto, which was accorded first place, and which calls for an imposing building in Gothic treatment, are described by the authors as follows:

The connecting link between the academic block and residence college has been reduced to a cloister enclosed and heated during winter. The chapel and library facing the University lawn have been separated by a low arcade suggestive of entrance into a quadrangle beyond, and the dining hall has been placed on the St. George Street elevation for the following reasons:—

First.—To give the two courts the effect of one large quadrangle with a broad opening from the University lawn, by means of which the extent of a quadrangle bounded by the chapel, the library, the dining hall, and the residences, could be appreciated from the University lawn, and the requirement of a group of connected buildings most effectively fulfilled, thereby carrying out the established traditions in Oxford and Cambridge.

Second.—To avoid spoiling this opportunity by dividing these courts with a high building, so that it would be necessary to keep the north and south sides open to fulfill the requirements of plenty of light, air, and sun. These open sides, which would be the most important sides as viewed from the college, would be adjoining uncontrolled property, the building upon which might ruin all the attractiveness of the courts. The recession from the building line as well as the six foot passage would protect the light and air sufficiently of the bedrooms facing south as the residence building is not high.

Third.—To avoid competition with the adjoining University College by repeating the motif of a large central feature flanked by two wings, practically on the same plane, the duplication of which would either be to the detriment of Knox College, owing to the omission of the enrichment, or to the detriment of the University College, owing to the preponderating mass. By throwing the preponderating mass on the central feature back from the face all impressiveness can be given to Knox College without affecting the proper relation it should bear to the University College, besides obtaining the great attractiveness, that the distance or depth of a composition always exercises.

Fourth.—To add interest to the west elevation by placing the dining hall on St. George Street, thereby breaking the monotony of what in the future, would probably be over three hundred feet of residence about on the same plane, and on a narrow street.

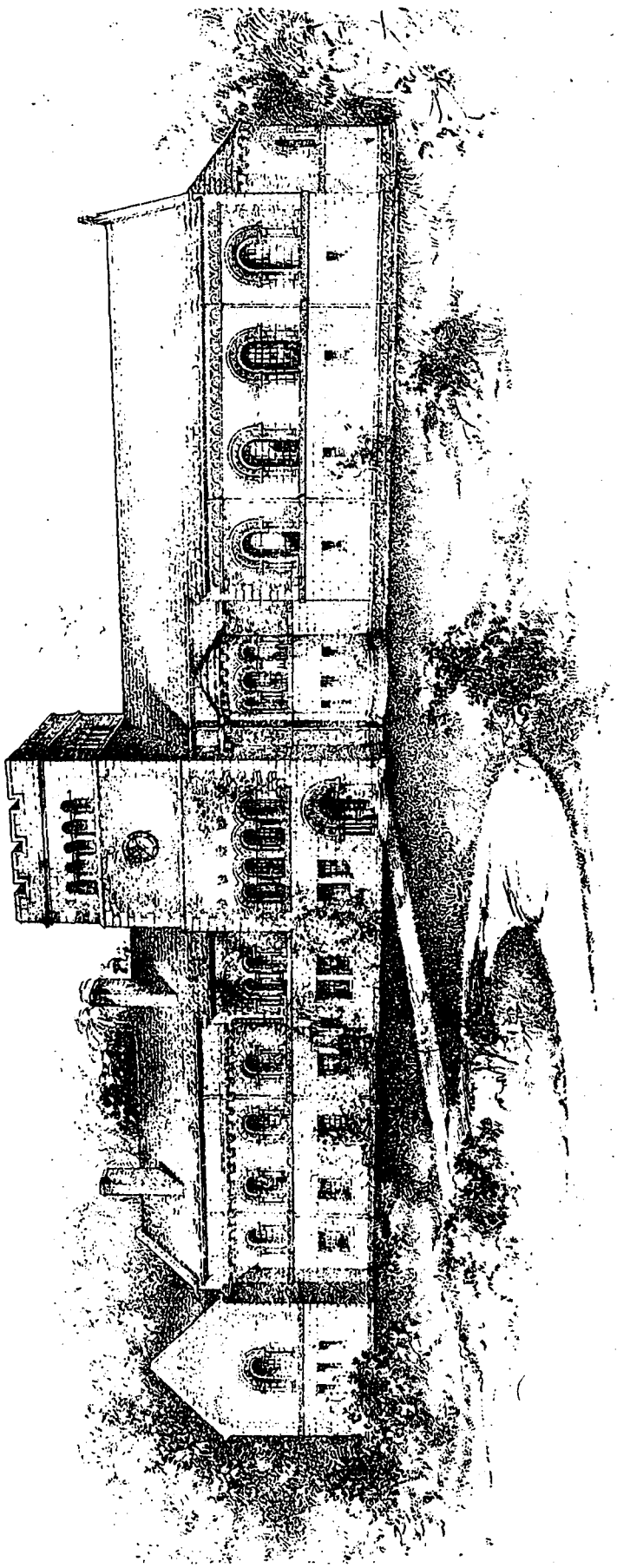
The block plan shows the broad open treatment of plan obtained with the large quadrangle surrounded by the chapel, library, dining hall, and residences and intercepted by the cross communication, from which all this can be viewed, as well as, in the future extension, the smaller probably garden quadrangle opening off it at the north. There would be an opening into the northern quadrangle, similar to that leading from the 6 foot lane on the south through the archway, though which a charming glimpse of the quadrangle would be obtained.

Character of Design.

The style illustrated has been chosen because it lends itself to modern academic lighting requirement and has far more of the academic and ecclesiastical character than the style of University College, which is more suggestive of a museum than academic building. The University building stripped of its interesting ornament, which gives it that charming bejewelled archaeological character leaves a rather crude and clumsy character to work in for modern school requirements, and if Knox College was designed in a purer and more classic form of the round arched Norman style than the University College the latter would lose most of its charm by comparison. We have taken the liberty, however, of submitting an alternate drawing illustrating the effect of our design with the detail transposed, should your Board have reasons for a closer adherence to the Mother Building. The color, material, and most important of all the scale has been closely adhered to.

Detail Arrangement of Plan.

ACADEMIC BLOCK.—The two monumental elements of the plan, the chapel and the library, have been kept on the same axis, so that from the large vaulted entrance hall one has a view on the left up a short, but broad flight of stairs, through the glazed tracery of the entrance into the vaulted chapel beyond, and on the right, one has the same monumental approach to the library with the suggestive view of the library beyond. The administrative portion has been kept in a distinctive and attractive position and in easy communication with the chancel of the chapel. The board room is arranged with a high ceiling, so that an unusually attractive room can be obtained;



Perspective View (Overlooking University Lawn). Competitive Design of Messrs. Wickson and Gregg for Proposed New Knox College, Toronto.

access to the chancel for the choir can be obtained by an entrance at the end of the class room axis, into the gallery of the gymnasium and into the passage under south transept communicating from Principal's room to chancel.

RESIDENTIAL BLOCK.—To add to the homelike and self-contained character of the college, it has been deemed advisable to enter the residences from the large open quadrangle rather than the street. There are four separate houses, containing one hundred and one bed-rooms, four reception rooms, twelve sitting rooms, and twelve bath-rooms.

The entrance to dining-hall is up a broad flight of stairs in a vaulted entrance hall, similar in arrangement to that of Christ Church, Oxford, and on the same floor adjoining the dining-hall is the common reunion room. The reading room and an extra reunion room for special reunions are above this; and above this, in the upper part of the tower, entirely cut off, is the hospital.

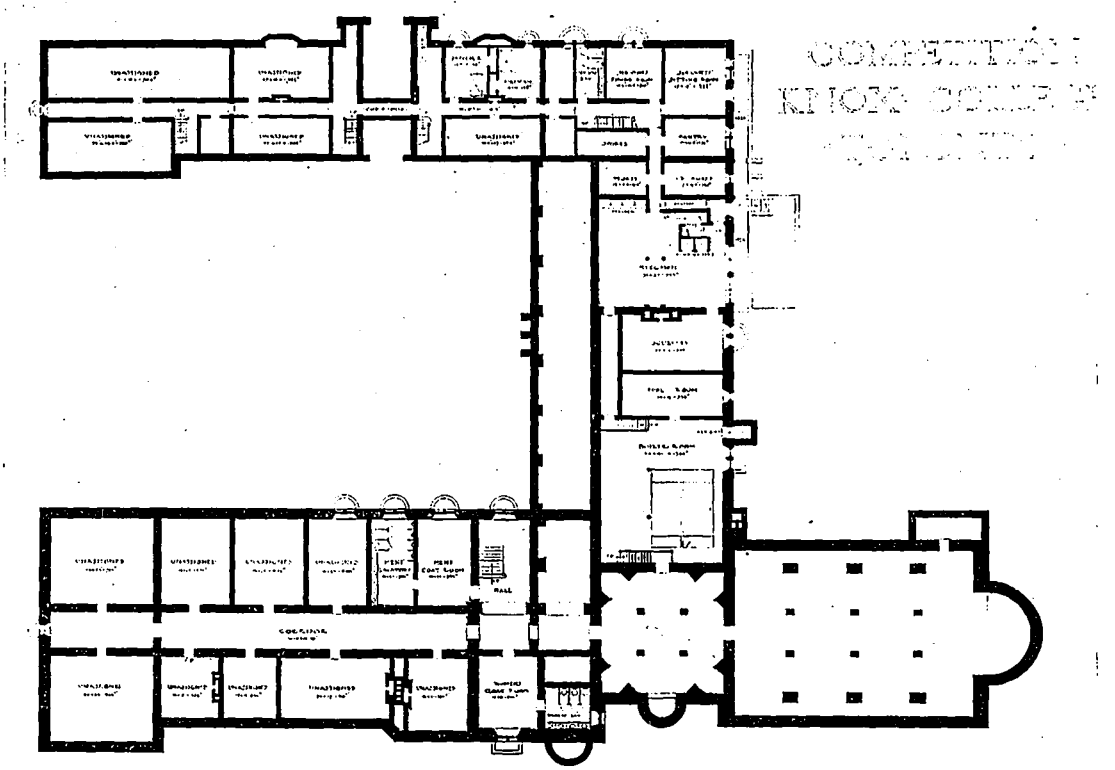
The exceptionally fine view from the dining-hall, reunion rooms, and reading room into quadrangle and beyond on to the University lawn might be noted; and attention is also called to the use of the roof of the cloister as a promenade for the students in seasonable weather.

Materials, Cubical Contents and Cost.

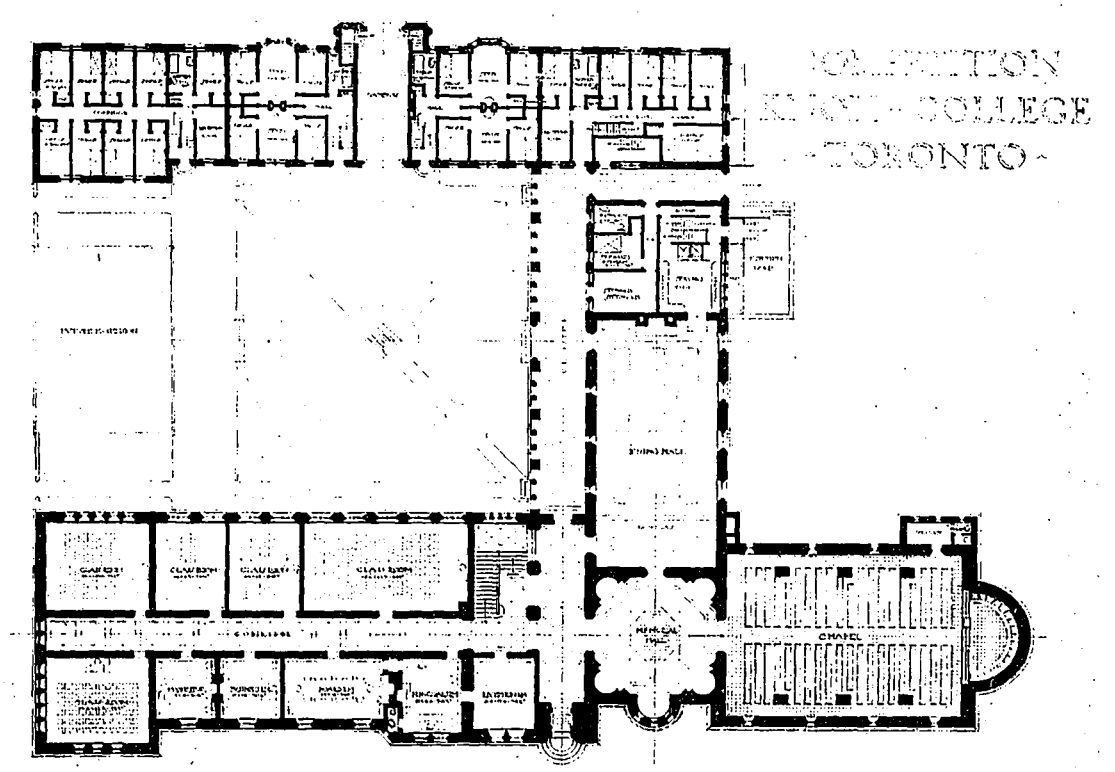
All the exterior material would be Credit Valley grey stone with probably Indiana limestone trimmings, and tracery. The academic portion, west entrance tower, and dining-hall would be first-class fireproof construction; and the residence portion would be semi-fireproof with fire proof halls and staircase and with hardwood trim and metal sash.

The cubical contents of the residences *proper* totals 369,873 cubic feet and it has been estimated that this portion will cube at twenty-five cents	$92,468.25
The cubical contents of the west entrance tower and dining-hall totals to 218,573 cubic feet, and it has been estimated that this portion will cube at thirty cents...	65,571.90
The cubical contents of the academic block, including the cloister, totals 670,590 cubic feet, and it has been estimated that this portion will cube at thirty-two cents, or a total of	214,588.80
This brings the total cost to	$372,628.95

In estimating the cube, the full areas have been taken into account and the heights from the bottom of



Basement Plan, Competitive Design of Messrs. Wickson and Gregg for Proposed new Knox College, Toronto.

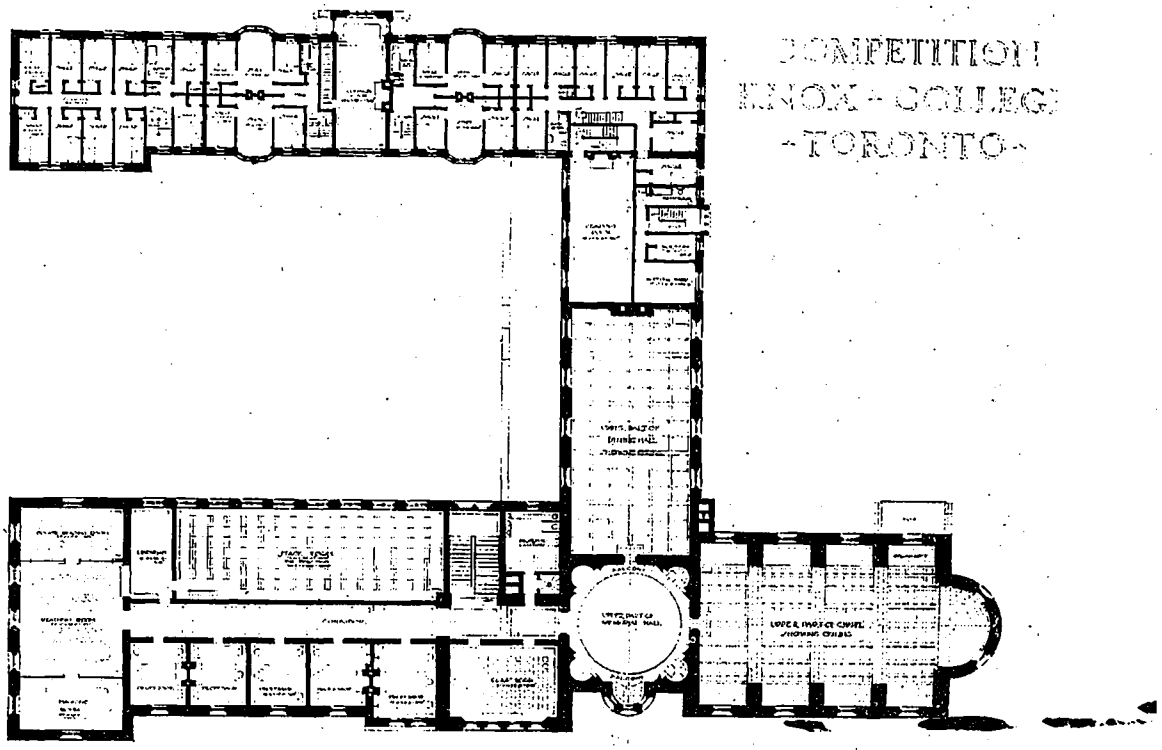


Ground Floor Plan, Competitive Design of Messrs. Wickson and Gregg for Proposed new Knox College, Toronto.

West (St. George St.) Elevation, Competitive Design of Messrs. Wickson and Gregg for Proposed New Knox College, Toronto.

the foundations or one foot below cellar floor to top of the flat roofs and to the average height of all pitched roofs. The cubical contents have been carefully estimated and are correct.

ing a group of buildings from a central power or heating plant will be adopted for this building, particularly as the method is being at present adopted for the existing University buildings. On this assumption the steam

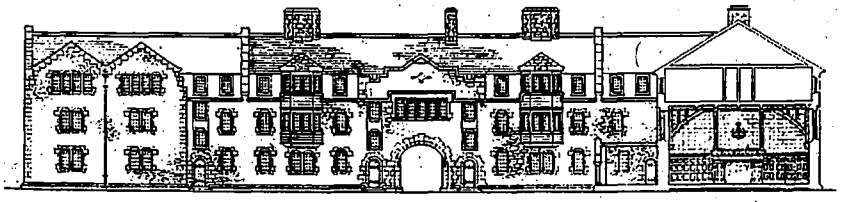


First Floor Plan, Competitive Design of Messrs. Wickson and Gregg for Proposed New Knox College, Toronto.

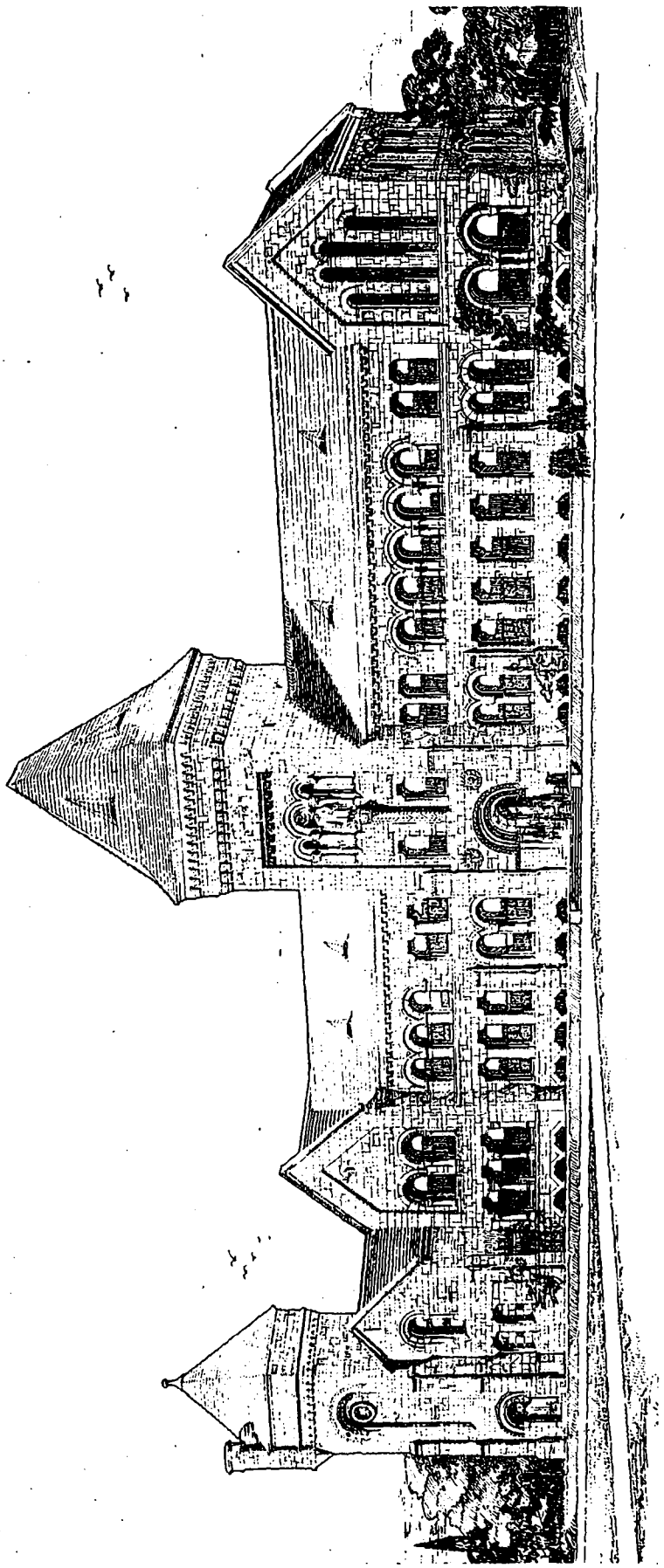
Heating and Ventilation.

It has been assumed that the modern method of heat-

pipes would be brought in at the centre of the building to a large central passage indicated on the basement plan. This passage would also contain the fresh air room, the air being brought down the towers flanking the entrance, and forced by the fan through ducts to the side walls of the library and class rooms on the right, and on the left under the gymnasium gallery to the side walls of the chapel and straight down the passage to the side walls of the dining hall and reunion room. All bed-rooms in the residential block would be heated by direct radiation. The library, academic rooms and din-



East Elevation of Residential Wing and Section of Dining Hall, Competitive Design of Messrs. Wickson and Gregg for Proposed new Knox College, Toronto.



Perspective View (Overlooking University Lawn), Competitive Design of Architect John M. Lyle for Proposed New Knox College, Toronto.

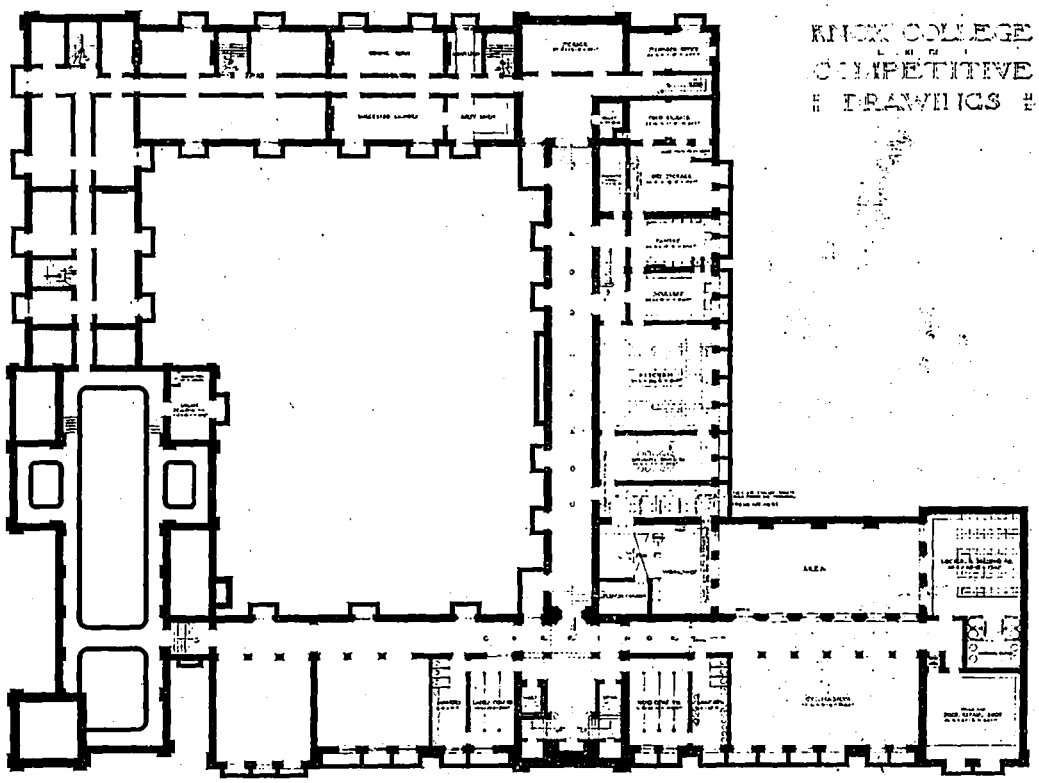
ing hall would be ventilated by indirect radiation and heated by direct radiation. The foul air would be taken off near the floors, assembled in the roof space and exhausted through louvere openings in the towers.

Messrs. Wickson & Gregg's Design

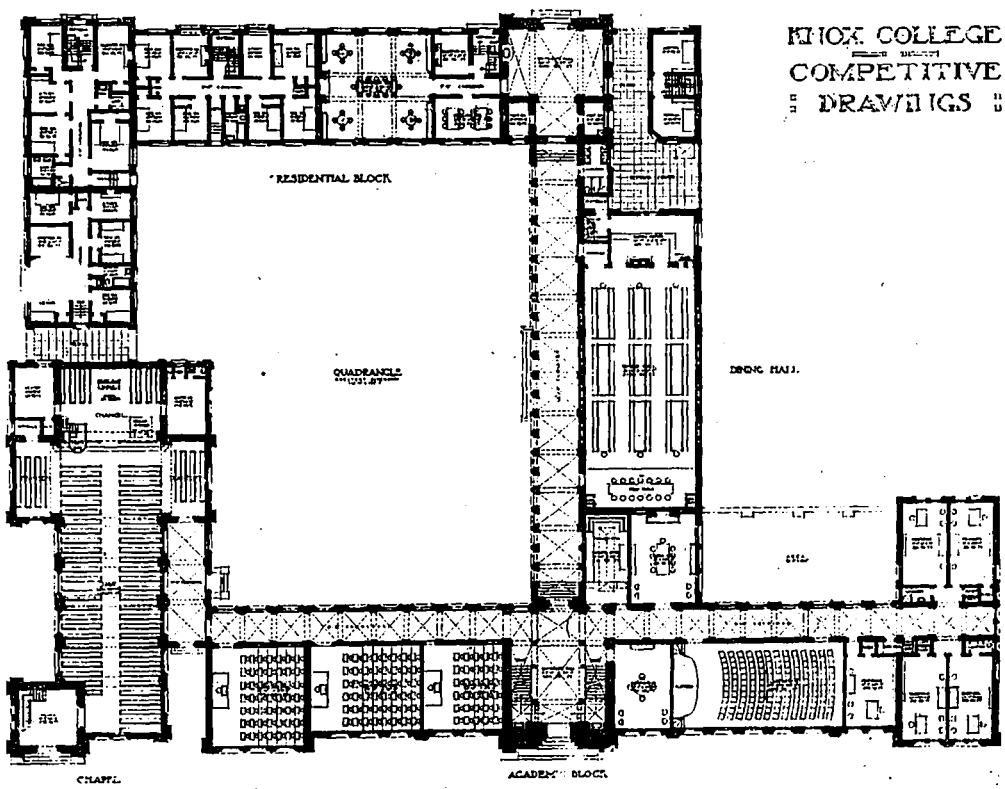
In accordance with the expressed wish of the promoters, the round arched Norman style has been adopted, a style which seems appropriate not only on account of the relation of the proposed building to the University and to the Library opposite, but also for the reason that it seemed a natural development of the plan and expressive of the general purposes of the building. In designing the Academic building, the fact has been borne in mind that the University should be the dominant building in the campus group, and that while the College should have a distinctive character of its own, it should be of less height than the University and much more simple in general outline and detail. As the material has much to do with the design, the suggestion is that the building, where so indicated in elevations, should be carried out in the roughly dressed stonework known as Scotch masonry, and elsewhere in rubble stone with wide joints.

