

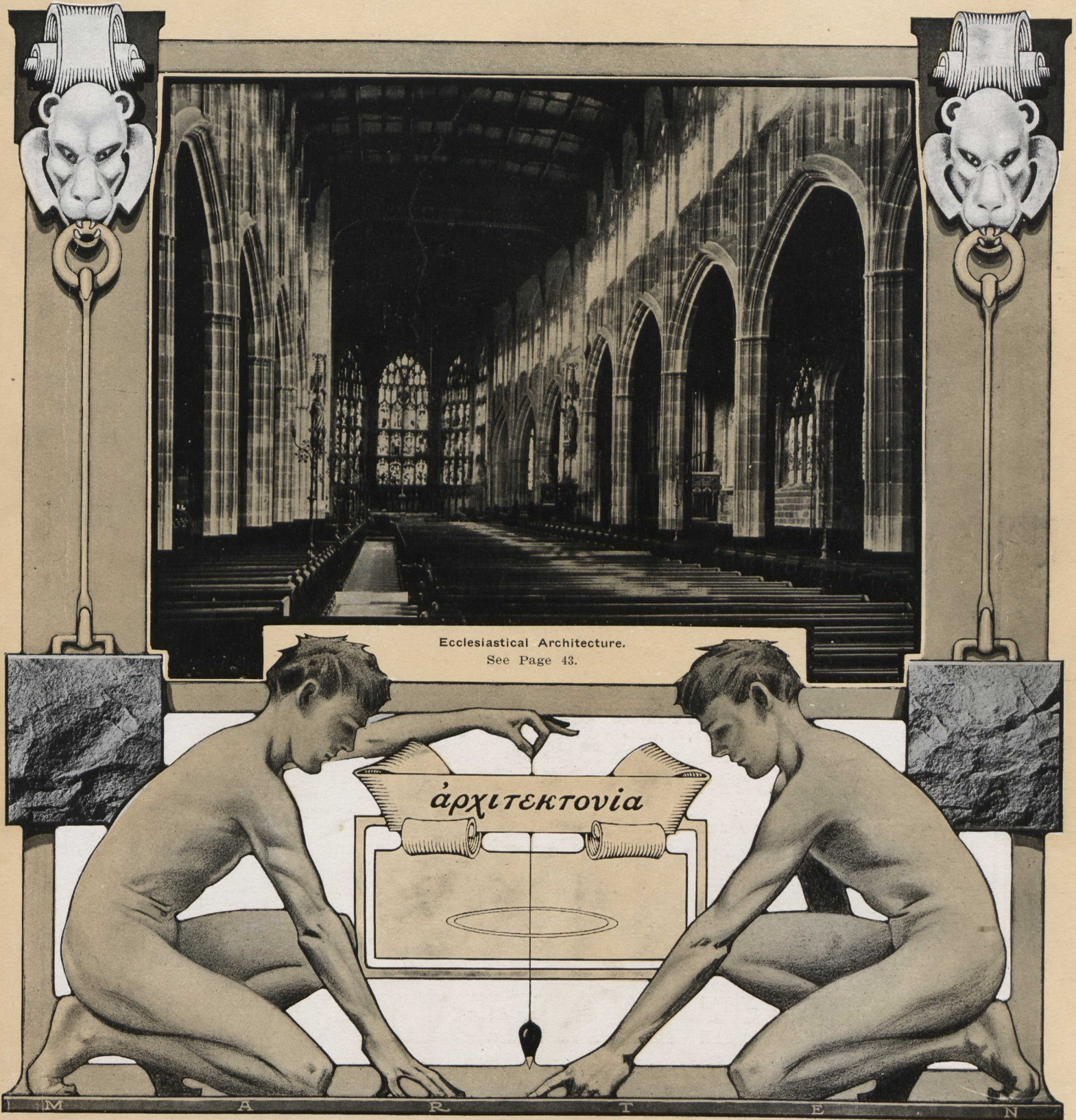
CONSTRUCTION

“ A JOURNAL FOR THE ARCHITECTURAL ENGINEERING AND CONTRACTING INTERESTS OF CANADA ”

Vol. 2, No. 6.

APRIL, 1909

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Ecclesiastical Architecture.
See Page 43.