The instructions given in the programme as regards the general arrangements, the sizes of rooms, etc., have been closely followed; while the planning of all halls, corridors and stairs, and the general disposition of the rooms, have been carefully studied to give easy and direct means of intercommunication, and also with a view to ease of supervision, both from the collegiate and housekeeping standpoints, thus ensuring a low cost for maintenance. The University campus may be reached from St. George street by way of the quadrangle, cloister and main hall. This route is intended to be a convenient one, without having the disadvantage of appearing to be a thoroughfare for the general public. It will be noted that what might be called the living rooms, viz.:—the general reading rooms, the students' reading room and the dining hall, will all have south light.

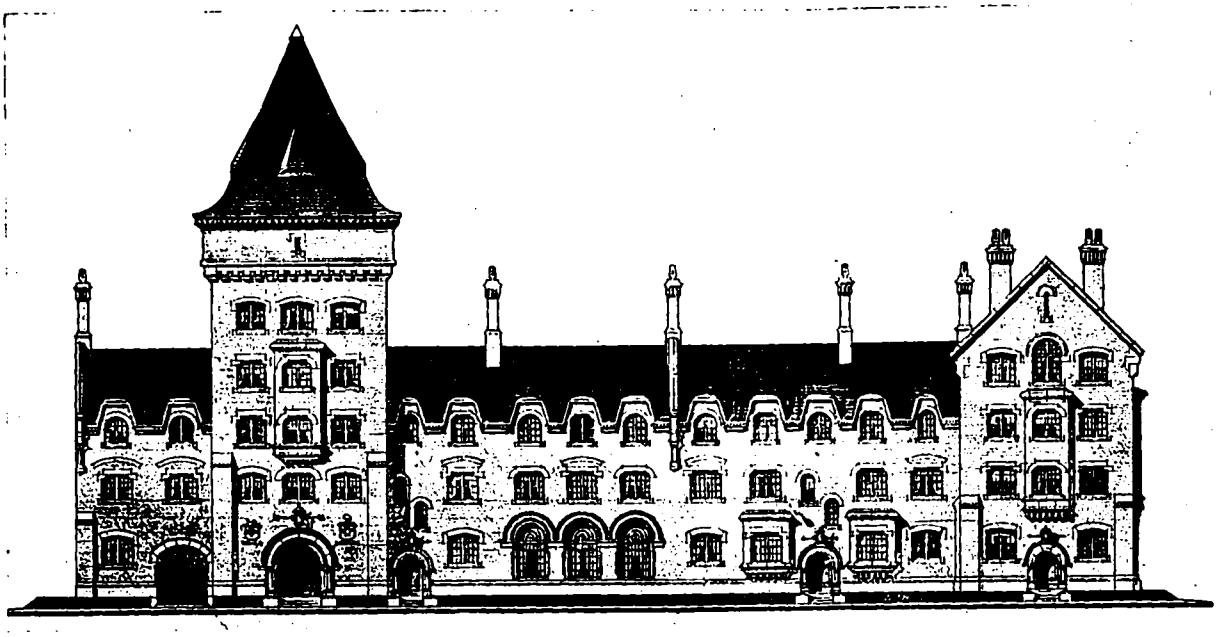
The principal's room and business offices are placed near the entrance, so as to be easy of access and to reduce interference with class work by the public; and all the class rooms have been arranged with ample light according to established rules, the window openings being one-fifth the floor area. The reading rooms have been placed on the second floor and as far as possible from the entrance in order to ensure quiet. The main reading room will be of extra height



Basement Plan, Competitive Design of Architect John M. Lyle for Proposed new Knox College, Toronto.



Ground Floor Plan, Competitive Design of Architect John M. Lyle for Proposed new Knox College, Toronto.

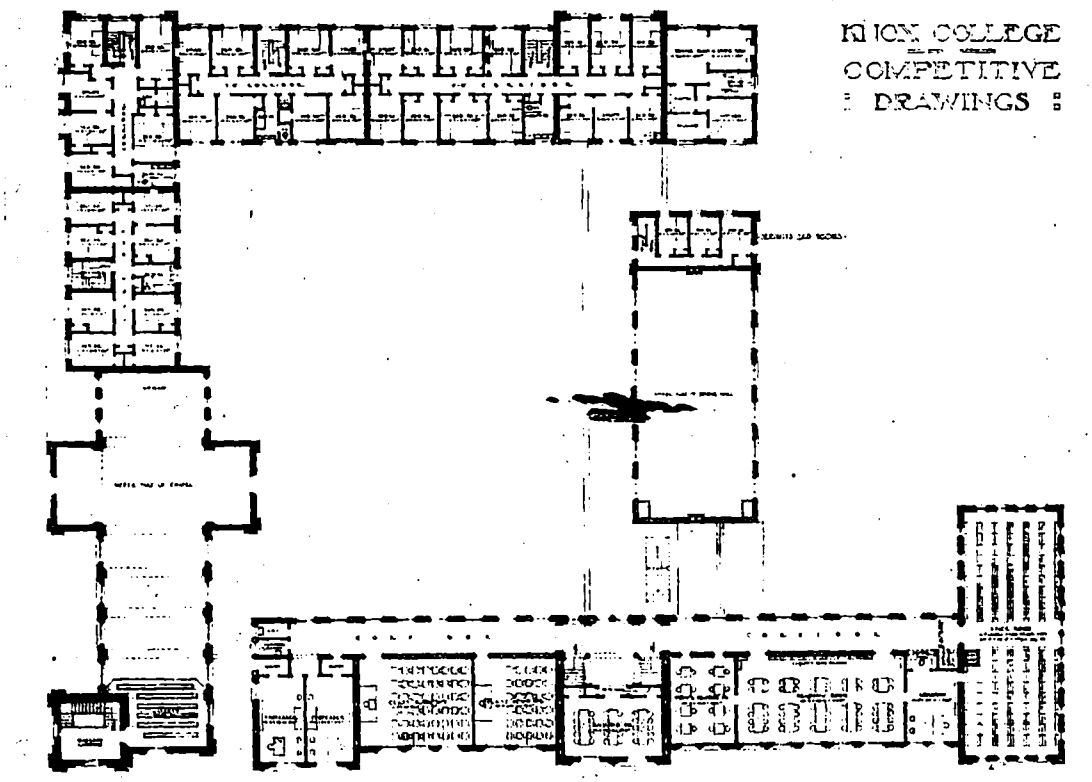


St. George Street Elevation, Competitive Design of Architect John M. Lyle for Proposed New Knox College, Toronto.

with open timbered ceiling. The stack room contains shelf room for 75,000 volumes in two tiers of fireproof stacks. It is supposed that the lower tier will provide space for all books in general use and thus little stair-climbing will be required of the librarian.

door and the windows will have metal frames and wire glass.

The Memorial Hall is intended not only as an architectural feature of interest and as a suitable place for tablets or busts in memory of eminent men of past days,



First Floor Plan, Competitive Design of Architect John M. Lyle for Proposed new Knox College, Toronto.

While the whole of the academic building is of fireproof construction, as an additional security the only entrance to this room will be safeguarded by a fireproof

but it is also planned to serve as an everyday place of meeting for professors and students and as an antechamber or vestibule for the chapel. The gallery above

should prove an interesting architectural feature and from the small balconies views may be obtained of chapel and dining hall. The chapel is designed to seat comfortably 416 persons and the arrangement of nave, aisles and apse should lend itself to a fine architectural effect. If desired, a gallery could be built at the south end, thus increasing the capacity to accommodate 504 in all.

The dining hall is situated so as to be equally convenient to residence and class rooms, and the plan is arranged so that on great occasions it may be entered from the Memorial Hall. The steward's quarters are convenient of access from the cloister and there is also direct connection between his apartments and the service department. The students' reading room is located on the second floor of Cross Block and is reached by entrance at west end of cloister.

Five separate houses have been provided, affording accommodation for 89 students, each suite comprising two bedrooms and a common study. The entrance to these residences will be from the quadrangle, from which the students can quickly reach dining hall or class rooms. In stormy weather, students may descend to the basement corridor and by this means reach any part of the building under cover. A common room for students' meetings, games, etc., is placed over the St. George Street entrance, with separate entrance from ground level. If desired, this entrance could be arranged from the landing of second floor stairs in residence adjoining. In the two central houses, it is supposed that the study rooms will serve for reception rooms. In the north and south houses, separate reception rooms have been provided.

Instead of using any of the unassigned rooms in the basement for the purpose of a gymnasium which the programme suggests might be required in the future, it is proposed that a separate building might be erected near the north boundary when this portion of the college property is available. If the residence be extended to the north and the Gymnasium building built, a second quadrangle will be formed on the north side of Cross Block.

If more accommodation be required for students, it is proposed to build the additional residence building to the north. By reference to the first floor plan, it will be seen that a passage has been provided from the west end of cloister through the connecting block. Future residences may then have entrances on east side, with access from St. George Street through a second archway and access through above mentioned corridor to main quadrangle.

It has already been suggested that a gymnasium be built near the north boundary of lot and if at any time, it is desired to have additional accommodation for class rooms, etc., another building might be erected on the south side of lot.

It is proposed to heat the whole building on the direct steam vacuum system with automatic thermostatic control in all main rooms in academic building, dining hall and reading rooms. In the class rooms, reading rooms and chapel, ventilation will be obtained by means of a mechanically driven fan located in basement, which will supply fresh air and a similar apparatus to be located in chamber in the roof space to remove the foul air. Exhaust ventilators will be placed in serving pantry which will also ventilate the dining room. This arrangement will prevent the odors of cooking from being drawn into the dining room. The kitchen and all toilet rooms will be connected with the exhaust chamber. A boiler room has been provided in basement, but if arrangements can be made to heat the building from the University plant, this room can be utilized for other purposes.

It is proposed that the academic building shall have fireproof floors, partitions and roof. In the cross block and residence building, the floors and roof will be of ordinary timber construction, but it is intended that the different houses be separated by brick walls. In order to form an estimate of the probable cost, the building has been cubed as follows:—

Academic Building (including tower)	626,420	cubic feet.
Chapel	210,728	" "
Cross Block	205,394	" "
Residence	270,387	" "
Total	1,312,929	" "

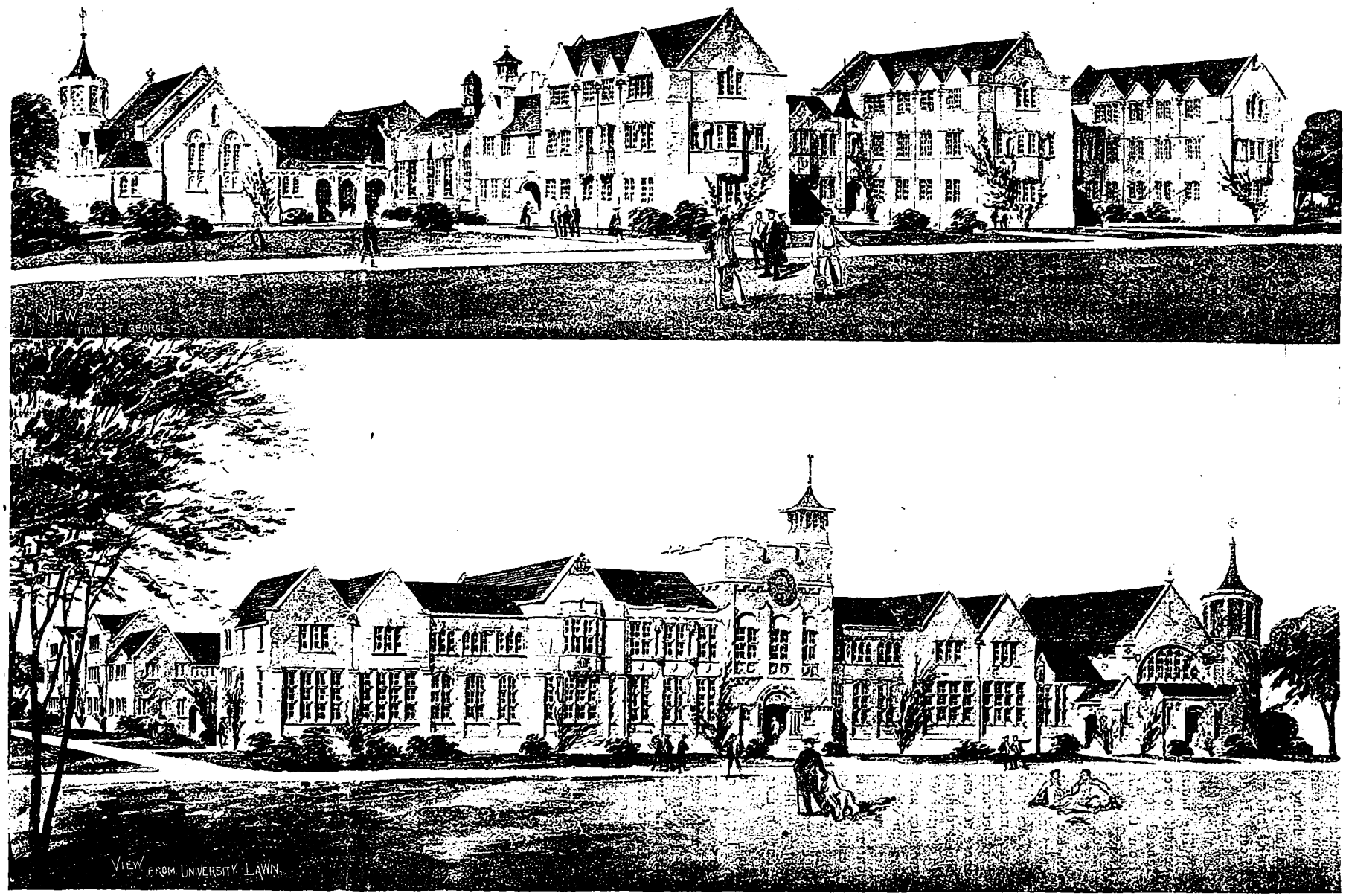
Taking the total cost at $400,000, the price per cubic foot will be 30½ cents, and it is believed that the building can be erected for this amount, this opinion being based on the actual cost of recently erected public buildings in the City of Toronto. In cubing the building, the figures were obtained by taking the height of the various portions of the buildings from the level of basement floor to the centre of the space between the angle of wall and roof and the apex of roof. Although the whole of the basement will not be required for actual use, yet it is recommended that it be excavated throughout, thus assisting in keeping the building dry and giving proper space for the installation and care of the heating pipes, etc.

Architect John M. Lyle's Plan

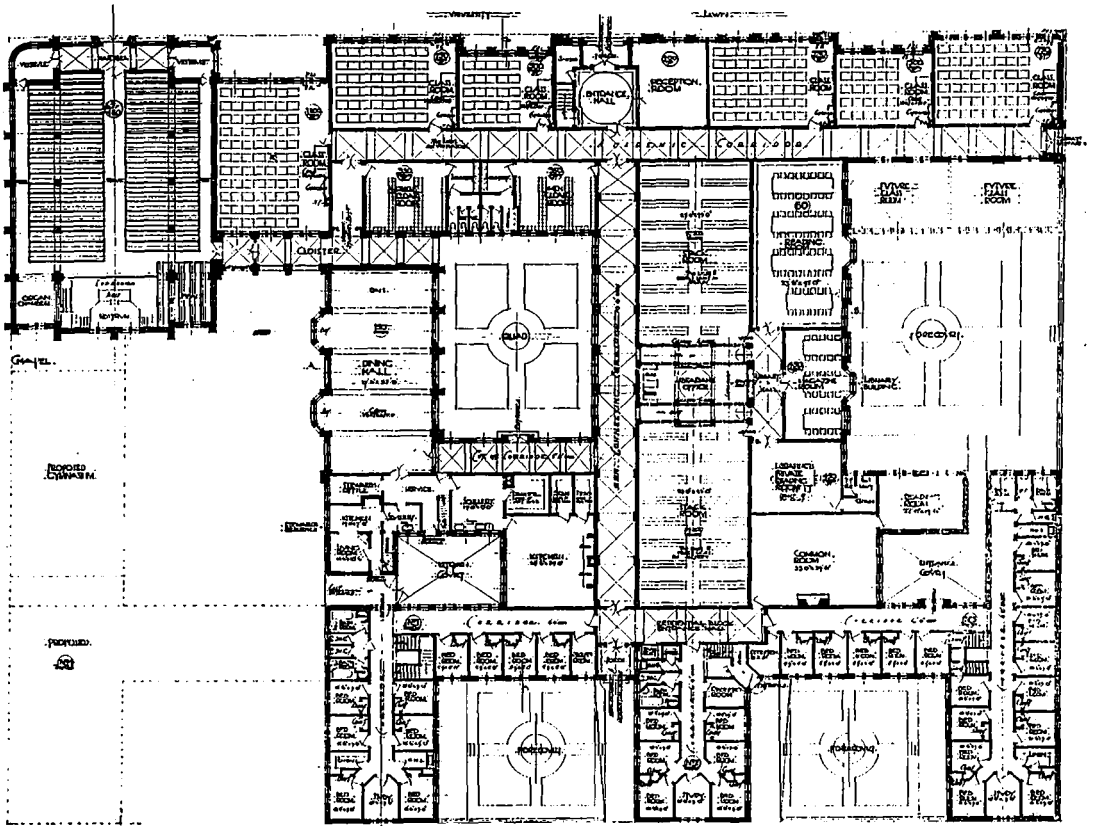
As the programme suggested that the general architectural feeling of the University College building should be followed, an effort has been made to reproduce the spirit of this edifice. The numerous high-peaked towers breaking the sky-line in many places, and the general roof character was also adopted as being characteristic of this most interesting group. In studying the problem it was concluded that one of the principal features in determining the character of the plan was the location of the chapel. As the terms of the competition make known that it is the intention of the promoters to enlarge the academic building at some future time, the chapel has been placed to the left of this structure so as to allow for a free expanson of an academic building to the west. The plan is also arranged so as not to interfere with the circulation to the future wing through the academic building attractive, all classes have been ing has been carried out allows for a quadrangle as large and as open as possible. In order to make the life in the epidemic building attractive, all classes have been placed on the lawn side abutting the corridor giving directly out on the interior quadrangles, thus making a bright attractive corridor and allowing the students to have a pleasant outlook. The dining room has been placed on the ground floor level in the connecting link which is distinctly referred to in the programme, as is also the interior courts so formed. In studying this part of the problem an effort was made to place the dining room on the St. George Street elevation, but it was found, owing to the restrictive dimensions given the programme, that it was impossible to do this and get a satisfactory arrangement or a large enough dining room with the proper service.

Architect G. W. Gouinlock's Design

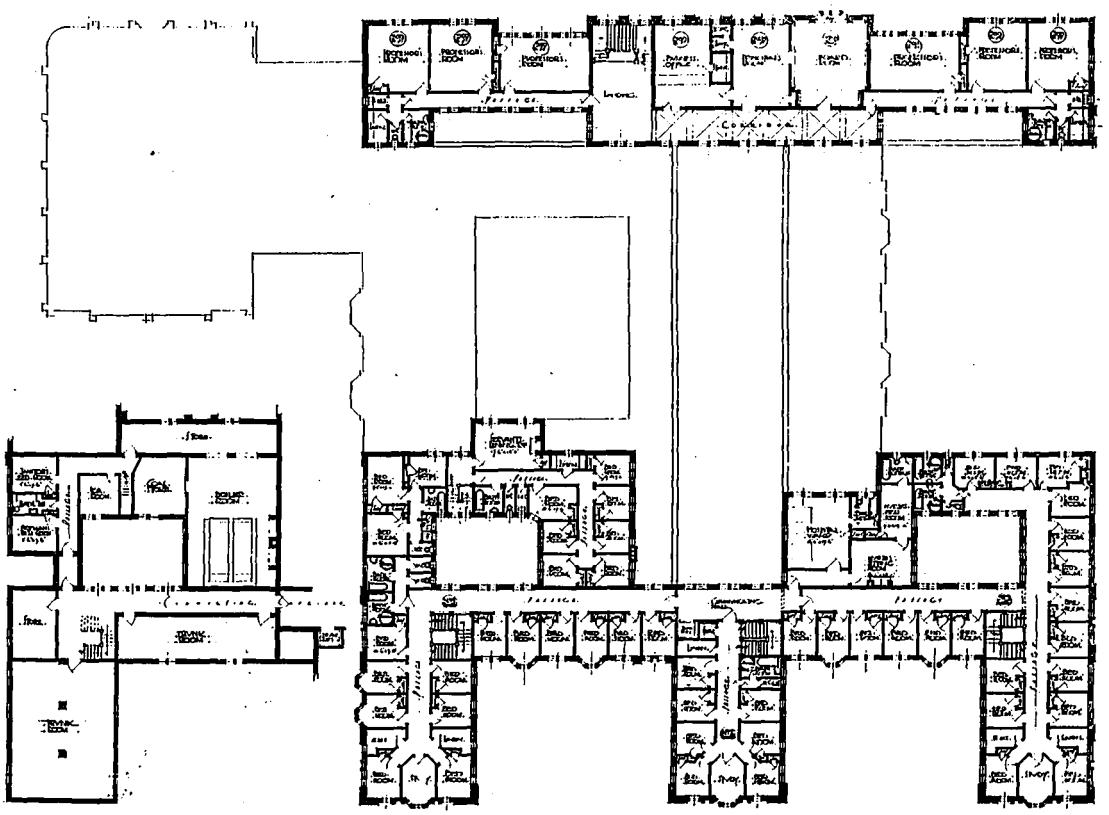
The whole of the accommodation required is worked out in a compact form, thus providing the greatest convenience in arrangement and allowing for adequate supervision and lighting. With this object in view, the different parts of the structure are so placed as to give all courts an ample amount of light, air and sun. No part of the building intended for residential purposes occupies any portion of the ground facing the University lawn; while on the other hand no portion used for academic purposes occupies any part of the ground facing St. George Street. The chapel can be entered directly from the main building, and is so arranged that it



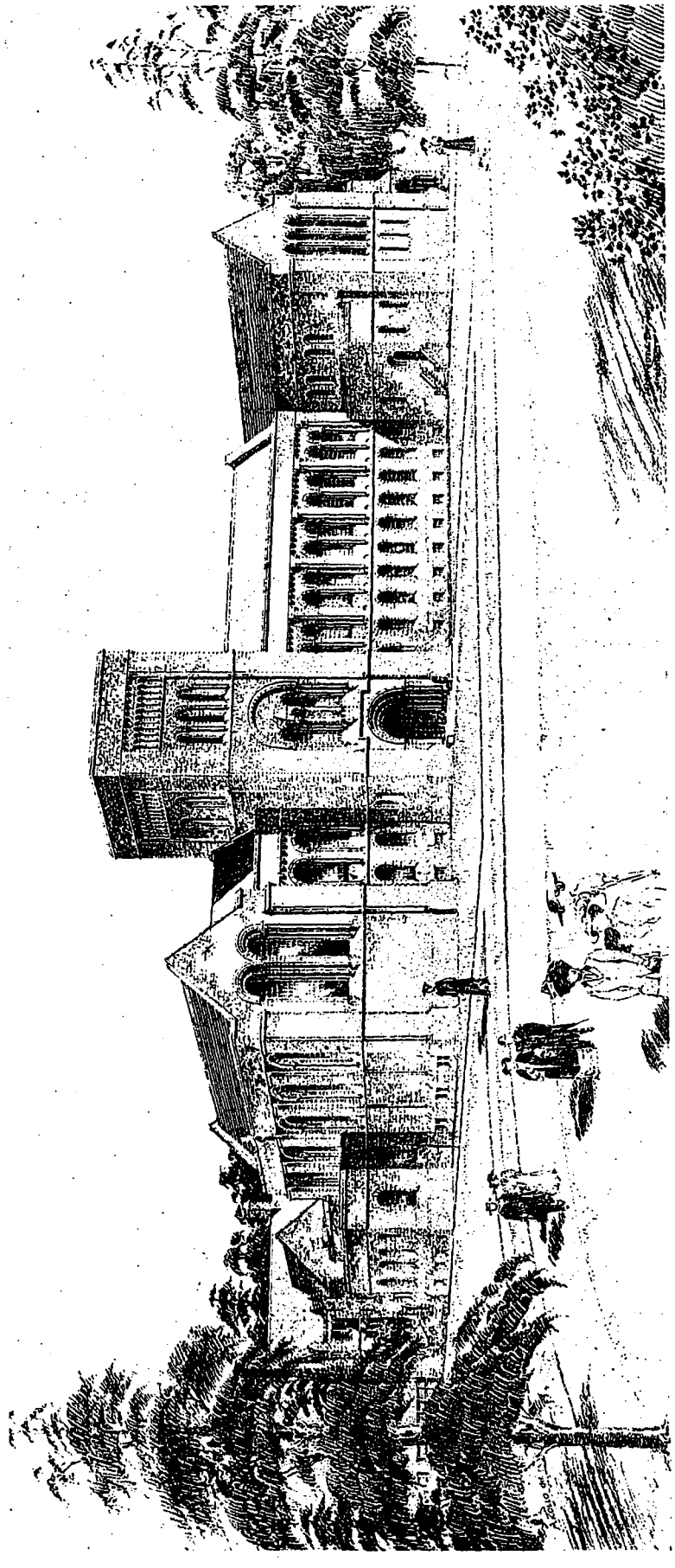
Competitive Design of Architect George W. Gouinlock for Proposed New Knox College, Toronto.



Ground Floor Plan, Competitive Design of Architect George W. Gouinlock for Proposed new Knox College, Toronto.



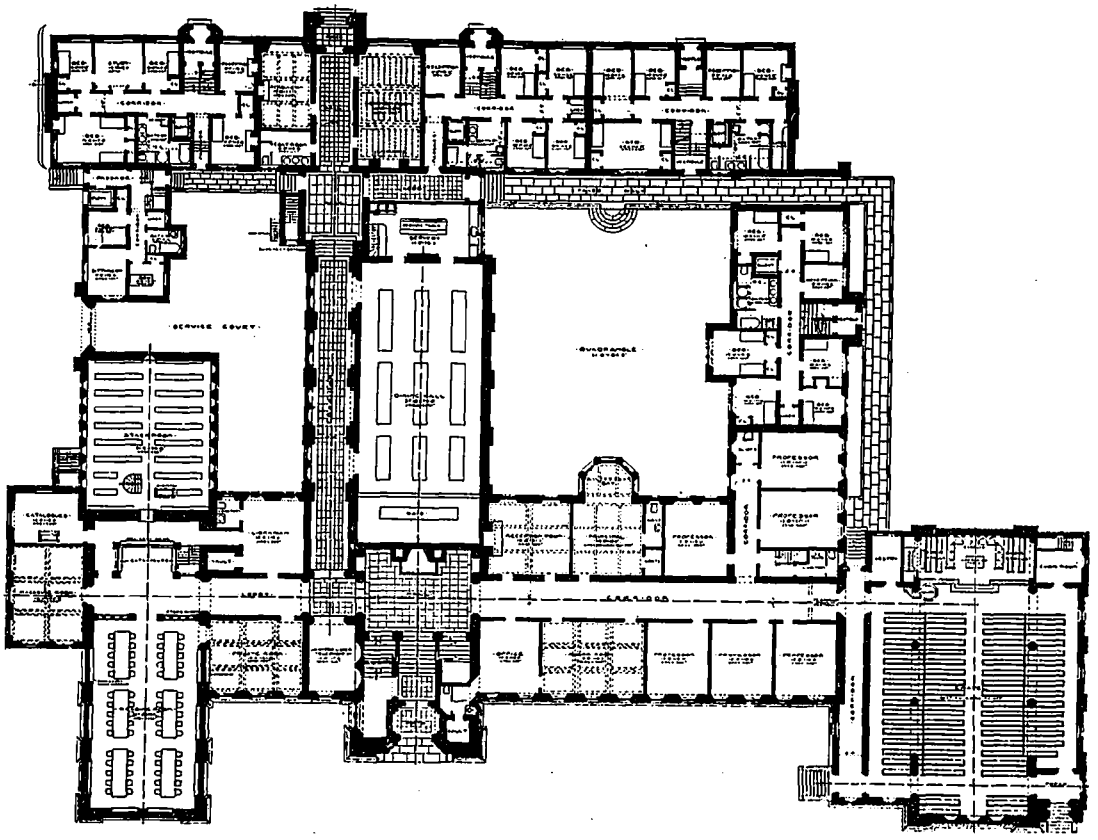
First Floor Plan, Competitive Design of Architect George W. Gouinlock for Proposed new Knox College, Toronto.



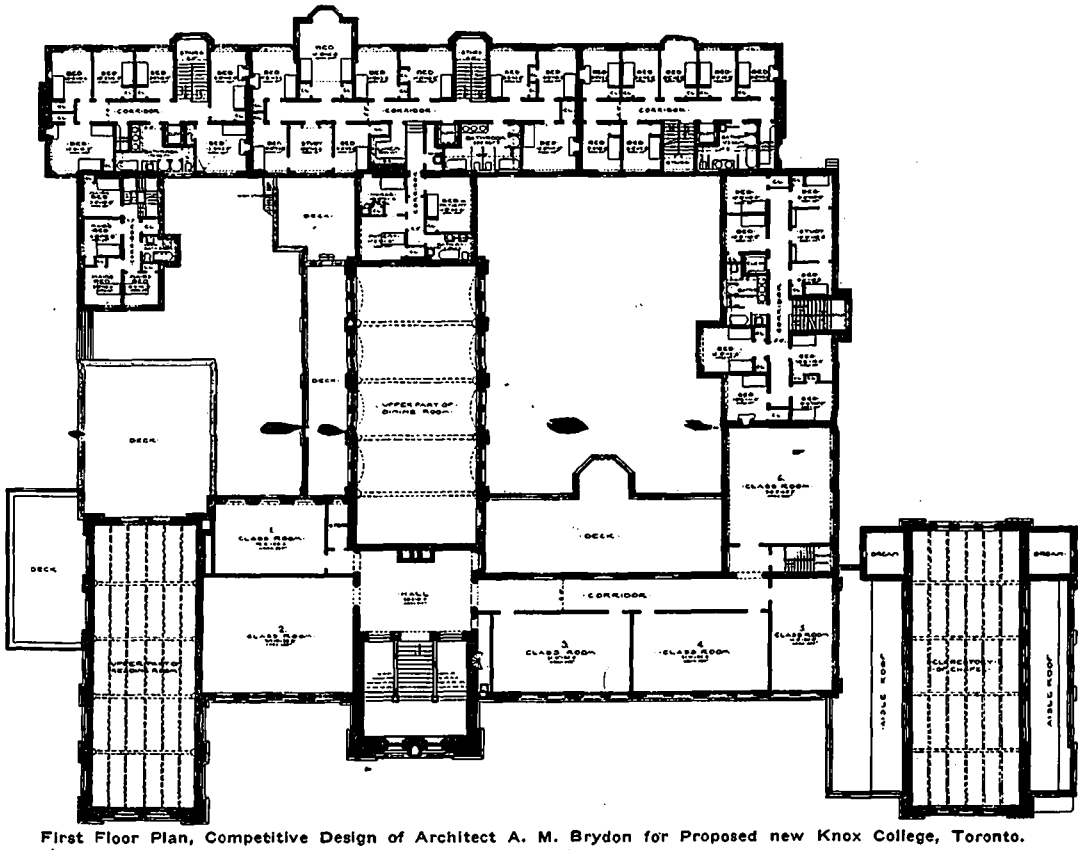
Perspective View (Overlooking University Lawn), Competitive Design of Architect A. M. Brydon for Proposed New Knox College, Toronto.

could be omitted for the present and built when funds are forthcoming. Both the entrance from the University lawn and St. George Street affords direct and dignified access right through to either side by means of a well-lighted and architecturally treated corridor, ten feet wide, which being centrally located, is designed a facility egress from the building equally as convenient from either side. The class rooms which have high ceilings are all placed on the ground floor overlooking the University lawn, and all windows are taken right up to the ceiling. These rooms have cross ventilation. The library has been planned to be of equal distance from the academic and residential portions. The librarian's office and delivery desk have been centrally placed, so as to afford means for the librarian to have complete supervision over the students not only when entering and leaving, but when occupying any of the rooms constituting the library section. All of these rooms are kept well together and are well lighted and ventilated, thus making this portion complete in itself. As regards the residential portion special care has been taken to make it as home-like as possible; the different hostels being planned so that they can be entered with an equal degree of convenience from the inside of the building by means of the communicating corridors, or from independent outside entrances. The common room has been centrally placed so as to make it equally accessible to any of the three hostels. A special feature has been made of the dining hall both internally and externally, this portion being cut off from the rest of the building by a corridor providing ample light and ventilation, which would effectually prevent any odor from entering the main building. The kitchen and offices are placed immediately adjacent on the same floor. The steward's residence and servants' quarters are also cut off from the students' section, while the hospital ward which has been located on the first floor, is competely isolated from the rest of the building.

The exterior has been designed in a simple style, with mullioned windows and stone copings and strings, well in keeping with University College and eminently suitable to a scholastic building. It is intended that the walls should be of light Credit Valley stone laid up in irregular coursed ashler, with cut jambs and reveals; the roof of green slate, and the interior fireproof throughout. Regarding heating and ventilation this has not been taken up in detail but it is intended that the system of heating would be of low pressure steam; while that of ventilation would consist of air drawn through ducts by electrically driven fans and distributed into class rooms, lecture rooms,

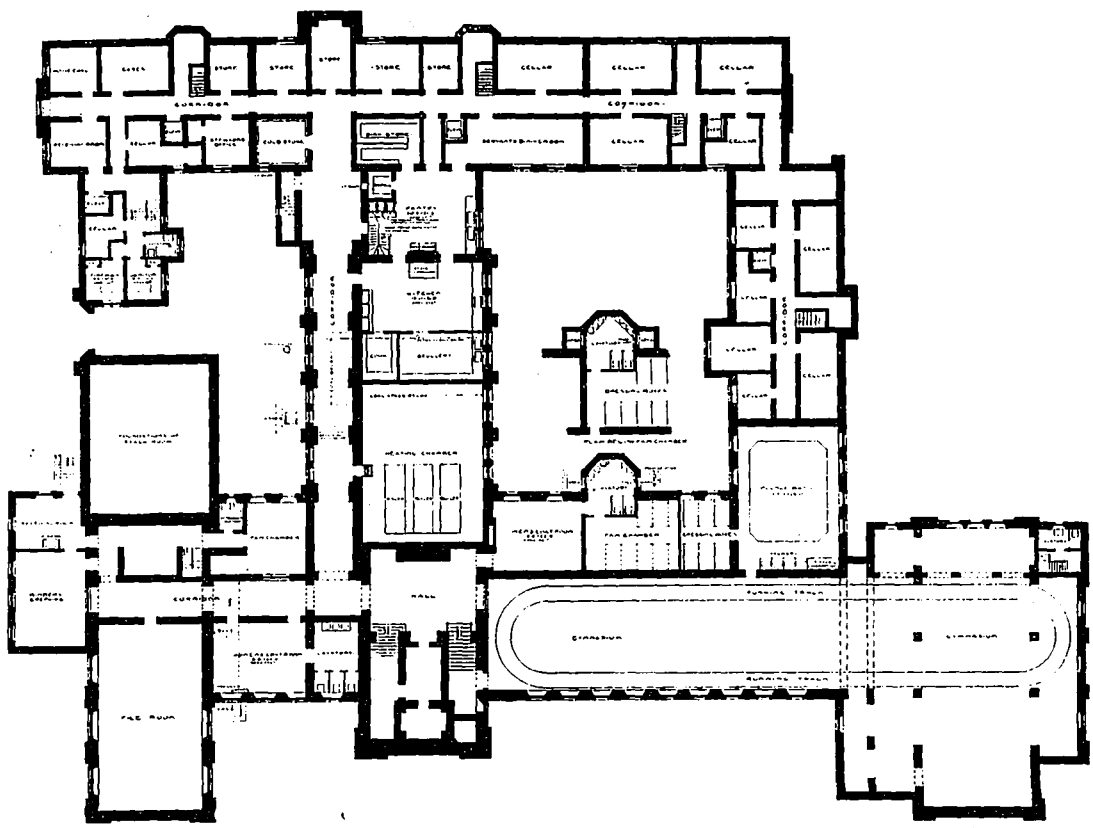


Ground Floor Plan, Competitive Design of Architect A. M. Brydon for Proposed new Knox College, Toronto.

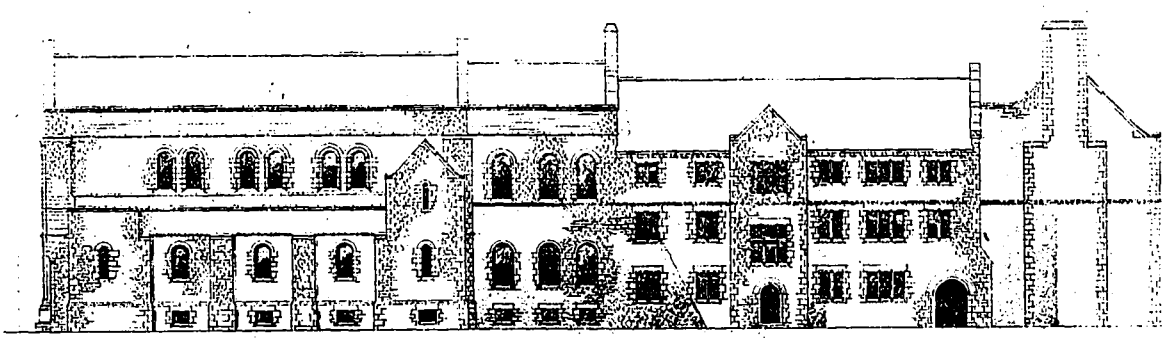


First Floor Plan, Competitive Design of Architect A. M. Brydon for Proposed new Knox College, Toronto.

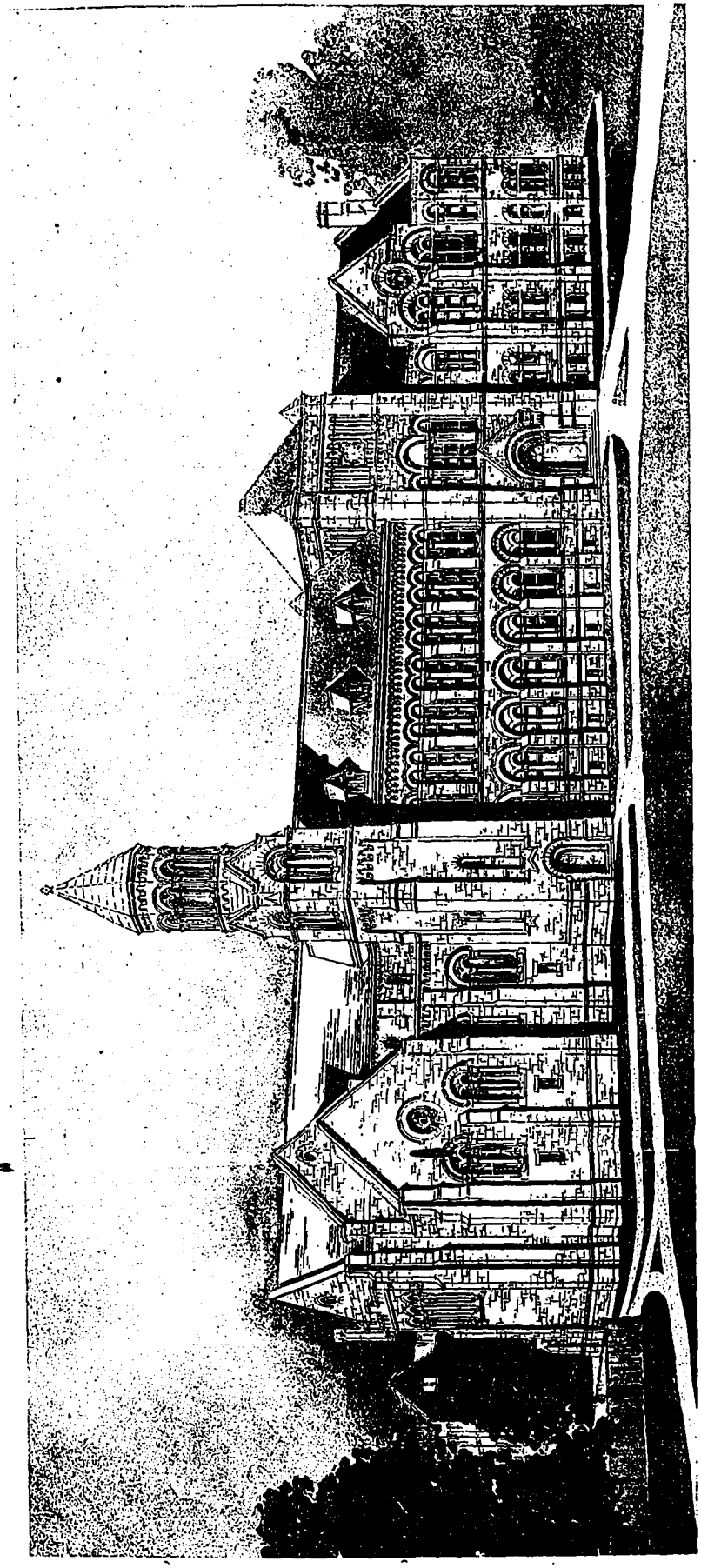
West Elevation, Competitive Design of Architect A. M. Brydon for Proposed New Knox College, Toronto.



Basement Plan, Competitive Design of Architect A. M. Brydon for Proposed new Knox College, Toronto.



North Elevation, Competitive Design of Architect A. M. Brydon for Proposed New Knox College, Toronto.



Perspective View (Overlooking University Lawn), Competitive Design of Architect G. W. King for Proposed New Knox College, Toronto.

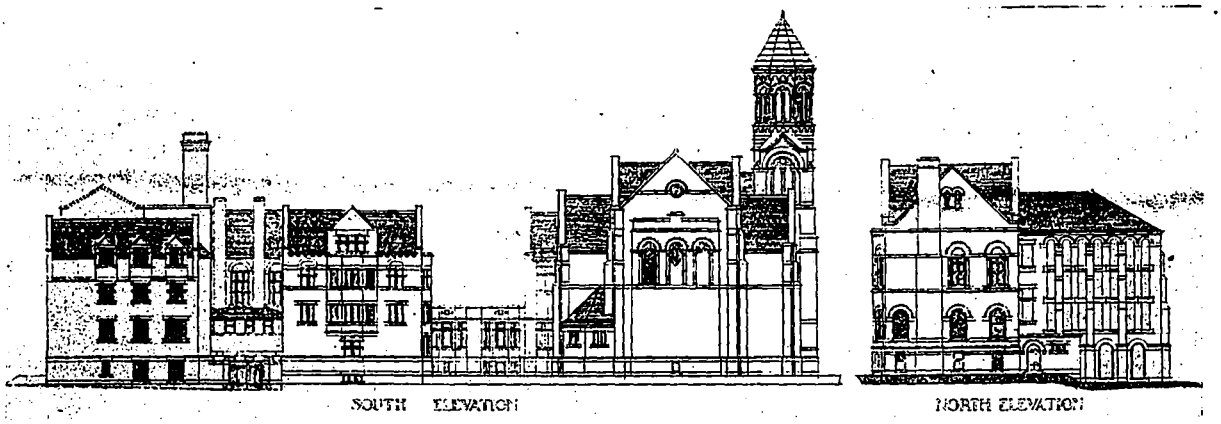
corridors, etc.; the fans to be placed in the roof space with a system of ducts for carrying the air from the different parts of the building and exhausting it in the ventilating turrets.

The cubical contents of the building (measured from the bottom of the footings to half-way in the height of the roof are 1,048,709 cu. feet). The contract price for a somewhat similar building, fireproof throughout, was recently let at a figure equivalent to 33c. per cubic foot, including heating and ventilation. On this basis it is estimated that the sum available ($400,000) to be expended upon this building, is amply sufficient to carry out the work as designed in a substantial and satisfactory manner.

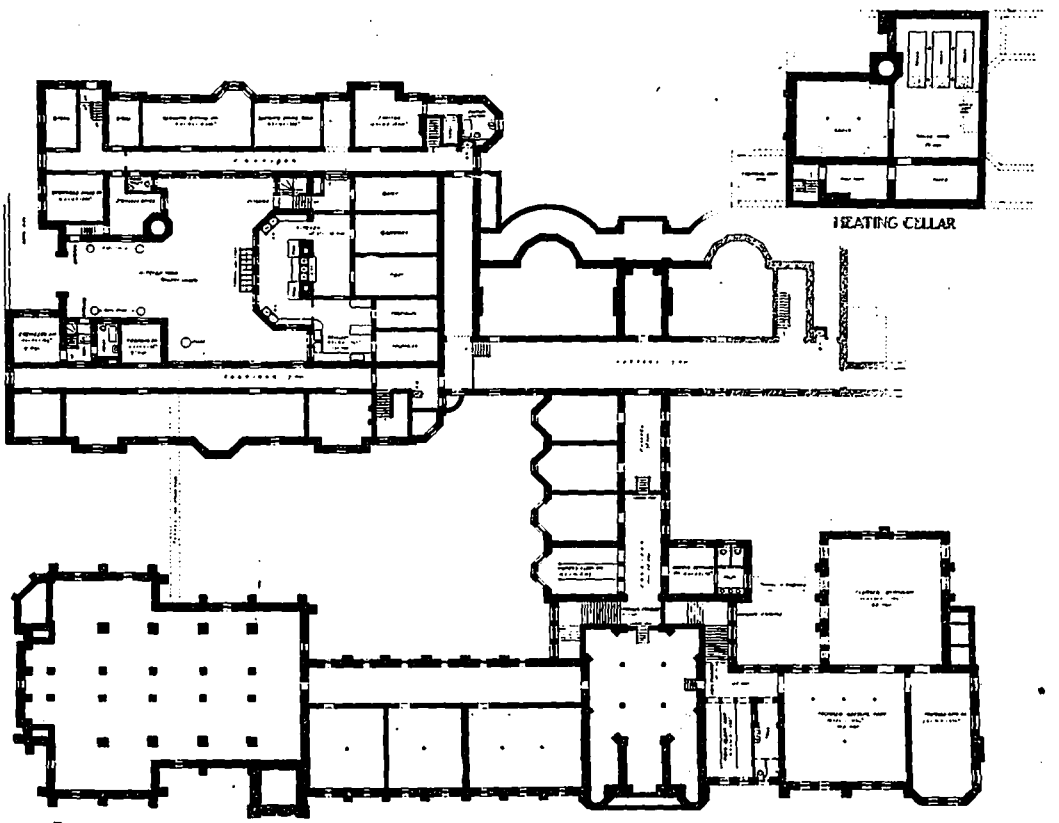
Architect G. W. King's Design

The key note of this design has been taken from instructions, as to the centre corridor directly communicating all buildings with entrances from University lawn and St. George St., so that all persons leaving the buildings can do so equally convenient by either entrance. This has been taken to mean that all students must enter and leave their residential quarters as well as from other parts of the buildings through the main corridors by either one of these entrances. The exit doors adjacent to the staircase of the residential blocks leading direct to the open air are shown only for emergency, but should this not be the correct interpretation of the instructions, and principal entrances to the residential blocks be required, then with a little more prominance in the design given to the exits of the centre and south-western block, these can be obtained without in any way altering the general plans. However, a change in the south-eastern block would be necessary; and in this case, it is therefore proposed that this block be reduced 10 feet in length and an entrance made at the south end of corridor with staircase and reception room adjacent, necessitating the omission of four bed rooms. As shown in the plan, the accommodation has been provided in three blocks, and if the centre block is only partly built to roughly the 200 feet line, the accommodation would be as indicated. It was thought necessary to clearly illustrate this design, to draw the centre block complete, but if a reduction be required then a temporary staircase could be placed directly adjoining the St. George Street entrance at T. S. lavatory at T. L., and the common room divided for the time being.

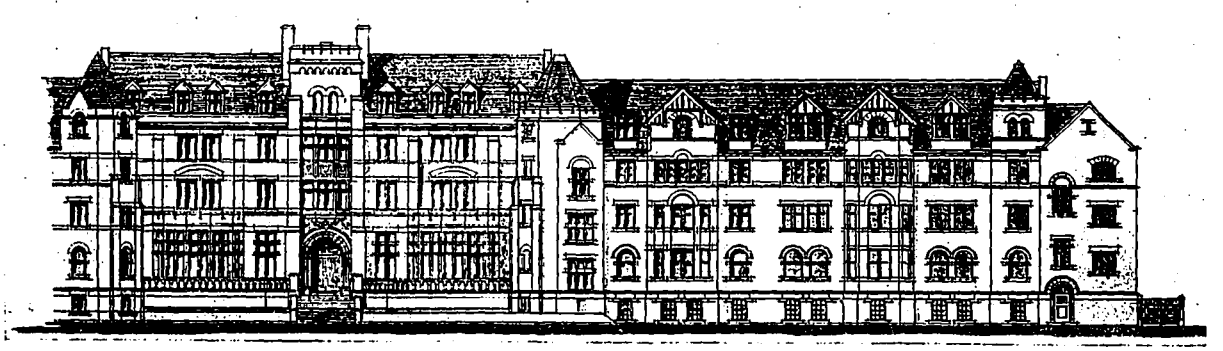
The general reading and common rooms are centrally located and convenient of access, and these and all entrances and corridors are easy of supervision by the four Professors,



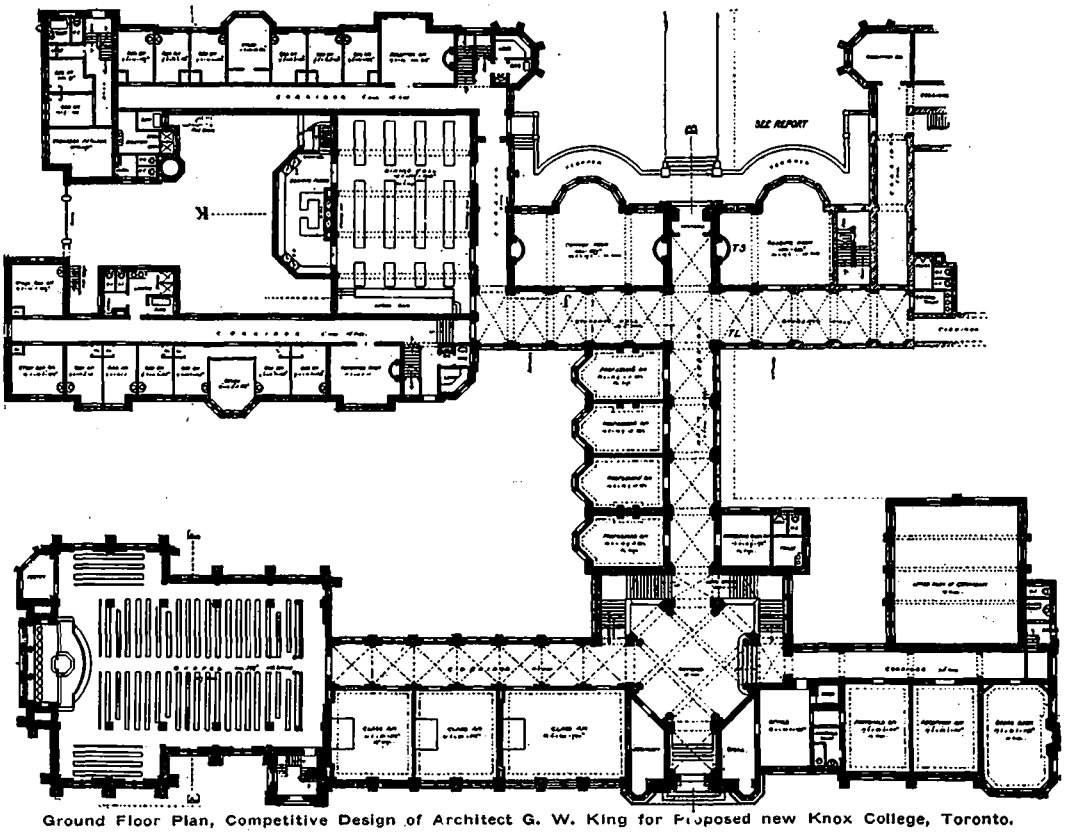
South and North Elevation, Competitive Design of Architect G. W. King for Proposed New Knox College, Toronto.



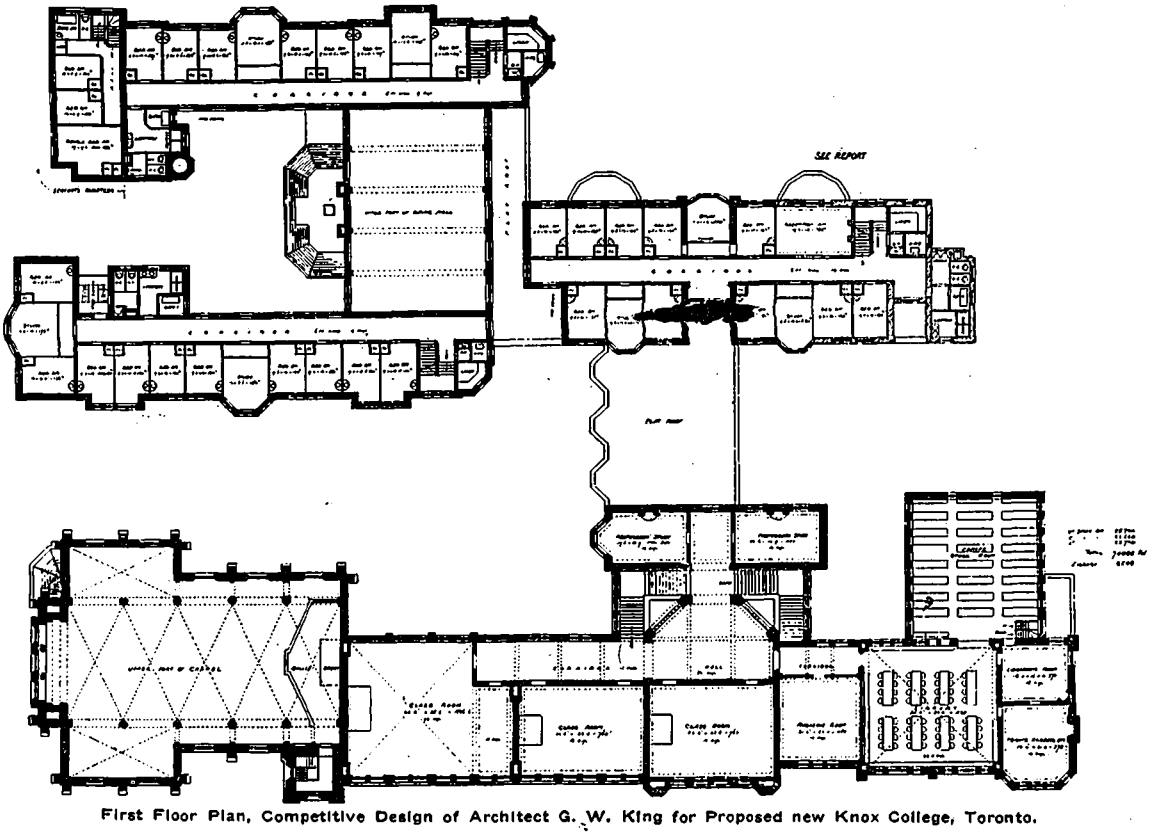
Basement Plan, Competitive Design of Architect G. W. King for Proposed new Knox College, Toronto.



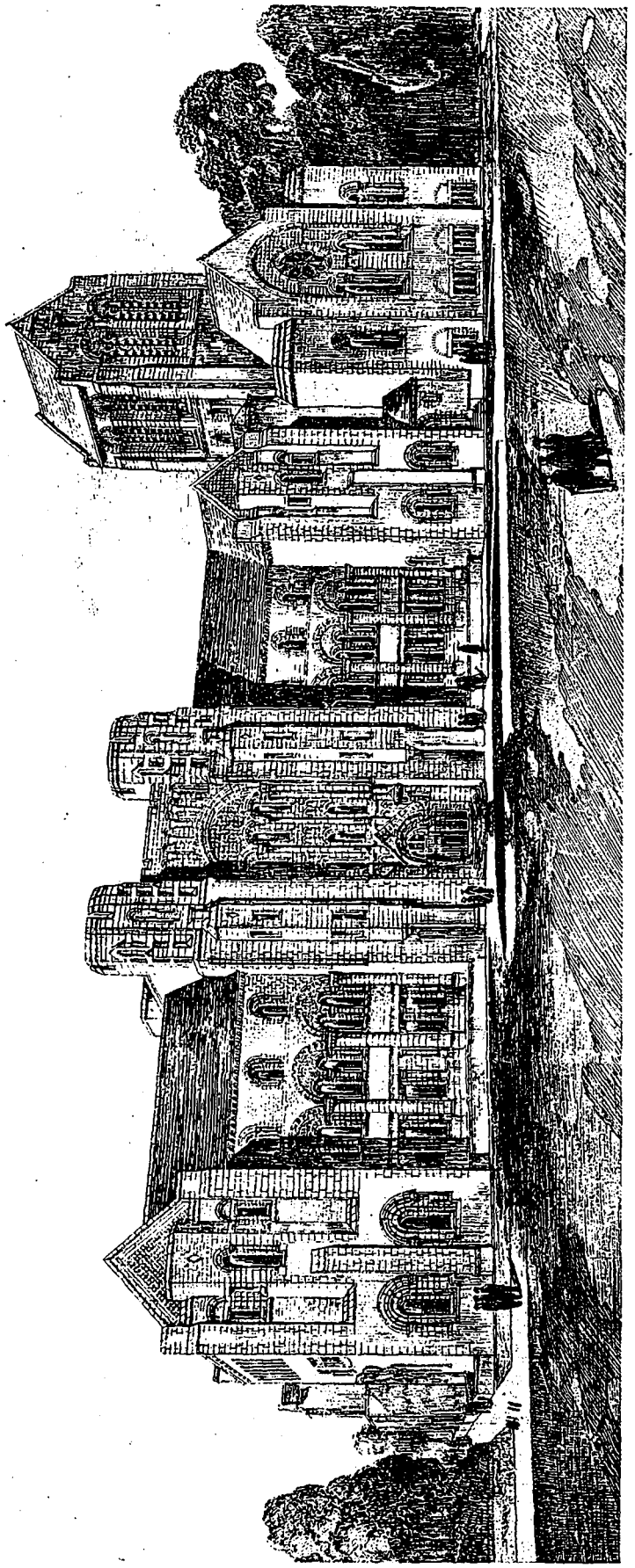
West Elevation, Competitive Design of Architect G. W. King for Proposed New Knox College, Toronto.



Ground Floor Plan, Competitive Design of Architect G. W. King for Proposed new Knox College, Toronto.



First Floor Plan, Competitive Design of Architect G. W. King for Proposed new Knox College, Toronto.

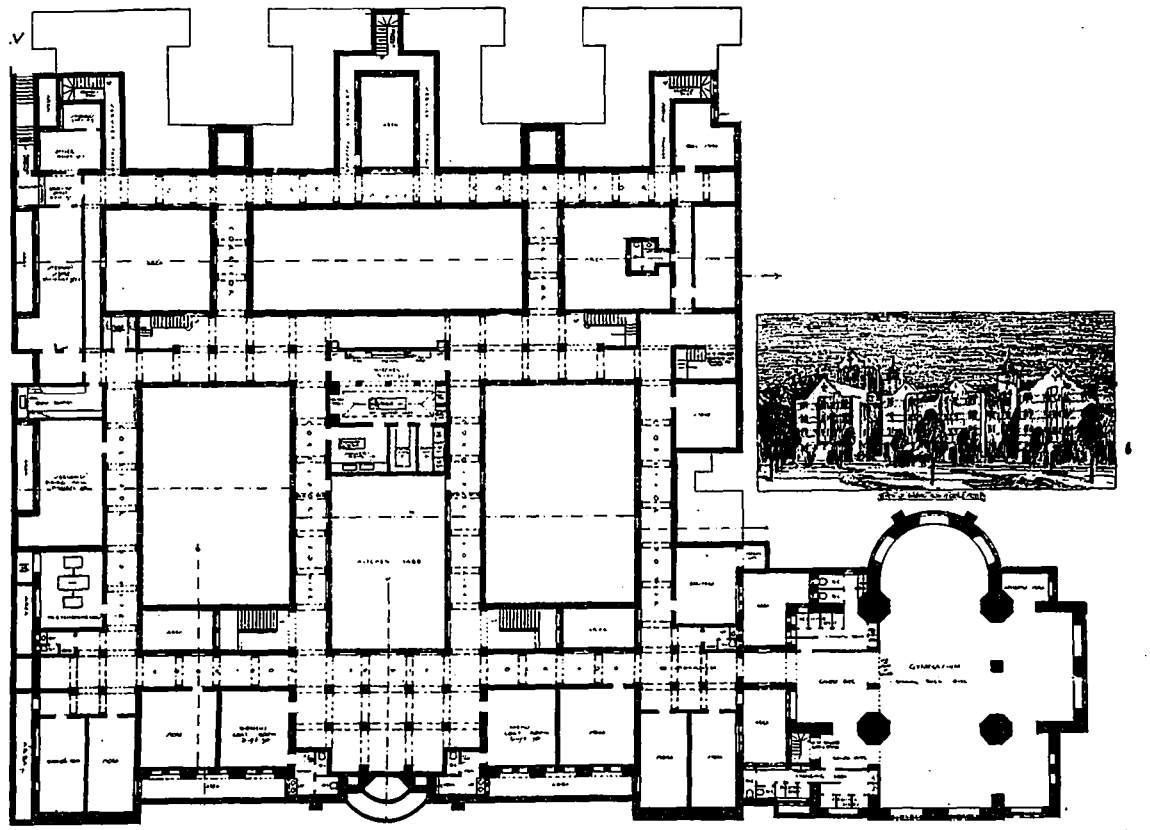


Perspective View (overlooking University Lawn), Competitive Design of Messrs. Bevan and Moore, for Proposed New Knox College, Toronto.

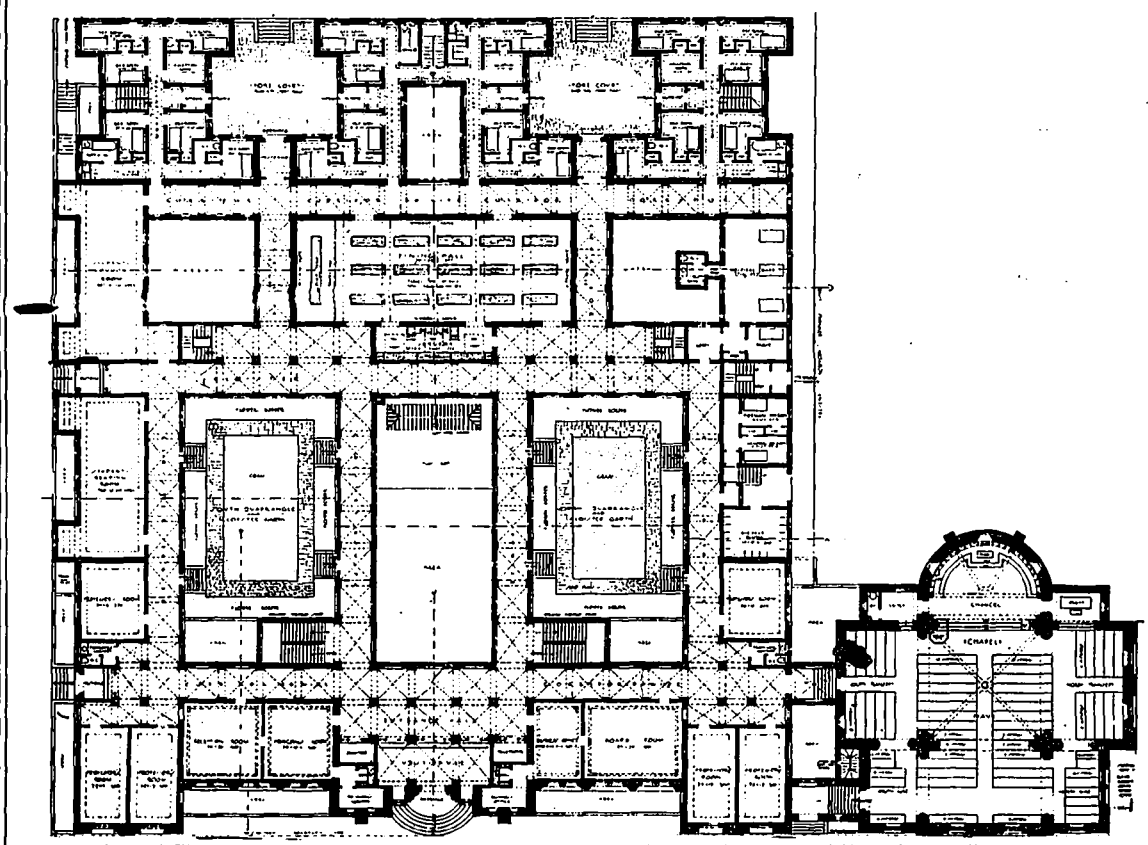
their rooms being situated off the centre corridor, the other two Professors' studies being placed on the first floor. The dining hall has been placed to the south of the main hall, with serving pantry adjoining and kitchen directly under and servants' quarters provided in the lower floor of the south western block, and a connected building at southern end for the accommodation of steward on the two lower floors and for eight female servants on the two upper floors. The steward's office is in direct communication with kitchen and servants' quarters and overlooking the kitchen yards and entrances, which yard is entirely surrounded on three sides (being open to the south) with buildings, making a complete and compact arrangement for the delivery of goods, eatables, coal, etc., entirely under direct supervision from the steward's office and doing away with any unsightly appearance from the front. The servants' bedrooms are entirely isolated, and the windows are so placed that there is no view from any window to students' quarters. The possibilities of annoyance from dust is also reduced to a minimum, the boilers which are entirely shut off from the servants' quarters, being placed under kitchen yard at a level convenient for the direct flow of steam to heaters on the lower floors.

Attention is also called to the position of the rooms for administration purposes, these being so placed that there would be no continual thoroughfare passing through this corridor. Allowance has also been made for a private entrance for the Governors. The height of these rooms are shown at 12 feet which gives additional height to lower floors for the proposed dressing and bath rooms. Space for gymnasium has also been arranged for under the lower stack room with a height of [illegible] feet without inc[illegible] depth. All the class rooms have been placed on two floors, the large one being on first floor allowing for an additionally high ceiling. The library is well shut off, with direct communication to staircases placed over the administration offices; and the chapel has been placed prominently at the southern end.

As regards the character of construction, the scheme provides for the external walls of the academic block, above grade line, to be faced with an approved stone laid up in rock faced random rubble, having not less than 6 in. beds in ball, with 10 per cent. of surface bond stones running within 4 ins. of the internal face of walls and intermediate bond stones half through walls. All of this is to be backed up with hard stock bricks set in Portland Cement mortar, and lined with 4 in. hollow terra cotta blocks properly bonded with walls as



Basement Plan, Competitive Design of Messrs. Bevan and Moore, for Proposed New Knox College, Toronto.



Ground Floor Plan, Competitive Design of Messrs. Brown and Moore for Proposed New Knox College, Toronto.

built. All beds over 6 ins. are to be brick sizes, and the cut stone work is to be as per details, perfecty bedded, bonded, cramped and dowelled where necessary, with face left from the tool. The face walls of vestibule, and the rotunda columns, arches and staircases of academic block, are to be of Ohio stone, with the staircases covered with patent non-slipable metal threads; while the internal walls are to be of hard stock brick laid in English bond in cement mortar and furnished with all necessary bond stones and plates, anchor hoop irons, etc. The floor syssystem of the structure is to consist of steel beam encased in concrete with reinforced concrete slabs between wood sleepers and spaces filled with concrete. This will be finished with deafening and marble super-floors in class rooms and first floor corridors, and quarter cut oak in administration section. All corridors in students' sections of basement and ground story, as well as the lavatories throughout, are to have floors finished with marble terrenzzo having 6 in. base turned up all around. The roofs will be carried by steel trusses and covered with hollow terra cotta or book tiles, finished with slate; the flat roofs to be asphalt direct on concrete. In the residential block, the main central corridor running north and south, and the vestibule of the St. George St. entrance, together with the floor and ceiling of reading and common rooms and the staircases leading to first floor level, are to be fireproof in character with the main hall and corridor finished in every respect similar to the academic block. The external walls of this building are to be similar to those previously described in connection with the academic block; except for the face walls around kitchen yard, which will be carried out in stock brick. It is intended to heat the buildings by low pressure steam; the steam mains to be run on ceilings of corridors for all radiators aboe lower floor, and separate mains in trenches under lower floor for all radiators on lower floor and return mains. The ventilation of the chapel, class rooms and library is to be obtained by heated fresh air ducts radiating from celler of the academic block, and supplied by a fan and electric motor; the foul air being drawn off by heated flues carried to the roof, and discharged through opening in tower. The cubical contents of the building, arrived at according to terms of programme, are 1,515,287 feet; and it is estimated on the basis made that the structures can be carried out in a substantial and satisfactory manner at a total cost of $367,640, including heating all other branches of the work.

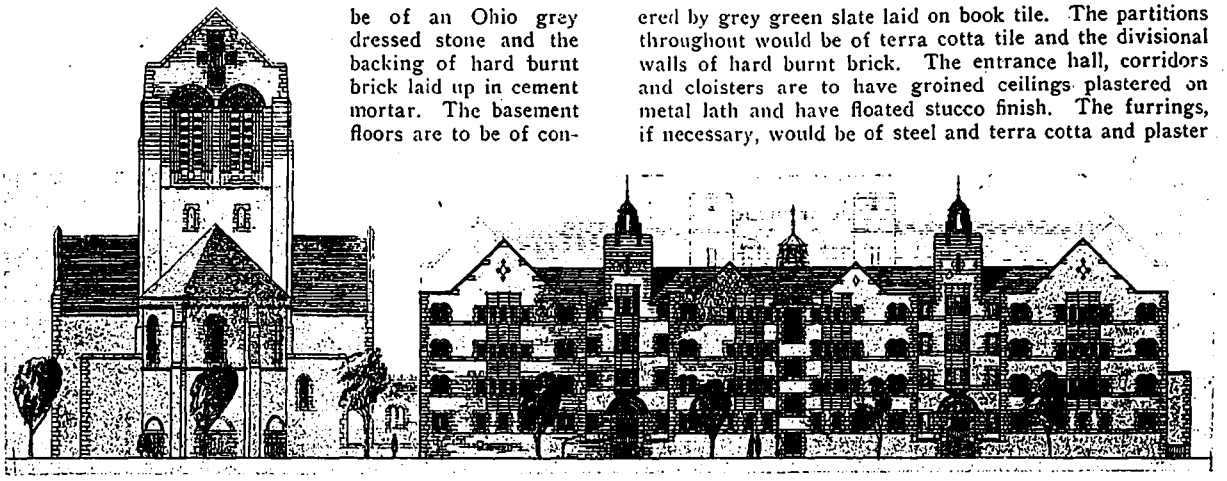
Messrs. Bevan & Moore's Design

This design is based upon the requirements contained in the "conditions," and the objects have been to produce a scheme which should be at once simple and expressive of its purpose, well lighted in all its parts, and with spacious corridors and cloisters affording ready access to all parts of the building. As required the academic building has its principal entrance facing Universty Lawn, while that of the residential block is placed on St. George St. These respective blocks are connected by cloisters enclosing quadrangles. The principle entrance of the academic block leads to a specious vestibule with small rooms for janitor and telephone on either side, and opens on to a well-lighted hall with main corridor 8 feet wide running north and south. The principal's room with its laboratory and reception room are placed to the left (south) and the business offices and board-room to the right. The six Professors' rooms are located at the north and south end of the corridor, viz: thre eat each end with their respective laboratory accommodations. Two wide, easy ascending staircases enclosed by masonry walls, opposite the entrance hall, give direct access to the basement and the floors above. It will be noted that the various departments are arranged so that all rooms comprising each suite, are kept well together on one floor. For instance, all class rooms with necessary lavatory accommodations for men and women are placed on the first floor. These abut the wide corridor and are unilaterally lighted from the left side. The library department, situated on the second floor, is also compactly arranged. The large and lofty reading roo mwhich is centrally located, and the adjcining librarian's office which is separated from the stack room by glazed windows, as well as the private reading and magazine rooms, are well brought within a compass which permits of ready and complete supervision of the entire suite.

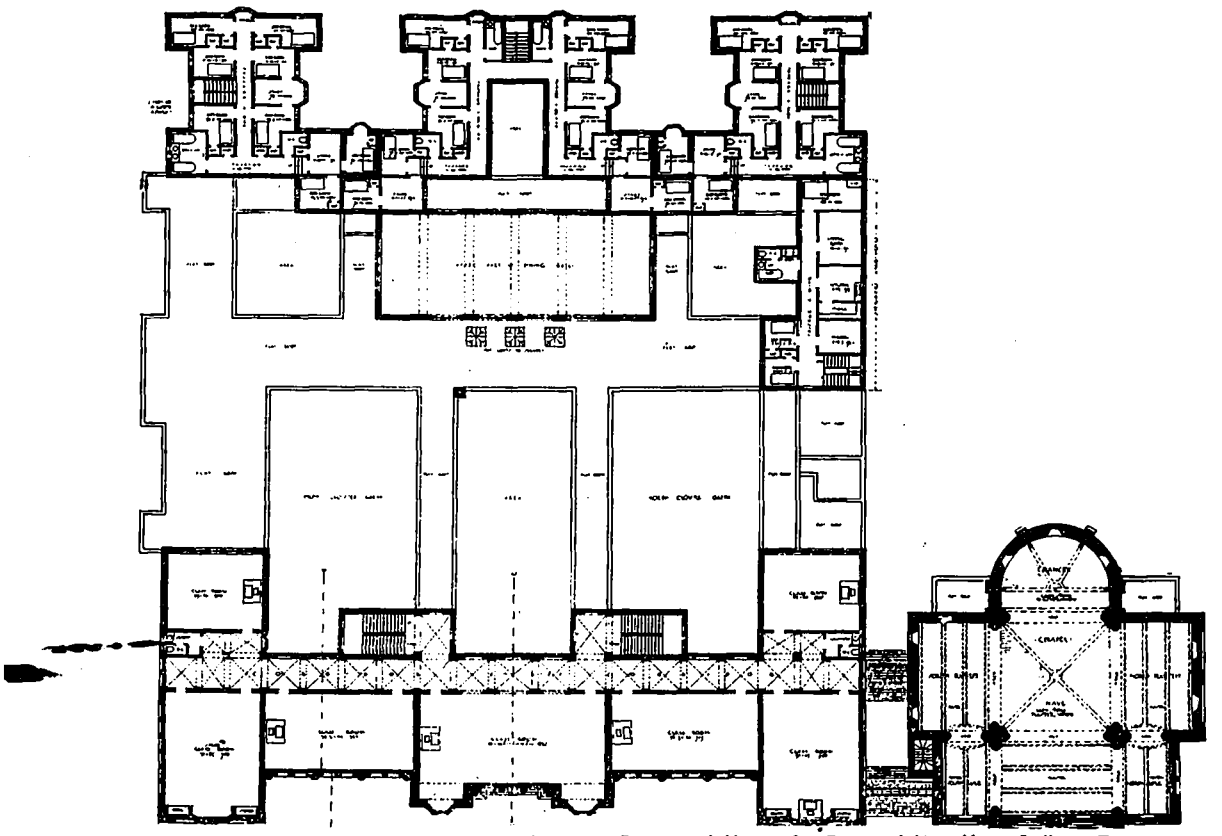
The chapel, which would seat 500 without the use of galeries, while designed to form a consistent part of the general scheme, is practically detched in plan and could, therefore, if necessary, be omitted until some future time without interfering any with the remainder of the group. As designed it is intended to be a feature in the scheme quadrangles are sufficiently large to secure plently of sun, light and air and should not only prove an advantage to the students, for retirement for studying and reading during summer months, but should form an attractive feature and pleasant outlook from the windows overlooking same. The four cloister walks would greatly facilitate communication between the academic and residential portions of the building, and with their groined plaster cellings should be architecturally attractive.

The residences which face St. George St. would be entered from two fore-courts, in which centrally situated would be the entrances to the main building under two small towers for the use of the public. The total accommodation on the four floors would be 97 bedrooms and 18 studies; if found necessary some of the studies could be utilized as bedrooms. All these rooms are arranged to be well lighted and ventilated. To the north of the dining-room, occupying the same relative position on the plan as the students' common room, is the hospital ward cut off from the rest of the building, with its nurses' room and ventilated lavatory block. The dining hall, which would form a feature of the residential block, is a lofty room centrally located and affording accommodations for 150 persons. This room is entirely surrounded by corridors and is, therefore, well lighted, well ventilated and easy of access. The kitchen is in the basement with scullery, pantry, store an doffices adjoining. A point worth noting is that the residences abut on a corridor enabling the students to enter the dining room, common hall, reading room, hospital ward and academic block under cover. The steward's apartments which have a separate entrance from the outside, are placed on the first floor, as are also the seravnts' bedrooms which are arranged so as not to be overlooked by the adjoining residences. Provisions are made in the plan to permit of an extension of the residences over the students' common room, in the form of a wing similar to the students' department on the north side. It would also be possible to make an extensio non the west end of the north wing of academic block. The chief characteristics of the period of work chosen, viz., Norman, being solidity and breadth of wall surface, it was felt that, as far as consistent with the requirement of the case, such characteristics should be embodied in the design; and whereas small windows so prevalent during the period of work would hardly be permissible in a modern scholastic building, an endeavor has been made to emphasize masonry features so that the windows would not be unduly in evidence. The chapel tower which is of Early Norman French character would dominate the buildings giving point and emphasis to the design, and constitute its crowning feature. The academic building has been designed as a fireproof structure, and by the use of automatic fire doors and shutters, the corridors in intersections may be cut off completely from the other buildings. The construction calls for super-structure walls of Credit Valley grey stone laid up in random work of similar character to the masonry in the main building of the Toronto University. The trimmings would

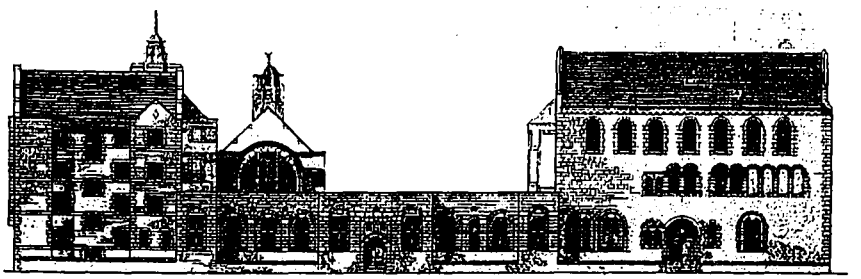
be of an Ohio grey dressed stone and the backing of hard burnt brick laid up in cement mortar. The basement floors are to be of concrete, and all other floors and the flat roofs of reinforced concrete (slab construction on steel beams); the roof to be carried by light steel trusses and frames, and covered by grey green slate laid on book tile. The partitions throughout would be of terra cotta tile and the divisional walls of hard burnt brick. The entrance hall, corridors and cloisters are to have groined ceilings plastered on metal lath and have floated stucco finish. The furrings, if necessary, would be of steel and terra cotta and plaster of three coat work on metal lath. With the exception of the administration rooms it is proposed to make the interior finish of hospital character, the plastering to be returned into window frames and wood trim omitted wherever possible. It is intended that the superstructure walls of the residential section should be of similar materials and construction to those in the academic block with the exception of the area rear walls, dining room, serving pantry, etc., which would be carried out in grey brick. The general



West Elevation of Chapel and Residential Block, Competitive Design of Messrs. Bevan and M oore, for Proposed New Knox College, Toronto.



First Floor Plan, Competitive Design of Messrs. Bevan and Moore, for Proposed New Knox College, Toronto.



South Elevation of Residential and Academic Blocks, Competitive Design of Messrs. Bevan & Moore, for Proposed New Knox College, Toronto.

floor and roof construction would be of wood frame carried on walls and steel beams where required, and the corridor floors of reinforced concrete. The building would be heated by a direct system of a low pressure steam; cast iron radiators being placed throughout in convenient positions, and the heat supplied by the central heating system circulating through a proper system of flow and return pipes. A plenum supply and exhaust system is proposed for the academic block, with supply and exhaust fans located at convenient points and operated by electric power. These could be so arranged that they could be cut in or out at such times as would be required. The ventilation of the dining room would be outwardly through the serving room and kitchen. The laboratory ventilation, of course, would be separate; the exhaust through the laboratories creating a vacuum, while all corridors, etc., would be a source of air supply. The estimated cubic contents and cost submitted herewith are the result of careful accurate figuring based on experience in the erection of buildings of a similar nature. Due allowances were made for the difference in character, architecturally and structurally of the various buildings.

	Contents.	Cost Per Cub. Foot.	Total.
Academic Building	568,392	.30	$170,517
Residential Building ..	556,041	.25	139,010
Residential Building ..	111,733	.22	24,581
Chapel	363,391	.37	135,000
			$469,108

The figure of $135,000 for chapel is on the basis of complete scheme, as shown by drawings.

Architect A. M. Brydon's Design

The general scheme is strictly in conformity with the published condition. The educational department of the academic block, which consists of six class rooms, six professors' rooms, principal's room, reception room, board room, office, etc., is arranged to the east, keeping the class rooms all as far as possible to the main front. The professors' rooms are planned in conjunction with a private stairs. In the staircase is enclosed the professors' lavatory, which is private and easily accessible from both floors. The principal's room is conveniently grouped with the office, board room and reception room, and is in a quiet part of the building with windows facing the quadrangles. The reception room, which is placed next to the entrance hall is easily reached by professors and visitors, and is especially convenient to the principal's room.

The library department forms the south wing of this block. By keeping the reading room east and west, and well back to the building line, good lighting is permanently insured. The magazine room can only be entered by passing the desk and efficient supervision of all the tables in the main reading room is secured. Access to the private reading room is obtained by two entrances. One is under complete supervision, and is easily reached from the distribution desk; while the other is intended for the private use of the faculty. The books can be called for by speaking tube telephones between the room and the desks. This makes it unnecessary for the members of the faculty to enter the general portion of the library. The librarian's office can be reached from both the corridor and the desk, while convenient to it and the desk is a cataloguing room. This latter room is situated over the receiving room to which it connects with a book elevator. Provisions are made in the basement for a file room for the storage of back numbers of periodicals and papers. The stack room of three tiers and of ample capacity for the number of volumes required. The wall construction would be of white enamel brick and the floor of white marble slabs, insuring complete lighting. Bookcase recesses are provided for under the windows of the main reading room.

While the chapel is connected with the main building it is so planned that it can be omitted and erected at a later date. Should the building of the chapel be delayed, the door at the north end of the corridor could have outside steps and a vestibule, the door to which could be used as a private entrance for the faculty. After the erection of the chapel, private access would be obtained from the south-east chapel entrance. The basement plan provides for a gymnasium extending from the tower to the north wall of the chapel. This allows for a circular running track over 100 yards in length, which could be suspended if so desired. The north wall would be carried on girders built in with steel supports during the erection of the main block, the filling being knocked out when the chapel is built. The residential portion, which consists of four separate houses, is arranged on St. George street, and then returns eastward to the north block. Access to each house is gained by the basement, and sleeping accommodations are provided for 95 persons. The steward's house, with servants' apartments above, is entirely separate from the students' quarters; while the maids' bedroom windows are kept outward from the court and cannot be overlooked from this side. The janitor's and fireman's bedrooms, with lavatory accommodations, are also in the steward's wing, and a freight elevator is provided for the easy delivery of stores, which are taken down to the receiving room and then conveeyed to the various store-rooms near the kitchen premises. The students' boxes on arrival would be delivered at this entrance and then conveyed through the basement to the particular house to which they were assigned. The hospital is centrally situated, and is arranged so that it can be completely isolated if necessary. The plan permits of the nurse leaving the building by the iron stairs from the deck roof, and this latter feature could also be used by a convalescent patient for exercising purposes. One or two rooms can be cut off as required, and food for the nurse and patients would be supplied by a dumb waiter from the pantry.

The construction of the academic block and the main dining room would be fireproof with terra cotta floors and partitions, and care would be taken to deafen the class room partitions with slagwool. The residential block would be of good ordinary domestic construction, while all internal partitions wherever superposed would be carried up in brick. All outside walls would be Georgetown rubble work backed with brick, and all heavy walls would be hollow so that the plastering could be done directly on the brick. The basement walls as well as those of the stack room would also be hollow. The trimmings would be of Bedford limestone and all opening windows would have steel casements or hoppers. In the residential block the division walls are carried up above the roof to prevent spread of fire; and the openings in the basement and kitchen offices which penetrate these walls would be protected by fire walls.

The ventilation of the educational block, building and dining room would be on a forced draught system. Two fan chambers would be used to supply the fresh air, one situated over the dressing boxees having a 10 foot by 6 foot ceiling and drawing the air from the quadrangle. Theo ther fan would draw air from the east front of the building. The air taken from these positions would be free from dust since it would be obtained from large grass areas. The use of two fans has the advantage of reducing the dimensions of ducts, which in a building of this size would be considerable. The extra cost on the fans would be covered or largely reduced by the smaller cost of ducts. The extract fans would be situated in a chamber 10 feet 6 inches high in the tower over the belfry. The ducts in the roof space would connect to two ducts in the belfry and the foul air passing up through the fan would discharge from a louvre in the tower roof. The fresh aid would enter 8 feet above floor lever, and be drawn off 6 inches below floor level. No air would be blown into the lavatories, but a small fan would extract from them. The air supplied the chapel would be allowed to escape in flues from the floor, depending on internal

(*Concluded on page 74.*)

CONSTRUCTION

A JOURNAL FOR THE ARCHITECTURAL ENGINEERING AND CONTRACTING INTERESTS OF CANADA

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Vol. 4 Toronto, February, 1911 No. 3

CURRENT TOPICS

CERRO DE PASCO, PERU, is the highest town in the world. While there are mining camps and Indian villages at a great elevation, there is no other real popular centre with a railway station, telegraph, telephone, churches, shops, clubs, hospitals and vice-consuls. Cerro de Pasco is 14,200 feet above the level of the sea, and it is a wonderful example of South American enterprise.

* * *

THE CURVED BRIDGES OF JAPAN are of three kinds—first, those known as spectacle bridges, with an arch in the centre suggesting a pair of spectacles; second, the camel back bridges, which go up very high indeed; third, the ordinary one arch, semi-circular bridges. The reason the Japanese so often have curved bridges is because until modern times they could not build them flat, and even to-day there is no keystone to the Japanese arches. A great many of two classes of bridges—the camel back and the high curved bridges—are found in the palace grounds at Pekin, in China.

* * *

CONCRETE CONSTRUCTION, both block and monolithic form, is being extensively adopted for basements and foundation work, facings, door and window sills, etc., in the rebuilding of Campbellton, N.B. The past season saw a large amount of work of this character carried out in connection with the erection of permanent buildings; and at the present time during the quiet of the winter months, a large number of contractors are busying themselves with the preparation of forms and molds in anticipation of a widespread use of this material in the spring and summer periods.

THE PALLADIUM, the new music hall, built on the site of the old Hengler's Circus in London, is said to be a wonderful place of its kind. Its stalls alone will seat nearly 1,300. Its palm court will give tea to a thousand at once. It has a larger Royal Box than any in London, a post office on the premises, writing-rooms and tape machines. It has a Louis Quinze salon with a ceiling that "almost exactly resembles porcelain."

* * *

FIVE HUNDRED MILES OF TRACK will be constructed by the C.P.R. in the West during the coming summer, according to a statement ascribed to Vice-President William Whyte of the company. This will include the completion of a double tracking of the line between Winnipeg and Brandon, in addition to considerable double tracking around Moose Jaw, which is becoming an important shipping centre. It is estimated that the work will cost $10,000,000.

* * *

A HOTEL CONTAINING 1,600 ROOMS and one thousand baths is to be erected in New York City on a site bounded by Broadway and Sixth avenue, Thirty-third and Thirty-fourth streets. The accommodations to be provided will be considerably in excess of anything now offered by present existing world famed hostelries. The structure is to be known as the Greely Square Hotel, and will be built at an outlay of $14,000,000. It is to be ready for occupancy September 1st, 1912.

* * *

THE CLOCK IN THE TOWER of the Metropolitan Building, New York, is the largest four dial clock in the world. Its dials are 26½ feet in diameter, the minute hands 17 feet long, and the numerals 4 feet high. Some idea to the giant mechanism required in its operation is obtained from the fact that the hands on each dial weighs 1,700 pounds alone. Connected with the clock is a chime of four bells, while at the top of the tower, 700 feet from the ground, is a lantern, from which the quarter-hours are recorded by an electric flash which can be seen for a distance of thirty miles by over six million people.

* * *

BOMBAY AND CALCUTTA, according to a despatch from the latter city, are about to be rebuilt on a colossal scale by the British Colonial Government in order to rid the ancient communities of the danger from plague, which for years has proven such a menace to civilization. The scheme of improvements includes miles of new roads to run through the congested districts, and the establishing of parks and up-to-date tenement houses. Trolley lines are also to be built, and sewers and other sanitary advantages as well are to be provided. The cost of rebuilding the two cities will be approximately $53,000,000, or about $26,000,000 in either case. On this Continent, it is said, the expenditure for a similar project would be greatly in excess of this amount.

* * *

A NEW METHOD of drying humid walls, says the *Slate Trade Gazette,* has been devised by a Belgian architect. It consists in embedding inclined porous tubes in the walls, the direction of the tubes in plan being perpendicular to the wall surfaces. By capillary action these tubes continually absorb moisture from the wall, for the air which they contain, being in the same hygrometric condition as that of the interior of the building, is relatively dry, and readily takes up the moisture. The act of vaporizing ensuing therefore reduces the temperature of the air passing from the tube and being constantly replaced by dryer and warmer air. The tubes are placed sufficiently close together to leave no intervals between their zones of influence. In new buildings the places for the tubes are left, but the tubes themselves are not inserted until the mortar has set. It is stated that the method has been tried at Versailles.

RECENT REPORTS state that the Australian Government has selected Canberra, New South Wales, as a site for a new capital city, and that architects and landscape artists from practically all parts of the world will be invited to submit competitive designs for the proposed buildings and the laying out of an elaborate ground scheme. The site is described as lying among a series of hills of slight altitude, with exceptional advantages for the location of the principal buildings. It will probably be some little time before an actual start will be made on the projected structures, although the Government has already appropriated a substantial sum for the preliminary work.

* * *

ORGANIZATION is now being perfected for the Ninth International Congress of Architects to be held at Rome next year in connection with the Jubilee Exhibition. Among questions to come up for discussion will be: (1) Armored cement, as used in various countries, and the possibilities of its being utilized for large buildings of a monumental character, having due regard to the technical and decorative aspects of the question. (2) Rules governing international competitions in architecture. (3) Regulations and plans relating to buildings and artistic considerations in towns. (4) Professional instruction and diplomas for architects. (5) Duties and privileges of architects in relation to their clients. (6) Practice of architects of various nationalities.

* * *

A PORTABLE THEATRE, offering the advantages and comforts of a modern playhouse, is a new feature in the French theatrical world, which will start on a journey through France in the early part of April. This unique "Thespian chariot," as it is termed, is the outcome of an idea conceived in the mind of M. Gemier, director of the Theatre Antoine, Paris, to give the less populous and secondary cities an opportunity to enjoy a higher and more consistently staged class of attraction than those to which they are usually accustomed. The theatre is built on the principle of the balloon shed, and it will be hauled in vans drawn by eight road locomotives. Though portable, everything necessary to a first-class theatre will be incorporated in its make-up, including properties, stage, and what is more essential from a box office standpoint—an auditorium that will seat an audience of 1,500. It will also carry its own lighting and heating system, together with a fire-extinguishing plant, consisting of an electric rotary engine, and a tank on wheels which will be filled before each performance. The company will comprise twenty players, an orchestra, and forty carpenters and stage hands.

* * *

ALTHOUGH INNUMERABLE VISITORS have seen the round tower of Glendalough, near Dublin, says G. H. Orpen in the Journal of the Royal Society of Antiquaries of Ireland, one feature appears to have been unnoticed by them, as well as by archæologists. Almost directly under the elevated doorway, about 15 in. above the slightly projecting base is a rectangular hole about eight by six inches, pierced right through the wall. The two side stones of this hole are "thorough stones," and it is roofed by two stones. The wall is about four feet thick, and the doorway about 10 feet above the ground. What was the purpose of this hole? It was certainly an original feature, and this was not a loophole for a missile. In all probability it was a spy-hole, to enable the occupants of the tower to ascertain, before opening the door, who was demanding admittance. Such a squint was not uncommon in after centuries beside the doorway of castles and even of ordinary houses. There is an example at Athlone, in a house near the bridge, bearing the date 1632. Mr. Orpen says that if his interpretation is correct it supports Petrie's theory that round towers were erected as "keeps" as well as belfries.

CAREFUL INSPECTION is necessary while stucco work is in progress, says a writer in the Architects' and Builders' Magazine, to see that the wire or metal lath is properly fastened and that the stucco is properly mixed of good ingredients and is applied in sufficient thickness. Usually two-coat work totals in thickness not much over one-half inch. This runs close to the limit of safety and a one-inch coating is sure to be far more satisfactory, lasting and durable. The writer calls to mind a house on Long Island where the wire lath was fastened directly to the studding and a stucco rich in cement troweled on to a thickness of about one inch on the face squeezed through to the back, forming a bond about one-quarter inch in thickness. This house has stood for years. The walls are uncracked, because the foundations were good, and the house has always been dry inside and easily heated in winter.

* * *

IT IS ABOUT TWO YEARS since Mr. Gifford Pinchot, then Chief Forester of the United States, having made, under the instructions of the Federal Government, an inquiry into the timber resources of the States, reported that at the present rate of consumption the timber limits of the United States would be all gone in twenty-three years. This estimate is alarming, not only on account of the source from which it springs, but also because it is admittedly based on the assumption that the present rate of timber consumption in America will remain at to-day's figure. Statistics show that, notwithstanding the great increase in the use of concrete, iron, and steel throughout the United States, the use of timber per head of the population was almost doubled in the past twenty years. The stumpage, or standing timber, of the United States is currently estimated at 1,400,000,000,000 ft. This was the figures accepted by Mr. Pinchot when he made his famous estimate of the complete exhaustion of the forest reserves of the United States in twenty-three years from 1908. But some authorities have put the standing timber as high as 2,000,000,000,000 ft., and, accepting that figure, the evil day might be postponed for thirty-three years. In a portion of the Southern States of the American Union a relatively small belt of valuable timber is left, chiefly cypress, cedar, and long-leaf yellow pine, but it is estimated by the best authorities that within seven years this belt will have been cut clean. In Eastern Canada, deforestation has proceeded at the same rapid rate as in the Eastern States of America. The virgin forests have been cut away, with the exception of isolated belts which are held by strong hands. Eighteen years ago standing timber in Ontario was practically worth nothing. A settler clearing his land for crops would then have been glad to get $2.50 per 1,000 ft. for the cut timber, which would just about have paid for clearing the ground and hauling the timber to market. To-day such timber would fetch at least $14 per 1,000 ft.

KNOX COLLEGE COMPETITION.—Continued from page 72.

pressure. Air would be blown into the corridors of the dwellings, and rooms not having open fireplaces would have flues leading to the roof space and there connected to the chimney stacks, and operated by asperation coils. Separate extract ducts would ventilate bathrooms. The heating of the entire building would be from the boilers placed under the dining room. A low pressure gravity return steam system would be used. Direct radiation would not be employed throughout. The various sections of the building would be under separate control so that the engineer in charge might cut off any portion if necessary.

MODERN NAVAL ARCHITECTURE

By HERBERT M. CLARK

Unique interior treatment of S.S. Royal Edward. A beautiful example of the architect-decorator's art. Attention to lighting, both natural and artificial, essential. Elimination of waste spaces feature of plan.

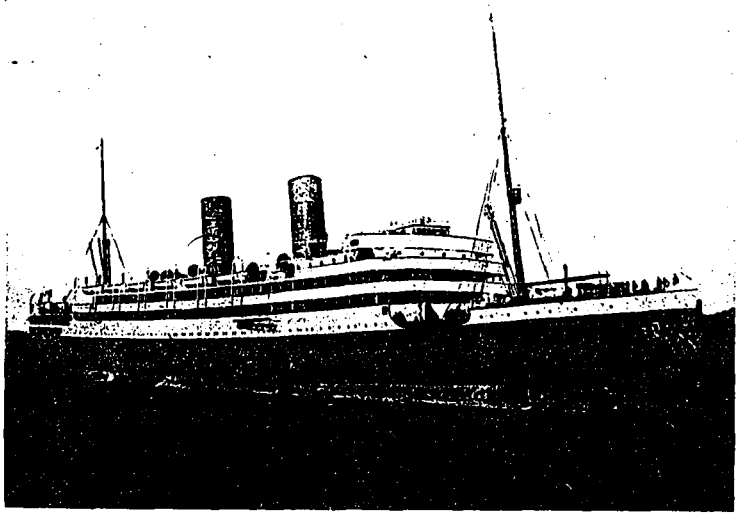
THE CLOSE RELATION which the work of the naval architect bears to the work of his colleague ashore may not be readily apparent. Yet it is a fact that the architect who designs hotels, residences and like work may study with great advantage the architecture of a modern steamer. In each case the designer is confronted with the same great problem—the successful combination of utility with beauty. And, though we workers on land may lack the unlimited financial expenditure permitted to the architect of this steamer, let us remember that the naval architect, too, has to effect economies. He must economise space to a degree that few of us suspect. He must utilize every square inch of surface and then beautify it, and as he works within limitations and under difficulties which are not of his own making, his methods are worthy of study.

One of the best examples of modern architecture is the steamship "Royal Edward," not only on account of the original and graceful treatment of the interior of the vessel structurally, but also on account of the fact that the public rooms and *cabines de luxe* are magnificent and unique samples of what can be done by the architect-decorator when, unhampered by any financial restrictions, he is permitted to work out in absolute harmony of detail the creations of his mind. Such work is rare on sea or land. Let us, therefore, make a brief examination of this vessel, confident that by so doing we shall gleam many valuable ideas and some valuable lessons. Glance, for example, at the illustration of the principal stairway and entrance hall. By means of a large and handsomely-designed well overhead, ample light is provided over the staircase which gives easy access from deck to deck and is convenient to both public and private rooms. The illustration shows the hallway in dark panelled wood, the ceiling, in plaster panels, is framed by dark oak ceiling beams, which contrast pleasantly with the light colored plaster. The design of the wrought iron balustrade is bold, yet light and open. Notice how the disposition of the staircases and especially how the graceful sweep of the balustrade enhance the effect of spaciousness, an effect which the photograph does not adequately convey.

Within the prescribed limits of steamship architecture it is no mean achievement to light, satisfactorily, a dining saloon sixty feet by seventy-five. The result so successfully attained is due in a large measure to the adoption of a decorative scheme of cream and white colors which have the further merit of giving a "freshness" so advantageous in a dining saloon. The decoration is Georgian, but, by a skilful use of circular windows, graceful supporting brackets, and much beautiful executed carving, the architect has avoided the severity so frequently present in the Georgian style.

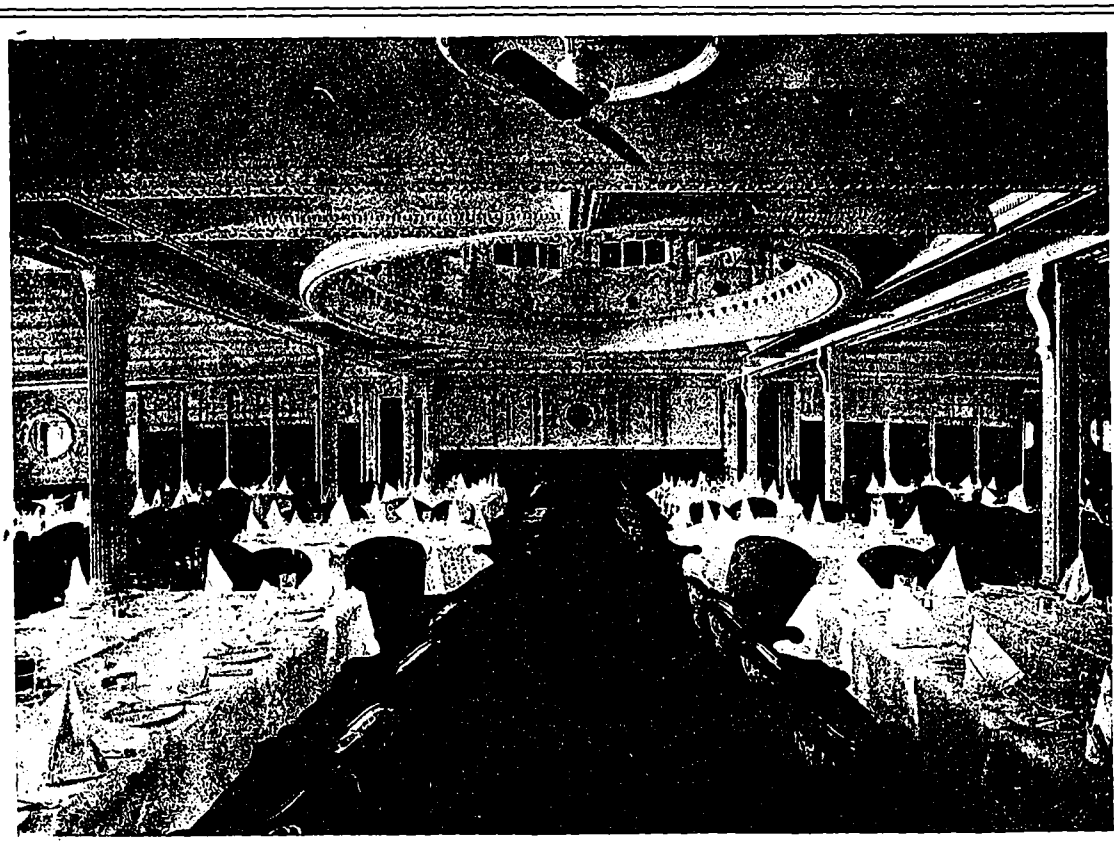
The ceiling consists of white panels of simple design separated by beams bearing a carved conventional design. It is studded with delicately shaped lamps of cut glass and bronze, which present a delightfully sparkling, jewel-like appearance. In the centre is a lofty glass dome which sheds a silvery light to the central area of the saloon, and also assists in ventilation. The upholstery is rose pink and the floor of polished teak is laid with Wilton carpet runners to harmonize. The entrance doors opening on the grand staircase are of polished nut-brown mahogany. The great charm of this saloon is the effect of "airiness" and space, together with the exquisite wood carving which is reminiscent of the best period of Grinling Gibbons. Indeed, the carving around the entrance doorways invites comparison with the best productions of that master-worker.

The dome of the dining saloon, to which reference has been made, is carried up through the centre of the library, where it forms practically a large circular air-shaft of glass, conveying a toned light to the centre of the room. In the hands of a less imaginative architect it might well have marred the appearance of the whole room, but it has been boldly utilized to secure a very striking effect. Picture to yourself graceful chairs and lounges of grey oak, richly upholstered in rare shades of green, with curtains and carpets harmonizing, a ceiling of panelled grey plaster with slender beams of dark oak, and at the far end, the glass fronted bookcase in similar wood. The walls are also of the same oak, with delicate beading and mouldings enclosing panels most exquisitely carved. The carving throughout is by hand, the most trivial fragment of a design being finished with exquisite care, and suggests the rich work in the Chateau of Rambouillet, with the atmosphere of



S.S. Royal Edward.

Section of Library, S.S. Royal Edward, Showing the Central Light Shaft which Forms a Continuation of the Dining Room Dome.



Main Dining Saloon, S.S. Royal Edward. Note the Effect of "Airiness" and Space, and the Character of the Decorations Throughout.

which the whole room is reminiscent. In the centre, the eye is attracted by the windowed air shaft, the interior of which conforms to the decoration of the dining room below and the exterior of it to that of the library—sedate white Georgian seen through a frame of luxurious Louis XV.—a striking contrast of styles very skilfully worked out. This room is most successful. The architect has utilized to the full the space at his command and he appears to have revelled in the task of surmounting the very great structural difficulties. The

Entrance Hall and Staircase, S.S. Royal Edward.

whole scheme of decoration, with its subtle blending of line and color, betrays the light hand *of an* artist.

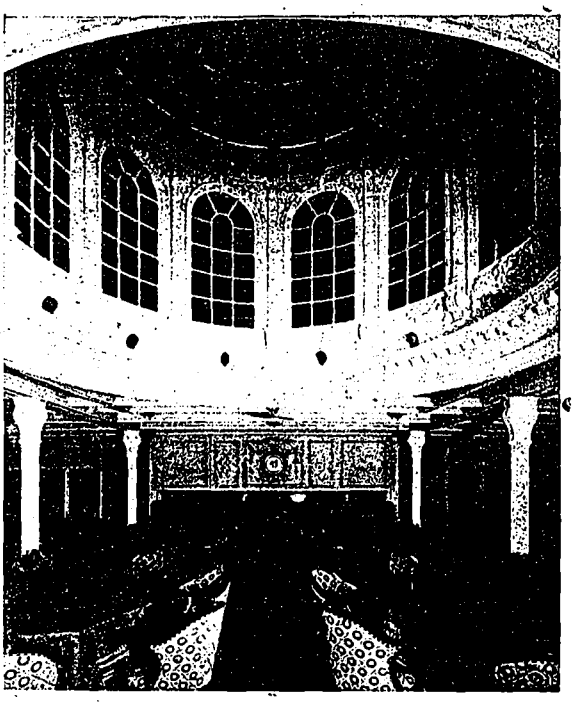
Above the library is the music room, which is treated in the delicate style of Louis XVI., ivory-white woodwork, tastefully panelled, chairs and lounges of the same color, with rich upholstery of Pastel blue. The same thorough attention to minute details is again evident, whether it be clock or candle bracket, and it would be difficult to equal the daintiness of this beautiful saloon. The treatment of the piano side of the room is particularly happy. A semi-circular recess, which is setteed, frames a grate-fire chimney place, and above the chimney piece is a plain plate glass mirror.

In the centre is the ingenious lighting and ventilating well from the library and dining saloon below, which here tapers off to a small diameter. The clever treatment of this difficult subject and the decorative effect obtained is worthy of a brief description. A circular metal-work balustrade, oval-shaped, protects a leaded glass dome which springs from the floor level in a graceful curve. This dome, which caps the air shaft at its larger diameter, supports a base on which rests a hollow column some three feet in diameter. This column supports, in its turn, the centre of the music room dome, and is quartered vertically by oak beading, presenting a twelve sided surface. Each surface is faced with small oblong mirrors placed vertically and latticed with brass strips in the manner of the celebrated Gallery of Mirrors in the Palace of Versailles. As the photograph shows, the work is beautifully executed and, in the delicate surroundings, the effect is unique.

The smoke room, containing 2,000 feet of floor space, gave the architect great scope. He has taken full advantage of the possibilities and has produced a beautiful room. He has adopted the Elizabethan style—a happy choice, since the reign of Elizabeth saw the introduction of tobacco to the English-speaking world. Beneath a central glass dome, which is protected by a quaint iron grille, dull finished, are placed some fourteen most comfortable club arm chairs of red leather. These chairs are movable, and constitute a most agreeable departure from the cast-iron convention of fixed chairs or immovable sofas. Surrounding these chairs, and leaving ample walking space, are a series of little bays, each containing table, chairs and lounge, and separated by false windows. All the upholstery is in red leather, which harmonizes well with the general scheme. The ceiling and walls are of square-panelled oak, and the posts supporting the old-time oak ceiling beams are in oak picked out with black wood. The floor is covered with interlocking rubber tiles. Details, such as quaint metal lamp shades, heavy oak chairs, even the old brass clock, combine to present a most successful reproduction of an Elizabethan baronial hall.

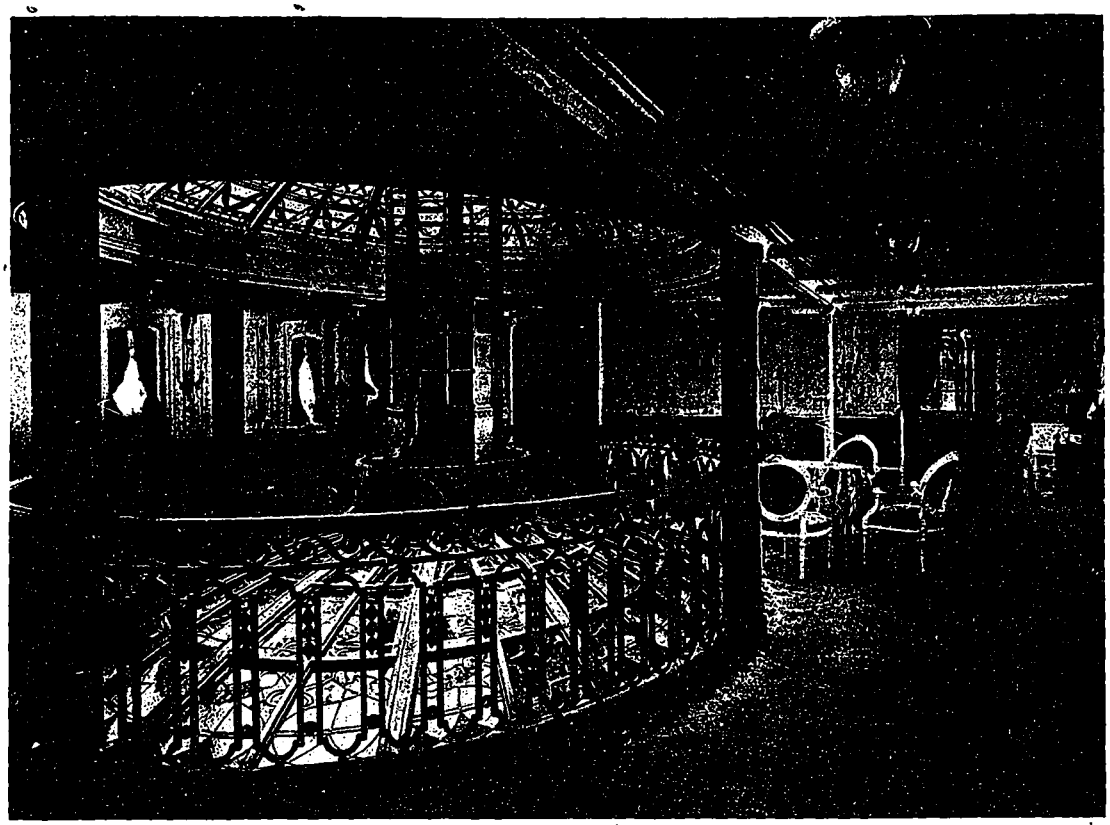
The cabines de luxe, each consisting of sitting-room, bedroom, and bathroom, are treated in varying styles. Satinwood, oak, mahogany, walnut and other woods are used, each suite receiving individual decoration and being most tastefully furnished. They are most successful, the Sheraton suite, to take one example, being delightfully worked out. The architect has utilized to the full the possibilities of the various woods and, as elsewhere, has made every minute detail to conform and harmonize to the whole. The illustrations convey some idea of the excellence and daintiness of these suites.

We pass a series of bathrooms, which are of the most approved system and are laid with black and white encaustic tiles, and descending, glance at the installation of electric light. The power plant consists of three sets of

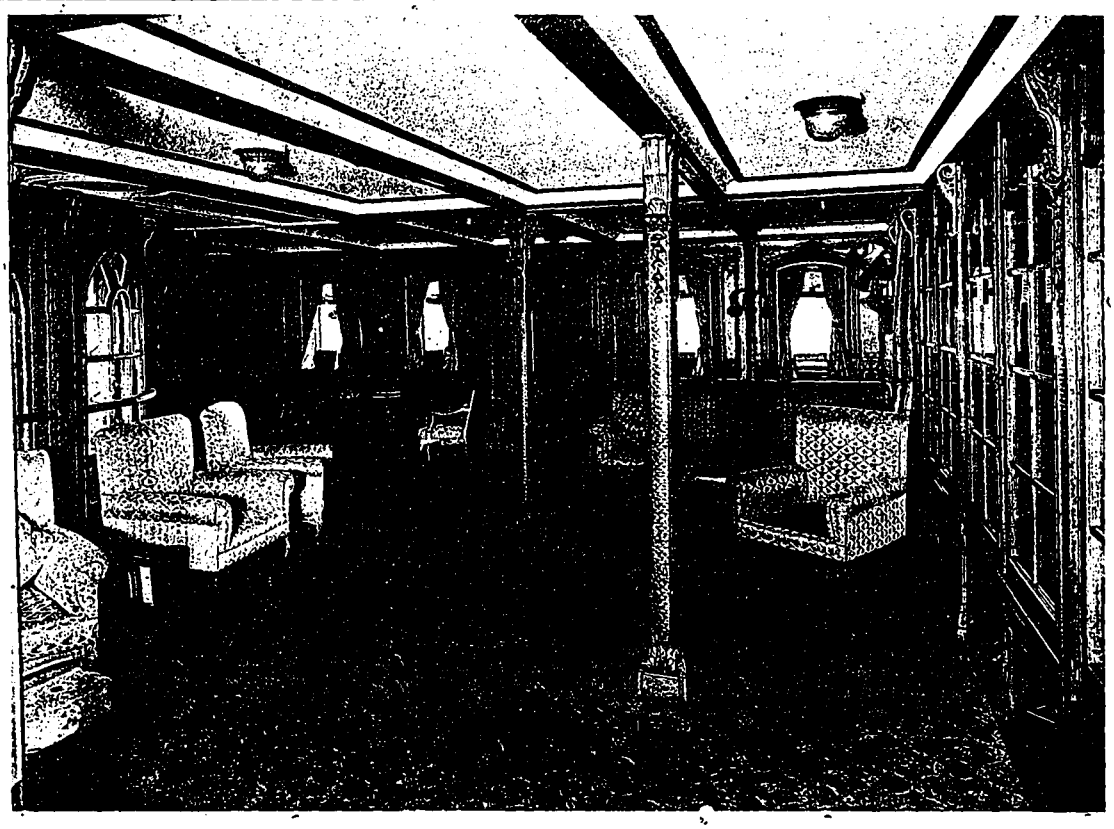


Detail of Dome, Main Dining Saloon, S.S. Royal Edward.

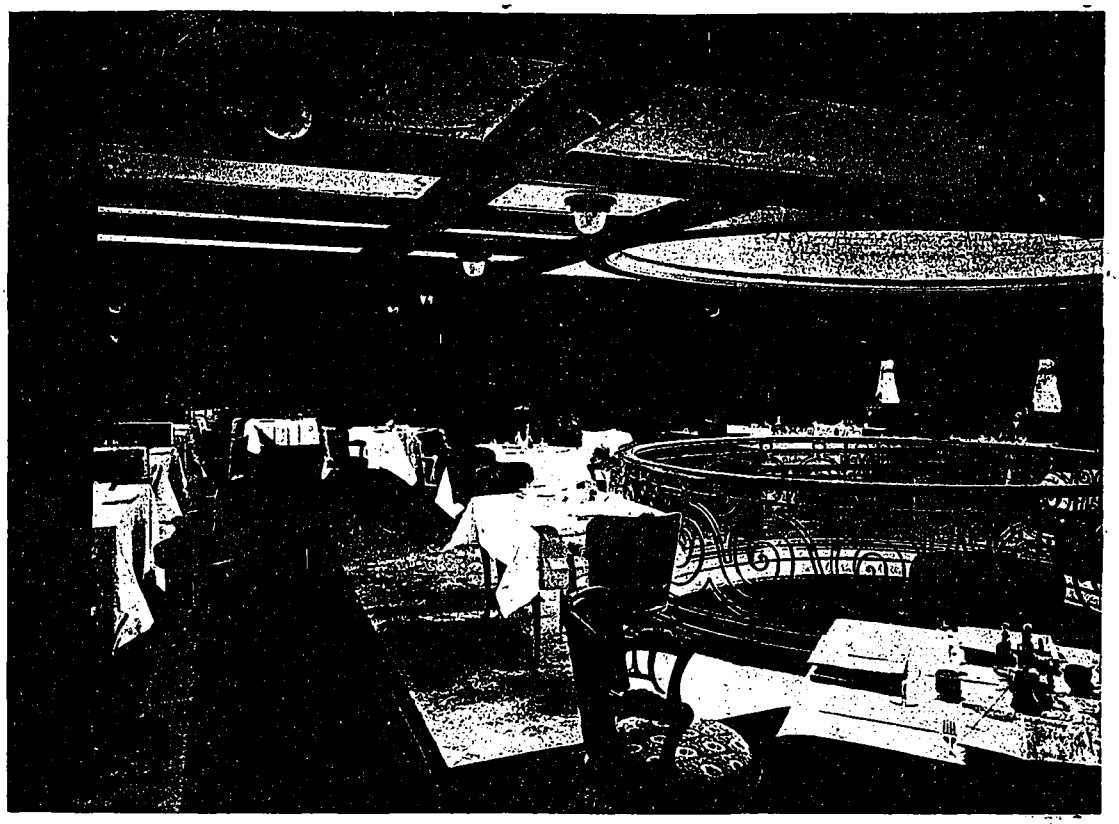
combined engines and dynamos, of the compound type, any two of which are capable of generating and supplying light equal to 28,800 candle-power, and of supplying the necessary current for a large number of cluster cargo-lamps, and for all signal lamps, thermo-tanks, motors, fans, etc. The current is transmitted by insulated cable of high conductivity, all the wiring being done on the double wire distribution-box system. The main switch-



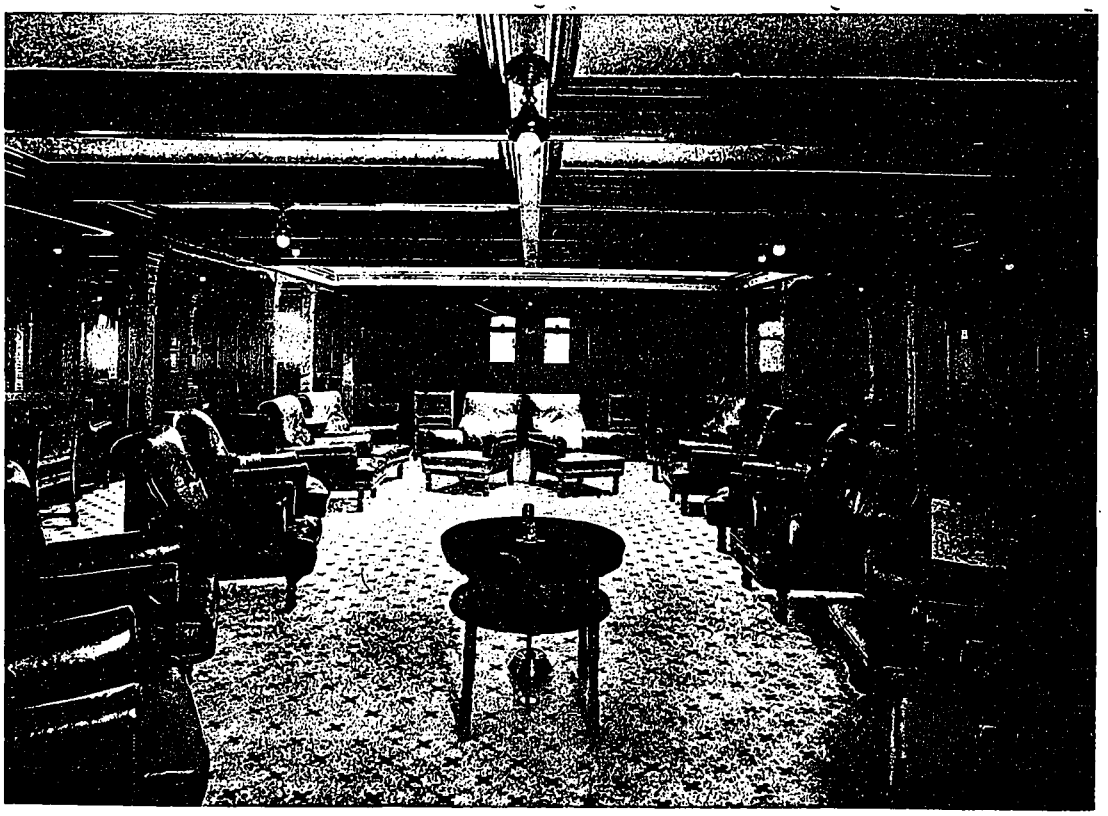
First Class Music Room, S.S. Royal Edward. An Interesting Louis XVI. Interior Finished in Ivory White Woodwork, with Pastel Blue Upholstering for Lounge and Chairs. Note the Treatment of Light and Ventilating Shaft above Library and Dining Salon.



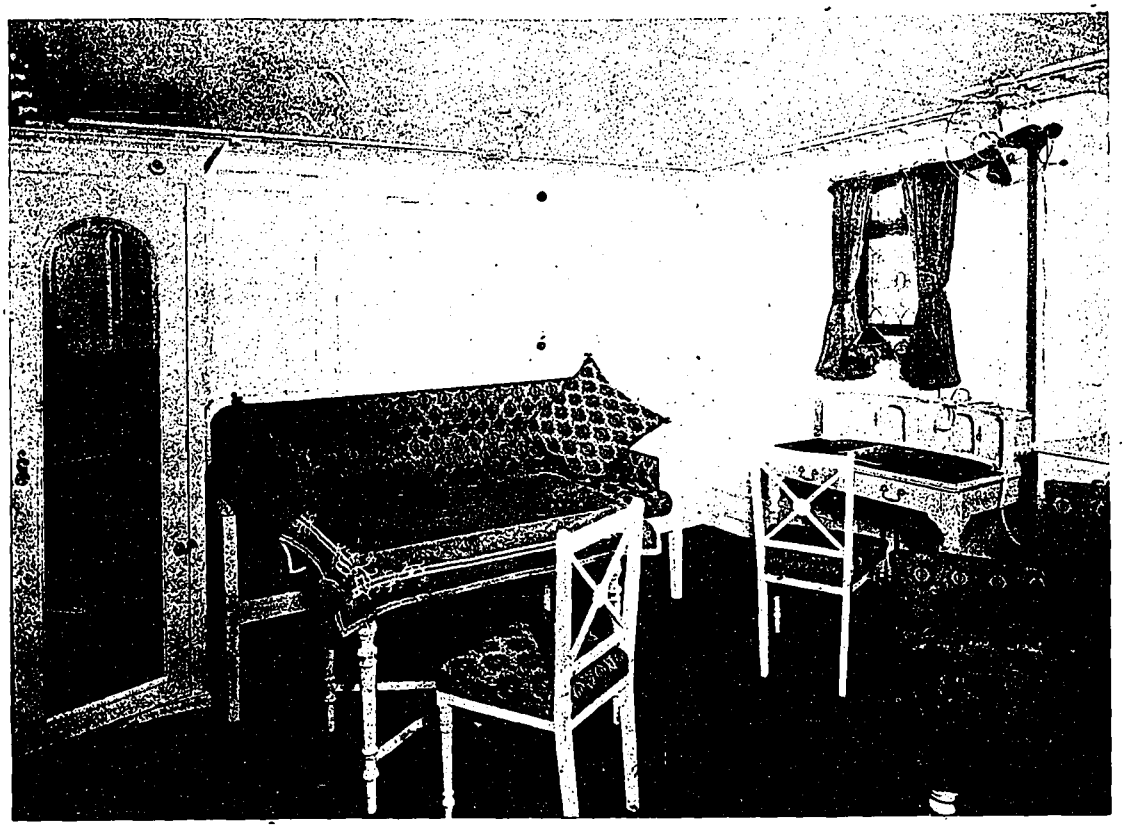
Library, S.S. Royal Edward. Finished in Grey Oak, with Richly Upholstered Furniture in Rare Shades of Green, and Curtains and Carpets of Harmonizing Tones.



Cafe, S.S. Royal Edward—A Handsomely Appointed Interior in Regency Style with Panelled Walls of Light Oak. The Floor is of Light Oak Blocks, with the Grain of Each Block laid at Right Angle to the Next, forming a Subdued Chess Board Effect.



Smoking Room, S.S. Royal Edward, which Contains over 2,000 sq. ft. of Floor Space, and Offers the Comfort and Advantages of a Lounge Room in the Modern Club.



Sitting Room, Cabin de Luxe, S.S. Royal Edward. Note the Dainty, Refreshing and Inviting Appearance of the General Scheme.

Room in Private Suite, S.S. Royal Edward, Showing the Rich Wall Panelling and Ceiling Lights.

boards are fitted with ammeters, voltmeter and switch, pilot lamps and switches, double pole switches and fuses for each of the generators, and change-over switches and double pole fuses for each of the main circuits. The instruments are of the moving coil type, and the whole switchboard is arranged for easy handling. Two-way switches are fitted for the electric lights, convenient to the berths in all first and second-class cabins, also two separate bell pushes; in addition, there are plugs for electric curling-irons in each first-class cabin. Space prevents more than a passing reference to other auxiliary machinery. Mention must be made of the unique Clayton fire-extinguishing apparatus. This machine readily generates and delivers 25,000 cubic feet of fire-extinguishing gas per hour. By means of pipes led to each compartment the machine extracts the air, simultaneously delivering sulphur-dioxide into it. When the fire is extinguished this gas is withdrawn by suction.

There is a complete refrigerating plant for fresh provisions and cargo and ice-making machinery, and a distilling plant, consisting of two large evaporators, which produce one hundred tons of fresh water from sea water every twenty-four hours, and two distilling condensers producing 12,000 gallons of pure drinking water daily. The various pumps of the ship, connected up, could discharge 2,000 tons of water per hour.

The provision for the heating and ventilating of the steamer is equally adequate. To meet the changes of temperature experienced between Canada and England, the steamer is equipped with a thermo-tank system for both heating and cooling. These tanks are not only capable of renewing the air ten times in an hour, but are also capable of maintaining the air at a temperature of 65 deg. Fahr. with the surrounding atmosphere at zero. In addition to the thermo-tank system there are electric exhaust-fans throughout the ship.

Proceeding now to the upper deck we reach the last of the public rooms—the cafe. Perhaps here the architect was most handicapped, and his treatment of this room is an excellent example of good work produced under difficult conditions. Exigencies of space have required a low ceiling—low, that is, in comparison with the loftiness of the other public rooms, for although ten feet separates ceiling from floor, the ceiling necessarily appears low in a room some forty-five feet square. Yet, in spite of these limitations, the architect has secured a light, warm effect, unmarred by any sense of oppression overhead. He has chosen the Regency style, the walls being of light oak, with carved panels of graceful design and of varying breadth, so well disposed that an excellent balance is secured. The floor is of square light oak blocks, the grain of each block right-angled to the next, forming a subdued chess-board design which, being of the same light color as the walls, helps to secure a receding effect. The furnishings are faultless examples of Louis XV. style, lounges and chairs of the prevailing light oak being upholstered in old crimson pink, and the same color is carried out in lamp shades and table covers. The lighting is from six side windows and a large ceiling dome, the light flittering through crimson pink curtains. The ceiling calls for special comment in view of the difficulty of diffusing an even light throughout. Light oak beams cut the ceiling into panels, which are of white plaster, smooth finished with a carved flower-border of conventional design. Here, as indeed in each of the rooms, one is impressed by the extraordinary attention paid to artificial lighting, and the charming results so obtained should encourage some of us to emulate this thoroughness. The lights in this cafe number some forty-five, disposed in the ceiling and on walls and tables. Considering the size of the room, the number is far from excessive, the lights being arranged so as to secure a subdued, evenly-distributed light throughout. By day or by night this room, with its warm yet delicate coloring, gives a feeling of absolute restfulness.

The elevator attracts notice by its economy of space. This utilization of waste spaces everywhere is most impressive, or rather the absolute elimination of waste spaces. They simply do not exist, a result only to be obtained by great care and a capacity to form beforehand a nice judgment of the ultimate result.

The work of this naval architect bristles with ideas and suggestions. There is one man certainly who will continue to envy his vast knowledge of woods, and his skill in handling their decorative values. Most of us might imitate the extraordinary care bestowed on the lighting—both daylight and artificially—the perfect finish of the smallest detail (everyone of the innumerable carved panels in these rooms is backed by cotton wool to prevent cracking) and the forethought in dealing with spaces. It is thus that he clothes unsightly posts and beams with beauty and grace, and, by a subtle blending of line and color, creates out of space—spaciousness. In each room, whatever the style of the decoration, he catches the exact note, and the note rings true, unmarred by any jarring triviality. And, with a brother-worker's appreciation of the difficulties overcome, we study his handiwork, not with criticism, but rather with that feeling of elated satisfaction with which we gaze upon a fellow craftsman's work that is good, very good.

THE C.C.C.A. CEMENT SHOW AND CONVENTION

This year's event at Toronto promises many interesting and instructive features. Exhibition and convention to be representative in every way.

MUCH OF GENUINE INTEREST is promised at the coming Cement Show to be held at the St. Lawrence Arena, Toronto, during the week of March 6-11. If the preparations now being made by the Canadian Cement and Concrete Association, under whose auspices the exhibition is to be conducted, are to be taken as an indication, this year's event will measure in every way the rapidly extending scope of the important industry whose interests it represents. Already the major portion of the vast exhibition hall has been taken up, and judging from the large number of firms applying for space, every nook and corner of the arena will be well occupied at the appointed time. During the past few weeks the executive committee has been arranging for several novel and instructive features, one of which will be a cement gun similar to that which proved an attraction at the New York show. There is also a likelihood that the exhibition will include a miniature cement plant in which the manufacture of cement from the raw material will be practically demonstrated. In addition to this, an effort is being made to secure the model of Mr. Edison's concrete house, although the danger of breakage in transit is liable to preclude the possibility of its shipment to Toronto.

Aside from its educational value, an exhibition of this character strikingly illustrates the vast strides the cement industry is making. The first show of any magnitude held in Chicago four years ago, proved so successful that an affair of this kind has since become an important annual event. The Canadian cement interests has not been slow to realize the value of such an undertaking, and this year's show will be the third of its kind held in the Dominion. It is interesting, in this connection, to note that a cement show was conducted in Toronto two years before it was felt that a similar project could be successfully launched in New York. The coming exhibition will witness a big improvement in every respect over the two preceding events. The manufacture of cement itself from the raw material, its mixing into concrete in the most up-to-date mixing machines, and

(*Concluded on page* 93.)

ANNUAL REPORT OF QUEBEC ASS'N OF ARCHITECTS

Summary of year's work shows transaction of large volume of business. Affiliation and Technical Education among important matters considered. Series of interesting lectures arranged for. Officers for 1911.

THE ANNUAL REPORT of Secretary J. Emile Vanier, of the Quebec Association of Architects, which is set forth in substance in this instance, shows that the Association in the last twelve months has given thoughtful consideration to a large number of important subjects relating to matters bearing directly on the interests of the profession, as well as dealing with contemplated schemes of both a civic and economic nature.

During the year twenty meetings of the Council were held and five new candidates were registered, thus giving the Association a total enrollment of 125 members. Of the new members, Messrs. J. E. Adamson and J. S. Bergerson were admitted after examination; Mr. I. M. Gordon, A.B.I.B.A., and Prof. Jules Poivert by credentials, and the J. E. Pagean re-registered. Five students—Charles Baudouin, Donat Beaupre, Ernest Gagnon, R. Riche and L. Venne—all of whom passed the necessary preliminary examination, were also enrolled. A special general meeting was held June 20, at which the by-laws regarding examinations was changed so to conform to the requirements of the charter, which calls for two examinations a year.

One of the more important matters up for consideration was the question regarding the formation of a Dominion Institute. This was dealt with at a special general meeting of the Association held on June 20th, and was approved on the following basis:—

Ist. That a Dominion Institute of Architects must consist of properly organized Provincial Associations. Architects in Provinces where there are no provincial associations, are advised to form one or join an existing provincial association.

2nd. That all Provncial Associations must first be organized on a basis equal to the charters granted to the Ontario Association of Architects, the Alberta Association of Architects or the Province of Quebec Association of Architects.

3rd. That the qualifications for membership be established by examination equal to these set by the above mentioned Associations or that of the Royal Institute of British Architects. That examination shall be conrolled by the respective Provincial Association.

4th. That n order to establish a uniformity of standard, the curriculum and examination papers from each Provincial Association be submitted to an advisory Board appointed by the Dominion Institute and consisting of representatives from each association, whose duty shall be to give such advice to provincial associations as will tend to raise and unify the standard. Such advisory Board to be appointed for two years by way of trial.

5thThat membership in such provincial associations shall "ipso facto" constitute membership in the Dominion Institute, but that, on the other hand, membership in the Dominion Institute shall not constitute membership in any or all of the provincial associations.

6th. The Council of the Institute to be composed of delegates appointed by the respective Provincial associations.

7th. All officers of the Institute to be elected by the Council.

8th. Each Provincial Association to pay to the Dominion Council a per capita fee, or a fixed sum per association.

9th. That the present charter of the Royal Architectural Institute of Canada be amended accordingly.

At this meeting the Vice-President was delegated to represent the Association at the third annual assembly of the Royal Architectural Institute of Canada, held at Winnipeg in August: and a motion was passed authorizing the latter body to take such steps as were deemed necessary to lay the matter before the Dominion House, with a proviso that the whole matter be first referred back to the provincial association for their approval before being submitted to the Government. This has since been complied with, and a draft of the proposed charter is now being considered by a special committee appointed for that purpose.

Regarding proposed amendments to Montreal's building code, the Building By-law Committee of the Association reports that after being approached on several occasions, the City Council has appointed a board of experts to revise the existing regulations, and that Mr. Joseph Venne has been to represent the Association. In this connection the Association recommends the following restrictions as desirable: (1). Prescribed building lines on all residential streets; (2), minimum size for interior courts with no skylights over; (3), regulation of advertising signs; (4), the extension of fire limits north to Sherbrooke Street, west to Atwater Ave., east to Delorimer Ave., and south to the river and canal. In the reorganization of the Department of Buildings it is recommended that both the Sanitary Inspectors and the Boilers Inspectors' departments be added to the Department of Building: that elevators be inspected by the city, and that the Inspection Department be strengthened, with the staff to consist of (1). Superintendent of buildings, to be in charge of the whole department: (2), Chief Building Inspector: (3), four assistant building inspectors, each to be in charge of a section of the city; (4), an engineer in charge of steel work, concrete, etc.; (5), two elevator and fire escape inspectors; (6), sanitary inspector's staff: (7). boiler inspector's staff; (8), adequate clerical staff. It is further recommended that electrical inspection by the Board of Fire Underwriters be made practically compulsory, and that a certificate be issued in each case, so as to protect the city's interest.

Another important matter referred to is technical education, in connection with which it is stated that a delegation from the Association awaited on the Royal Technical Commission last September, to urge the necessity of (a), the classification of mechanics in all building trades into three classes, the men to be paid according to their certificate; and (b), the establishing of properly equipped technical schools in all large cities, where each branch of the building trades could be studied both practically and theoretically, with the necessary lessons in drawings. With these two points gained, it was felt that there would be little excuse for the poor class of workmanship too often seen at the present time.

A close vigilance was also exercised during the year by the Association as regard illegality of practice, and five persons were inscribed against by the Legal Committee for non-compliance of the law. One of these cases came up on Dec. 27th, with favorable results, while another was settled out of court to the entire satisfaction of the council.

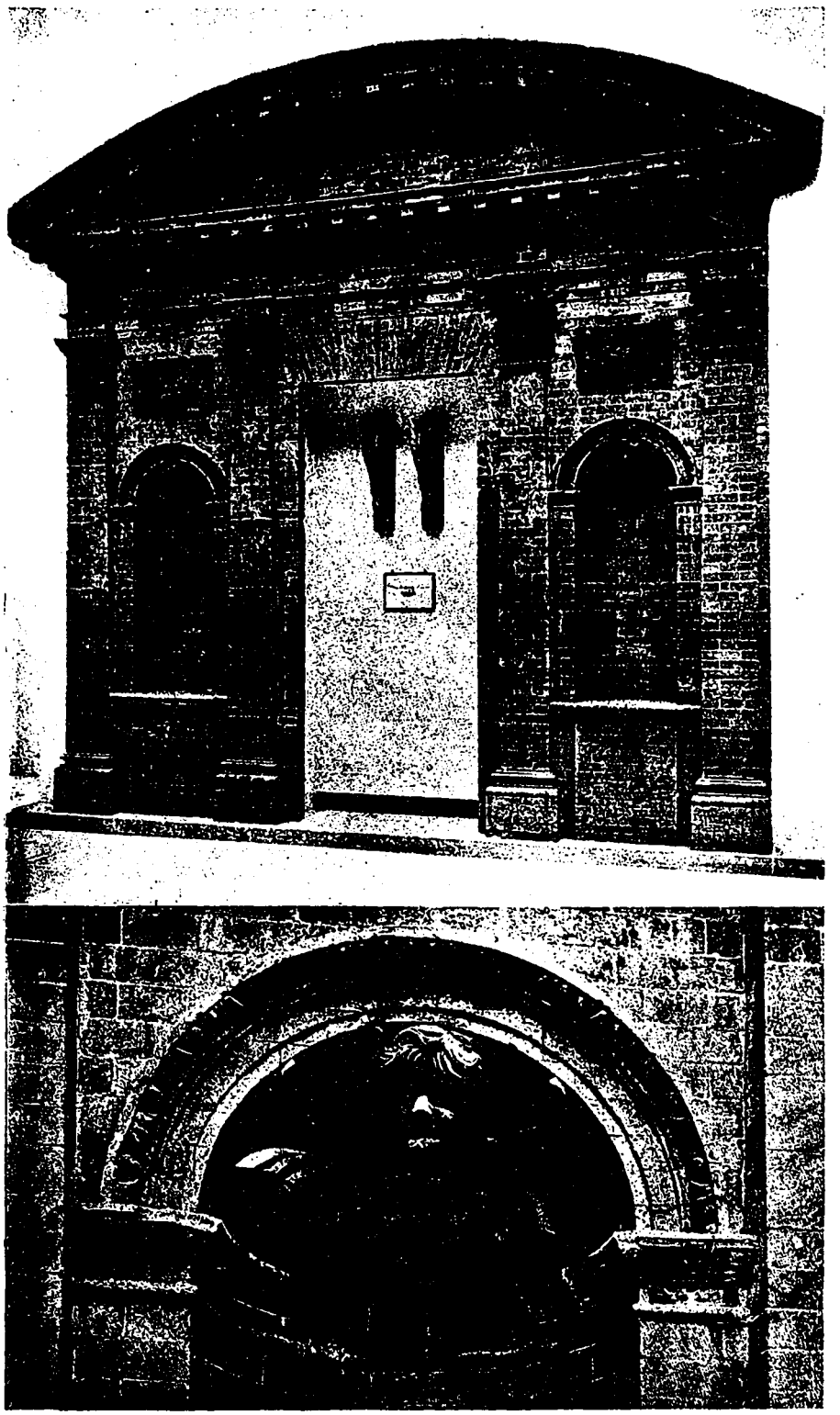
As regards civic improvements, various plans prepared by the Association in connection with suggested improvements for Montreal has been presented by a duly authorized committee to the Royal Metropolitan Parks Commission for its consideration. In addition to these, the commission has received a number of ideas and plans from different societies and individuals, but as to what extent the various schemes will effect its final recommendation, yet remains to be seen. The question of calling in an expert had been discussed, and the understanding is that the commission has had the advantage of professional advice from Mr. Olmstead, of Boston, in

(*Concluded on page* 91.)

BRICKS

A·DEPARTMENT·DEALING WITH·THE·ARCHITECTURAL AND·CONSTRUCTIVE POSSIBILITIES·OF·BRICK

BRICK HINTS FOR THE ARCHITECT-BRICK POINTERS FOR THE CONTRACTOR-BRICK SUGGESTIONS FOR THE MANUFACTURER



Courtesy of Architectural Review.

Brickwork from a House at Enfield, now in the South Kensington Museum.

A SHORT HISTORY OF BRICKWORK

By PHILLIP J. TURNER, F.R.I.B.A.

Biblical records of the early use of bricks. The brick-work of Italy and England. Charm of color obtained by great architects of the Renaissance absent in the brick-work of to-day.

IN ALMOST EVERY COUNTRY and age, the manufacture and use of bricks for building purposes is to be found. To commence with the earliest times, one recalls how that, with bricks baked at Shinai, the descendants of Noah founded Babel about the year 2247 B.C., as recorded in Gen. xi., 3: "Go to, let us make brick and burn them thoroughly; and they had brick for stone, and lime had they for mortar."

Josephus adds, in connection with this, the additional information that the bricks were cemented together with mortar made of bitumen, so that it would be impervious to water. In Exodus v. is recorded the refusal of Pharoah to provide the children of Israel with straw for making bricks about the year 1491 B.C., and if one goes further into Biblical history in Sam. xii., 31, David's prisoners, it is recorded, are given the hard labors of working in a brick-kiln.

In profane history, Herodotus has given an interesting description of the building of the walls of Babylon, in which he states that the clay that was dug out of the trenches (afterwards to form the moat) was made into bricks as soon as it was carried up and burnt in kilns, afterwards hot asphalt was used for cement, and between every thirtieth course of bricks, mats of woven reeds were placed. This bitumen was found in the river Is—a tributary of the Euphrates — in great quantities in the form of lumps floating in the stream.

The Babylonian bricks were usually burnt in kilns, while those of Nineveh and Egypt were in the main only sun dried. This can be readily appreciated, as the people of Babylonia had a changeable climate with damp weather in contrast to the Egyptian's dry and sunny atmosphere. The Romans had bricks of various sizes, according to the purposes for which they were required, but all of these were much thinner than ordinary bricks now in use. The burnt bricks of the early Romans were exactly like those of the present day in Italy, which are in fact tiles made of clay beaten flat.

These ancient bricks are often stamped, and the name in most of the makes, a brand of a tree, a plant, an animal, or a deity. Besides these common emblems, one sometimes finds added as well the date of the consulate.

Italian bricks, ancient as well as modern, are frequently scored on the underside or bed to form key for the mortar.

Into England we find that the Romans brought their universal methods of brick-concrete construction, and from that period dates the beginning of the use of brick-work in that country. Bricks must have been made on an enormous scale by these early occupiers of the country, and [redacted] brick kilns are still to be found. In the construction of their walls, the Romans usually employed bricks only in layers, or bands, at intervals varying from one to about four feet apart for the purpose of binding the work together. These bands occasionally consisted of single courses, but more commonly of two or three courses and sometimes of as many as five. As soon as the Romans abandoned Britain, the art of the brick-maker is supposed to have fallen into disuse, and for many centuries brick buildings were not erected

Battleford Hall, Suffolk, England—A Modern Addition to a 17th Century House. Note the Brick Stepped Gables and Dark Headers. Phillip J. Turner, F.R.I.B.A., Architect.

though tiles were made in large quantities for roofing purposes and for pavements. It seems strange that a country familiar for 300 years with the Romans' methods of scientific construction should not have striven to continue its sane tradition; instead, we find that the Saxons seemed utterly unappreciative and ignorant of the use of the material as used by the Romans, and examples are actually to be found of Roman voussoir bricks being used upside down in their arches.

The principal part of the dwelling houses in England in early times were naturally made of wood, and it is difficult to conceive, except in stone districts, how the chimneys to the early houses could have been constructed without the use of brick. Many of the early buildings, however, contain large quantities of Roman bricks, no doubt taken from those buildings which were scattered all over the country.

The Abbey Church of St. Albans is a very striking illustration of this. It is said that the Saxon abbot collected a vast store of material to build a new abbey

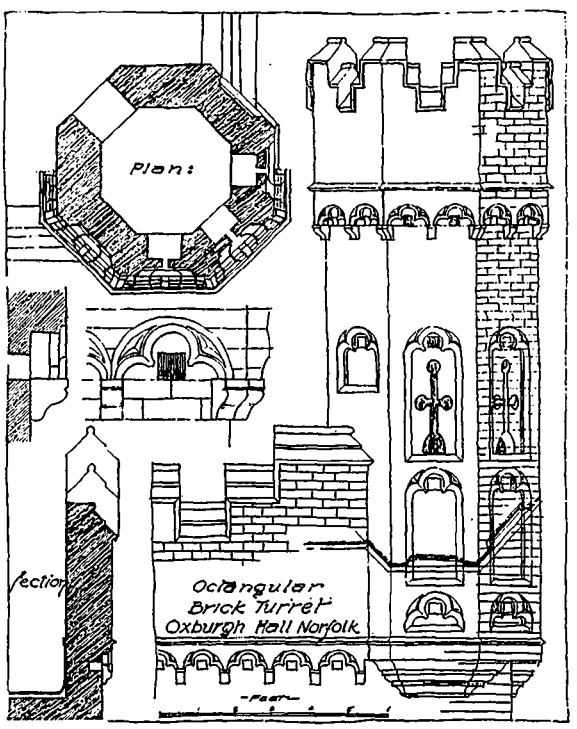
Hadleigh Deanery, Suffolk, England.

church, but in consequence of a dreadful famine which arrived just before the Conquest, they were compelled to sell the stone, etc., which they had collected, and in 1077, wishing to rebuild the church, the bricks from the old Roman city of Verulam were taken, and with these he constructed the church. Some of these piers and arches still remain, and the truth of this story appears clear from the fact that the Roman mortar, the characteristics of which are so well known, appears in many places, where it still adheres tenaciously to the bricks.

For an extended period in the past brickwork was looked upon by many authorities as a very inferior material, fit only to be covered with compo and never fit to be used in church or other important buildings. It is true, in this connection, that most of the Gothic Cathedrals of England and of France are invariably constructed of stone, but at the same time it must not be forgotten that throughout large tracts of Europe, brick was the natural, and, indeed, the popular material during the most palmy days of architecture in the Middle Ages. This is especially noticeable in Holland, in the southwest of France, in Northern Germany, and the Low Countries,

Oxburgh Hall, Norfolk, England.

in large tracts in Spain, and throughout Northern Italy, where stone was either scarce or not to be obtained, and where brick was both everywhere in evidence and most fearlessly used.

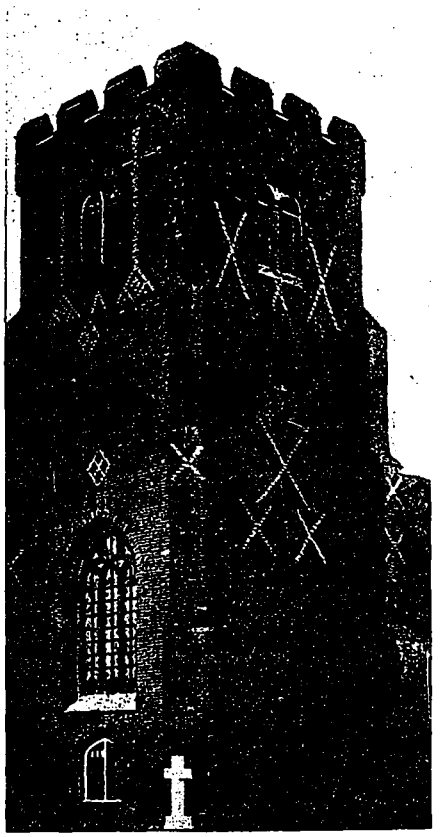


Details of Early English Brickwork.

The treatment of brickwork in Italy is far superior to any remains of brickwork of the Middle Ages that one find in England, for, with a rare exception here and

there, brick was not used to any great extent between the time of the Romans and the fifteenth century, and when it was used, it is seldom remarkable for any singular beauty or originality.

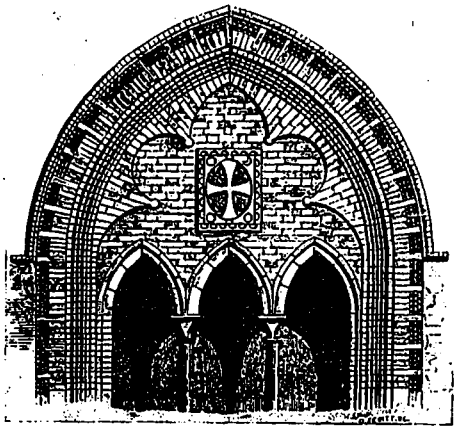
Italian brickwork is almost always executed with nothing but red brick, and rarely is stone used in conjunction with it. The Italian bricks of the Middle Ages are generally a little larger than those in common use to-



Tower of Sandon Church, Essex, England.

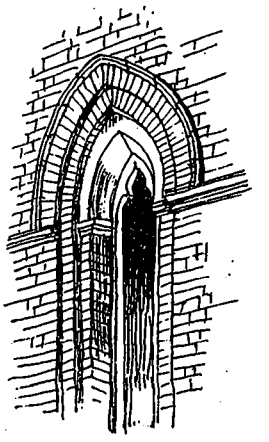
day, and are built coarsely with a wide joint of mortar. Such bricks as were used for windows, doors, and other ornamental work where they would be especially noticed, were often built of a finer clay, and the moldings executed with the greatest care and skill. Many splendid examples of this character of work are still extant. The moldings, as at Cremona Cathedral, are especially elaborate and the cusping is formed with great success. (See illustration.) Some of the details of this Italian work is well worthy of study, and in the example just quoted, attention is drawn to the fact that the cusps are not formed by means of bricks molded in the form of a cusp, but with ordinary bricks, built with the same radiating lines as those of the arch to which they belonged, and cut and rubbed to the necessary outline.

The Italians produced a very beautiful effect in another way in many of their buildings, and that was by the



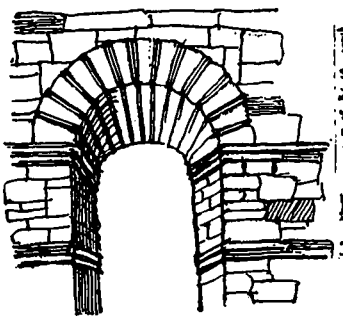
Window in North Transept, Cremona Cathedral.

alteration of stone and brick. They were generally most successful in this treatment of their work, which cannot be said of all work of the present day designed on these lines. Owing to the nature of the material, brick is not suitable for tracery, and the Italian work, as a general rule, appears most satisfactory and pleasing to the eye when the cusped head of the light is executed in stone, within an enclosing arch of line upon line of brickwork, a small portion of stone being used for the traceries. (See sketch, this page). One of the finest examples of this work is that of the magnificent walls of San Zenone at Verona, in which a deep red brick is used in courses alternating with a very warm colored stone. No doubt, the success of this design lies, after all, in the utter disregard of regularity in the setting out of the courses; for, beginning at the base of the walls we find alternating with courses of stone, first a band of three courses of brick, after this one course of brick, four courses, five courses, two courses, one course, and then the cornice, which is mainly of stone, but relieved by two courses of narrow bricks. As mentioned before, though brick was very little used as a building material in England from 420 A.D., the time of the Roman evacuation, to 1260, the first cause of its re-use was the growing scarcity of stone as well as of timber. The constant destruction of timber buildings must have hastened the introduction of a more fire-resisting material.

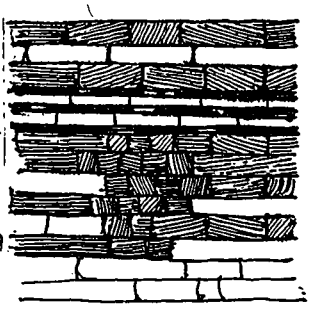


Example of Italian Brickwork with Cusp Head of Window Executed in Stone.

Reference might be made to the price of bricks in the early days, as records are in existence showing that bricks sold in the reign of Edward III. for six shillings per 1,000, and in the fifteenth century the price was still a little less! The size of bricks is also worthy of attention; in many fifteenth century buildings in England they are made 9 in. x 4½ in. x 1½ in. which, so great an authority as the late George E. Street considered a better proportion than the modern bricks of to-day. Those of Little Denham Hall, Suffolk, built in 1260, and which is con-



Roman Theatre, Tillebonne.



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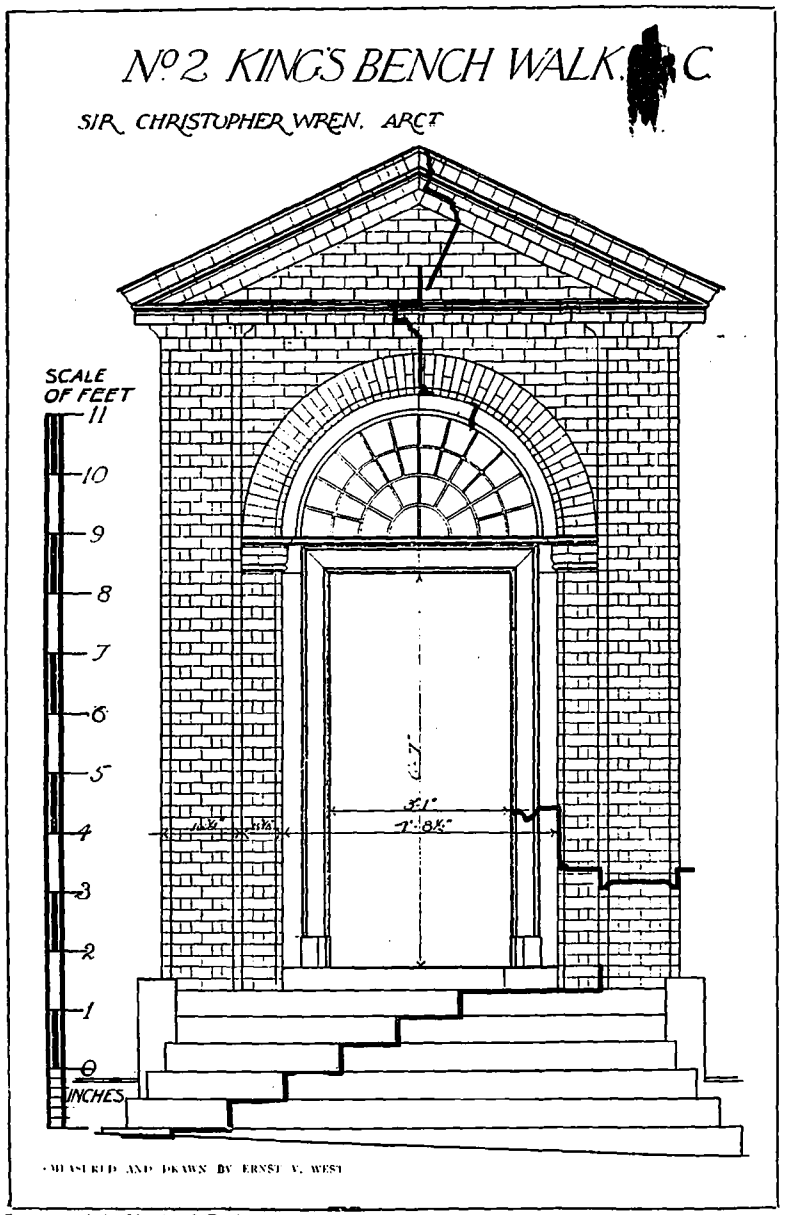
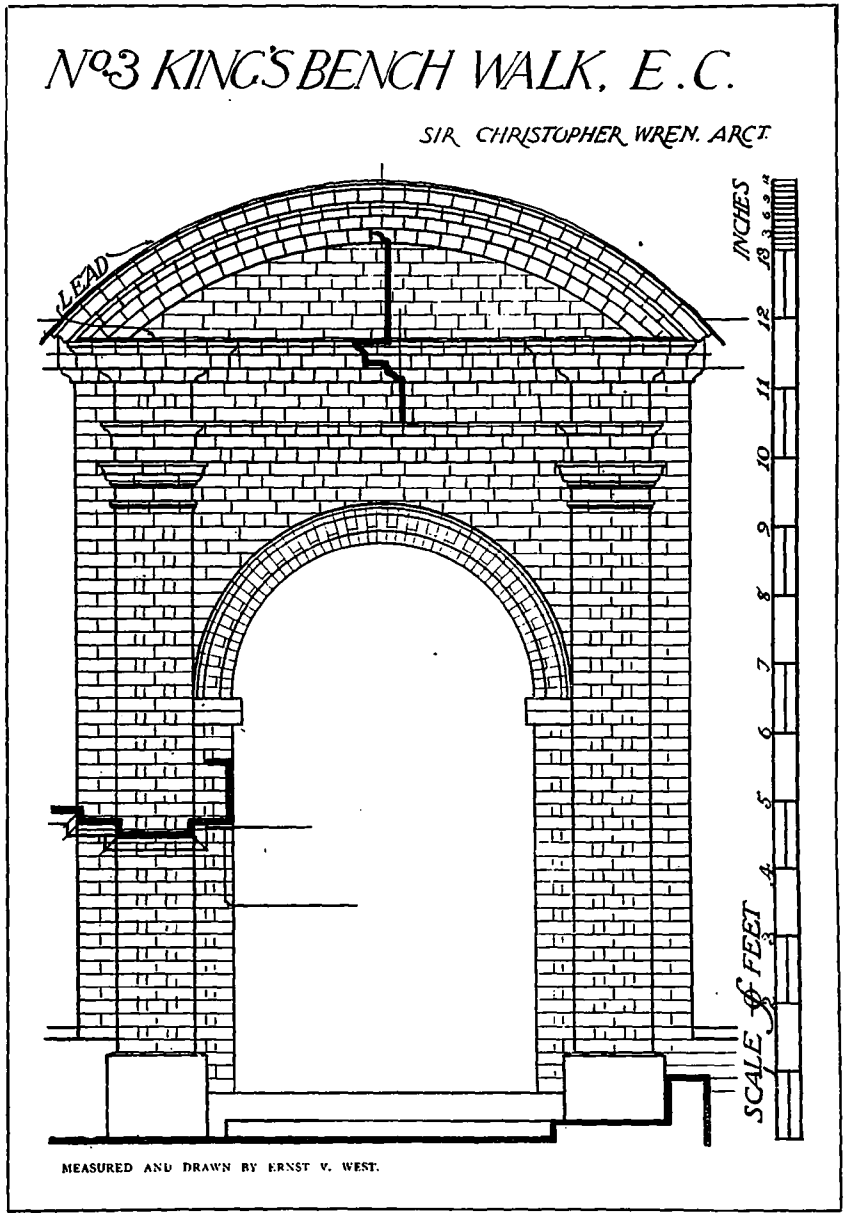


Courtesy of Architectural Review.

Detail of Doorway, No. 2 King's Bench Walk, London, E.C.



Courtesy of Architectural Review.

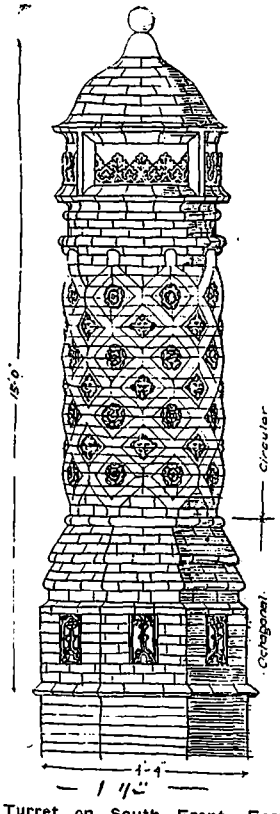
Detail of Doorway, No. 3 King's Bench Walk, London, E.C.

South Front, East Barsham Manor House, Norfolk, England.

sidered the earliest brick building built by English workmen, are 9¾ in. x 4¾ in. x 2¼ in.

Other sizes of bricks of different ages and countries, to mention only a few, are: Babylonian, 12¼ in. x 12¼ in. x 2½ in.; Roman (St. Albans), 18 in. x 12 in. x 1¾ in.; Roman (London Wall), 17½ in. x 11¾ in. x 1¼ in. and 7 in. x 7 in. x 1 in.; Chinese Great Wall, 15 in. x 7½ in. x 4 in.

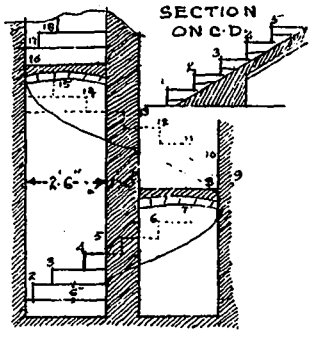
Church work in brick is not common in England, except in Essex, where several country churches may be found almost entirely built of this material. A pleasing design is that of Sandon Church (see illustration) with its tower, magnificent diapered crosses of vitrified bricks, and brick dome in its upper stage. Though brick was but sparsely used in English church building, its possibilities were quickly grasped for domestic work, and one finds in the work of the Tudor ages especially, many charming examples of how this material should be used.

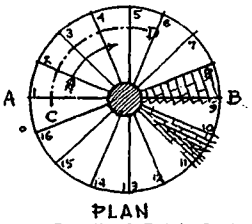


Turret on South Front, East Barsham Manor House.

An essential feature of this period is the natural enrichment of diaper patterns in the use of vitrified headers. Regularity of pattern was not always adhered to, but the aim of the builders of the Middle Ages, it seems, was always to obtain richness of effect.

The Tudor period produced those marvellous specimens of the bricklayers still, namely—the elaborate chimneys. These were quite a new thought to the architect of this age, as up to quite a late date, smoke had blackened the rafters of the great Gothic halls and was allowed to escape merely through a hole in the roof. These chimneys were characterized by battlemented caps, projecting angles or octagonal shafts and many other elaborations. They were made essentially a feature of the design of the whole building with plenty of breadth, and what is perhaps more important still, they were given plenty of height; the architects of these times, in fact, were not afraid of their chimneys being seen, as one might conclude is the case with many architects of the present days, where the general rule appears to be to keep the chimneys as low and insignificant as possible. With the death of Henry VIII., the ornamentation of chimneys ceased rapidly, and from 1500 on, the new Renaissance note, foreign in tone, made its influence felt in all the more famous mansions; and terra cotta, a new material suited to the desire for richness in detail, came into favor, and was used in conjunction with brickwork of this time. It is worth noting, however, that terra-cotta was only used with any freedom in England so long as the Italian workmen were present there. It never took the place as one of the building materials of that country.



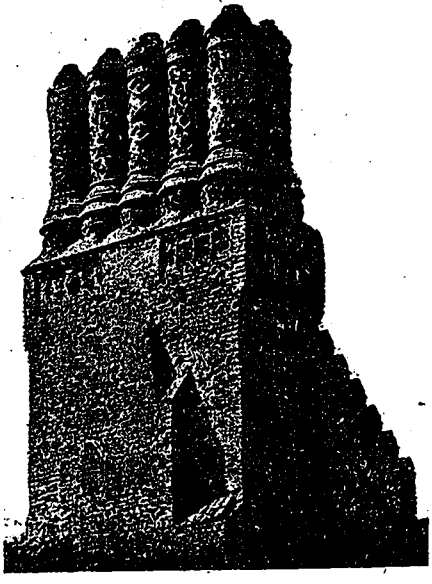


PLAN

Detail of Brick Staircase.

Brick newel stairs of the early defensive houses are from a constructional point of view both original and ingenious, and one is surprised at the intricate problems the bricklayers of the Middle Ages were able to overcome in their vaulting. In the well-known stairs at Esher Place (1500 A.D.) the newel, vault, handrail and treads are brick throughout. In referring to these staircases, it is interesting to find, as pointed out by F. E. Kidder in his work on Building Construction, that spiral stairs of brick are commonly made in Madras, India. They are built without any centering, and the cost locally is less than one-third of an iron stairs. As brick is such a good fire resisting material, these stairs might be advantageously employed in this country, if workmen could be found to build them. The dimensions of a typical Madras spiral staircase are given as follows.

Diameter of stairs, wall to wall, inside—6 feet.



Chimney Stack, East Barsham, Norfolk.

Diameter of newel, in centre—1 foot.

Headway, from top of step to arching overhead—7 feet 1½ inches.

Risers, each—6 inches.

Tread at wall—1 foot 2⅛ inches.

Tread at newel—2⅜ inches.

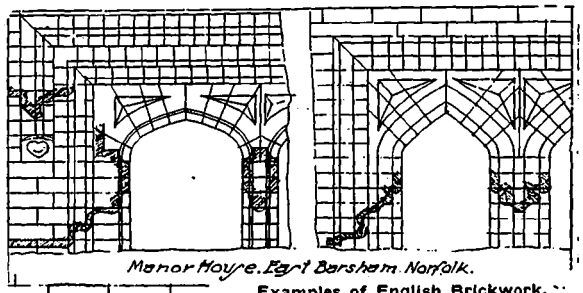
Square-headed windows in Tudor times were difficult to construct prior to the use of straight arches with radiating voussoirs. This latter treatment of soft bricks with their joints, known as "rubbed and gauged work," became the characteristic feature of all Georgian work, and was used and handled with great success in every form by Sir Christopher Wren. Though, during the Elizabethan period, brick was more generally used than at any previous period, its interest and elaboration declined for a time with the advance of the Renaissance, and the general brick revival, which continued till the nineteenth century, did not become general until the latter half of the seventeenth century.

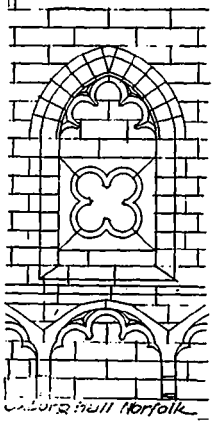
"Rubbed brickwork," which is brickwork not cast as is terra cotta, but rubbed to section, or carved for ornament, was laid with very fine joints. Sir C. Wren was

South Front, Gifford Hall.

one of the first to make use of this class of brickwork, which was probably introduced by the Dutch noblemen who came over with William III.

Classic cornices large in scale were built up of 2½ in. brick, and dentils and modillions were also added, with the addition in the earlier work of tiles for the fillets. In the Renaissance period, the Orders formed the great decorative resource in the use of brick by the architects of that time, and the super-imposed Orders of the Jacobean days were replaced by one large Order, usually Doric, this being easier to execute in brick than the others. Architectural ornament was always carried out in brick, with a very fine joint, as is seen in the house at Enfield. (See illustration.) Probably no finer example exists anywhere than this example of Renaissance brickwork in showing the possibilities of carved brickwork and also of the limitations of the material. Where the detail was especially intricate and fine (and this is especially to be seen in Ionic capitals), the work was sometimes



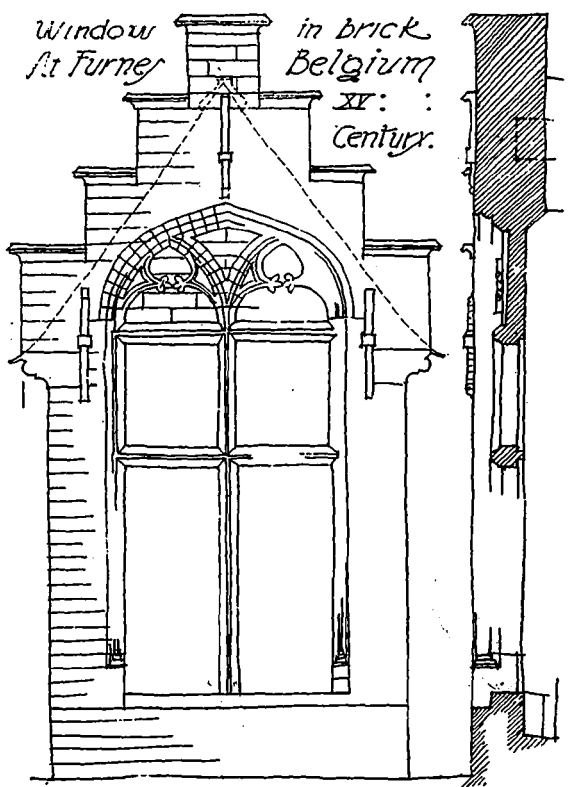


Examples of English Brickwork.

made from one homogenous block by using a substance of a resinous nature, which made the joints almost imperceptible.

The Renaissance architects also learnt the value of color effects by using a yellow or purple brick for the background of their work, and a red or different colored brick for the quoins and dressings of window and door openings. In this way some delightful results were obtained, as the contrasts are never at any time glaring, but seem to blend harmoniusly one with the other.

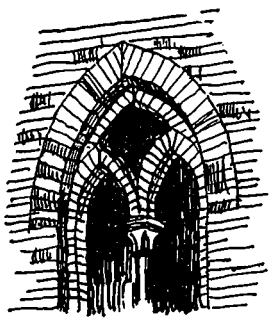
Although Sir Christopher Wren preferred stone for his churches, he used brick in domestic work with his natural strength and decision, considering it as suitable for the palace as for the smallest cottage. The execution of his brickwork, as might be seen by the doorways illustrated on page 88, is as excellent as its design. In his well known work at Kensington Palace, the artist's knowledge of the limitations of brickwork is well brought out. The carving, copings, and cells are all of stone, whilst the protected portions, as the heads of niches, are beautifully formed in brick (see page 84). Again at



Detail of Early Belgian Brickwork.

Hampton Court Palace, Wren has obtained a pleasing effect of color by using a dull red in the lower story, and the bright red of gauged brick above.

It is of interest to note that Sir C. Wren, realizing the reliability of brick as a constructive material, erected the cone in the dome of St. Paul's Cathedral in this material. The bricks here differ in size from those in ordinary use of the time, in that they are made double the length, so as to extend quite through the thickness of the dome. Following on the last work of this master architect came a decline, which was hastened by the general introduction of stucco late in the eighteenth century. Not only did this destroy the artistic value of brickwork, but it caused also an inferior quality of construction as well.



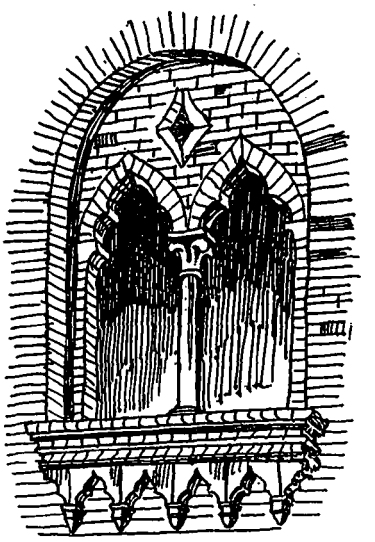
Brick Window, Campitallo, Italy.

Brickmaking of the present day, though developing on scientific lines has not equally improved the artistic quality of brickwork as a whole, and so long as pressed bricks are in favor on this Continent, and other such hard surfaces, that charm of color obtained by the great architects of the Renaissance in England, through the natural weathering of rubbed brickwork, and sand-faced bricks, together with their practical knowledge of the right use of this material, will never be seen to the same extent in the brickwork of to-day.

ANNUAL REPORT OF P.Q.A.A.—Cont'd from Page 82.

drawing up its report to the Government. In this connection it is recommended that should this report, in the opinion of the incoming committee, contain any detrimental suggestion, omission or defect, the Association should not take an actual part in criticising the plan. The committee was also given to understand that the City Engineer was engaged in planning a driveway from the head of Mountain Street to the foot of Pine Ave., along lines embodied in the general scheme advocated by the Association. The following resolution was adopted at a joint meeting of the committee, and a committee appointed by the City Improvement League, held Jan. 4th, 1911, to discuss the subdivision of the Redpath property above Pine Ave., and that of the Brunet and Molson properties, all of which abut upon Mount Royal Park: "That all properties abutting on any park when subdivided should be bounded by a road, as by this means one prevents the view fro mthe park being destroyed by overlooking backyards of residences: and that it is desirable that a committee be formed to take the necessary steps to see that the sub-divisions of the Redpath and Brunet properties comply with this idea."

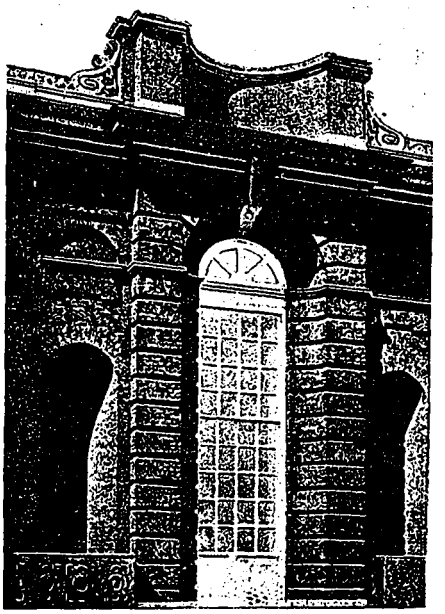
Reference is made in the report, to Mr. Henry Vivian, M.P., for Birkenhead, Eng., an expert on the Garden City planning, who kindly consented, on his visit to Montreal, to hold an informal discussion with members of the committee on various aspects of city improvement, including housing of the poor: also to Dr. Charles Elliott, ex-Pres. of Harvard University, who delivered an address December 3rd, on the "Metropolitan Park Commission of Boston," at a recent meeting held under the auspices of the City Improvement League to which members of the Association were invited. It is also suggested in the report that the Association keep a record of all historic or old buildings of architectural interest in the Province of Quebec, and all members having photographs or measure drawings of sufficient interest, should furnish a copy of same for the Association's collection. The Association proposes to hold an "Esquisse" competition in which the subject will be drawn En Loge, five hours being allowed for its development. It is intended that the first three in this competition should take place in one of the class B. projects of the Beaux Arts Society, the work to be judged by a committee of three local architects.



Window, Coccaglio, Italy.

Concerning the principle of inaugurating a travelling scholarship for students of architecture which was approved at the last annual meeting, the report states that the members of the Association have been approached wih a view of obtaining subscriptions towards this fund, as a first instalment towards the capital necessary should be made by the members themselves in order to prove their interest in the scholarship before approaching the Government and others for aid. Up to the present time the sum of $600 has been promised.

Regarding the students' classes, it is stated that very encouraging progress is being made under the patronage of Mr. W. S. Maxwell, who has kindly consented to give a generous portion of his time to the settling of problems and criticizing the work of the draughtsman. At the present time the Atelier consists of 15 members and the work is being done principally in connection with the Beaux Arts Society of Architects. Ten out of the fifteen members submitted rendered designs during the past session, and out of this number no less than eight were awarded mentions.



Banqueting Hall, Kensington Palace.

Lectures arranged for by the Council are as follows: Jan. 12th, Prof. Poivert on "Beauty in Architecture"; Jan. 12th, Prof. P. E. Nobbs on "Ornament"; Jan. 24th, Dr. Fryer on "The Europe of the Renaissance"; Feb. 7th, Prof. Ludlow, on "The Renaissance in Italy"; Feb. 21st, Prof. Beaugrand Champagne, on "The Renaissance in France"; Mar. 7th, Mr. Burgess, on "The Renaissance

in England." March 21st.—Mr. P. J. Turner, on "The Masons' Art of the Middle Ages." April 4th. —Mr. Beullac, on "Sprinkler Tank Supports."

The following officers have been elected for the ensuing year: J. R. Gardiner, President; Ludger Lemieux, 1st Vice-President; J. E. P. Dussault, 2nd Vice-President; J. Emile Vanier, Secretary; W. S. Maxwell, Treasurer; J. Venne, Councillor; Hugh Vallance, Councillor; Thomas Raymond, Councillor; G. A. Monette, Councillor; Stevens Haskell, Councillor; Jos. Perrault, Councillor; and Messrs. Cecil S. Burgess and Eugene Payette were appointed auditors.

MACHINERY & TRADE

THE TRUSSED CONCRETE STEEL COMPANY is erecting a large modern factory in connection with its plant at Walkerville, Ont., for the exclusive manufacture of a new type of steel window sash which the company is about to place on the market. In addition to being light, durable and economical, it is said that the particular type of sash in question has a number of other excellent individual points to recommend its adoption.

THE ALL-CONCRETE HOUSE

THE ALL-CONCRETE HOUSE, absolutely devoid of wood or other materials in its make-up, is no longer a novelty in the sense in which the word applies to building construction. Examples of this type are by no means uncommon, nor are the many advantages of concrete for domestic construction unkown to the building fraternity and the more intelligent portion of the lay public. The great problem with the builder has not been to produce a house of this character in itself, so much as it has been to produce one at a cost that will bring the durable and sanitary features which it offers well within the means of the average person. It was with this object, that Mr. Edison set to work on his now famous monolithic or "poured-concrete" house, which has excited no little comment in the daily press during the past three or four years, and which was exhibited in model form at the recent New York cement show. The one drawback to great inventor's idea, other than that of the enormous outlay required in the cost of molds, is the fact that his scheme allows of little or no variation as regards architectural design and plan; and a group of dwellings built according, would be monotonous in arrangement, and commonplace in their decorative treatment. Mr. Edison, however, is not the only one who has given thought to this important subject. Working along similar lines, the American Building Corporation of New York, has perfected and patented a system whereby any style of house can be constructed complete—walls, floors, roofs, outside trim, stairs, partitions, etc., without the use of wood. In this respect the American Building Corporation not only takes priority over Mr. Edison in the field of practical operation, but moreover, overcome the main objection to his scheme, in that a house erected according to this system can be built after the design and plan of any architect. Realizing the field for houses of this type in Canada, an enterprising firm, W. J. Bellingham and Company, of Montreal and Toronto, has secured the exclusive rights of this system for the Dominion, and have already started the erection of a number of dwellings, after plans prepared by Architects Ross and McFarlane, of Montreal, in order to demonstrate its practicability. These houses, an illustration of which is reproduced herewith, are most interesting in the character of their design, and they show the possibilities of concrete for artistic effect in residential work, where this system is employed. The walls, floors, partitions, stairs, balustrades and mantels, will be formed into one solid piece of concrete construction. An advantage claimed for the Bellingham type of house is that it is not only fireproof in every particular, but that the initial cost will be practically the first, last and only expense to the owner. It is further maintained that the type of molds used elminates the present heavy cost of concrete forms, which is said to be usually 30 per cent. or more of the entire cost of the building. In addition to this, the molds can be easily operated and repeatedly used, and any design of house can be built from the same molds. The Bellingham Company is arranging to sublet the right to use the molds in different parts of Canada on a royalty basis, and will send full particulars upon request.

Group of One-piece Concrete Dwellings, to be Built by Bellingham & Company at Montreal. Ross & McFarlane, Architects.

NEW CONTRACTING FIRM

ONE OF THE MORE RECENT firms of importance to engage in the engineering and contracting line, is the Standard Structural Company of Toronto. This concern makes a specialty of factories, office buildings, warehouses, foundations, municipal work, reinforced concrete work, and all contracting of a general character. One of its more recent contracts is the factory of the Standard Sanitary Manufacturing Company at Lansdowne and Royce Avenues, Toronto, which covers a tract about a block square. The construction of this plant, which is three stories high in its main parts, is fireproof throughout; the material employed being reinforced concrete, steel and indestructable brick, with "fenestra sash" windows. A feature of the factory is the foundry building which includes in its equipment a modern turn table that automatically operates to a set position. There is possibly no turn table of its kind to-day in another factory in Canada. The manner in which the entire plant is carried out shows close attention to thoroughness and constructive detail. The Standard Structural Company has a large working organization, and its equipment is such as to enable it to carry out important contracts with thoroughness and expedition. In this connection it wishes to announce that its engineering staff is at the disposal of the architect and that no contract is too large or too small for the firm's personal attention.

C.C.C.A. CEMENT SHOW AND EXHIBITION.

—Cont'd from page 81.

examples of the finest concrete work so far produced will divide the attention of the visitor with the variety of machinery used in the production of cement blocks; the many water-proofing compounds; types of reinforcement and other features and novelties which will be found in abundance. To the engineer, the architect, the contractor, the business man, the investor and the home builder, this year's show will offer much in the way of constructive, economic and interesting knowledge. It will attract the attention and thought of everyone who is interested in permanent construction and an enduring architecture. The most modern methods and best practice in every branch of the industry will be demonstrated. During the exhibition one of the city's best orchestras will play both in the afternoons and evenings.

As in the past the convention of the Canadian Cement and Concrete Association will be held in connection with the show. Papers of practical and technical interest will be provided by many Canadian and American authorities on cement and concrete construction. The programme, which is practically completed, will be announced shortly. All firms who are desirous of being represented at the exhibition should lose no time in getting in touch with Wm. Snaith, 57 Adelaide St. E., Toronto, who is Secretary of the Association, and who has the management of the show in hand.

MESSRS. BROWN AND VALLANCE, architects, Montreal, have opened an office in the McArthur Building, Winnipeg, in order that their rapidly expanding Western practice will receive the full attention it requires. At the present, this firm has a large amount of important work on hand in the Prairie Provinces, including the University Buildings, the King George Hotel, and the Lineham Block at Saskatoon; the Regina Methodist College and several other large buildings which will shortly be erected. The Winnipeg office will be in charge of Mr. E. E. Shepherd, who, for the past four years, has been representative for the Dominion Bridge Co. Mr. Shepherd has had a broad experience in architectural and constructive work, and is exceptionally well qualified for the duties he assumes in connection with his new position.

THE FIRST STRETCH of oil-concrete highway to be laid in Pennsylvania has just recently been completed on the Harrisburg-Linglestown road. It is about a quarter of a mile in length and is between Progress and Paxtonia. The oil-concrete road is an experiment on the part of the state highway commission, which in 1907 rebuilt the highway from the eastern terminus of the city to Paxtonia. The section just laid replaces a quarter of a mile of road constructed of concrete. The new section of road is made of concrete into which are mixed asphaltic oils. The top surface is not arched so much as the rest of the road, the crown being constructed on a basis of three-eights of an inch to a foot. The crown is the same as that used in laying a brick pavement.

DR. JOHNSON'S HOUSE in Gough square, London, has been acquired by an anonymous purchaser, and is to be placed in the hands of trustees as a national, permanent memorial to the great English moralist and lexicographer. The house has recently received a number of much needed repairs, but these were made so as not to destroy any of the characteristic features of the interior, which is in much the same condition as when Dr. Johnson lived there from 1748 to 1758.

CATALOGUE AND PRICES LISTS from manufacturers of products pertaining to the building line, are desired by Architect G. H. Bugenhegen, who has recently opened an office for practice in the new Stewart Block, Saskatoon.

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niture Co.
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