- MONTREAL -

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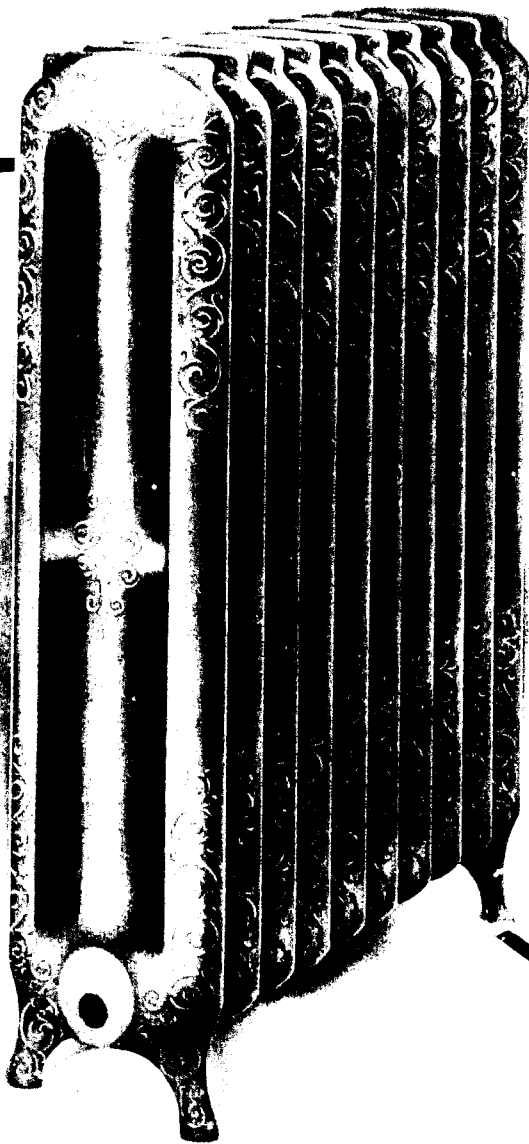
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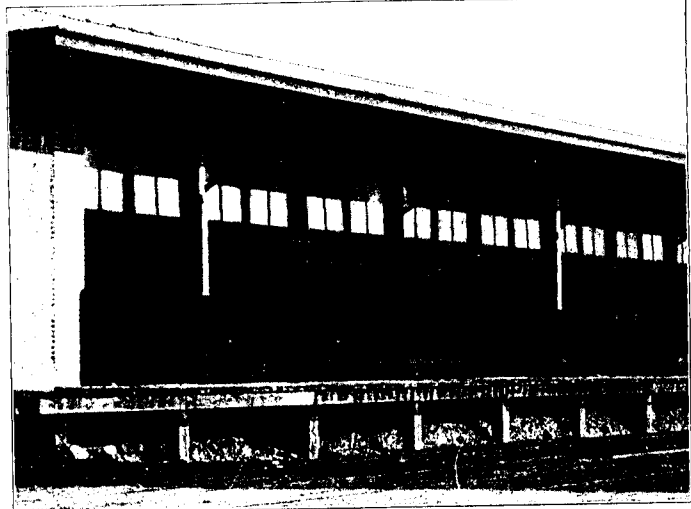
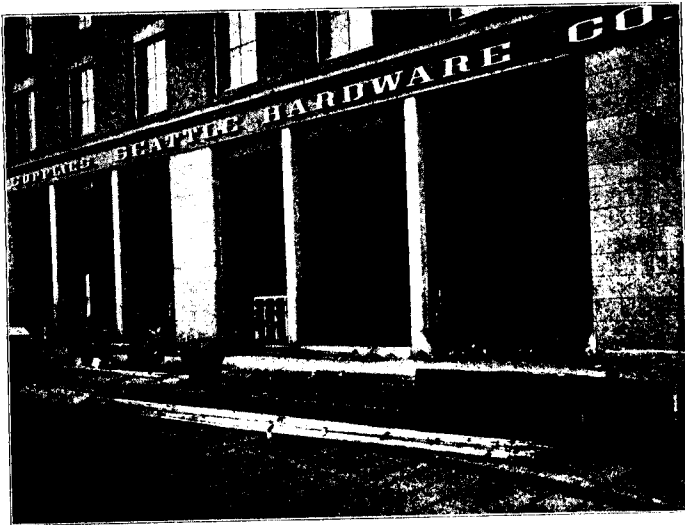
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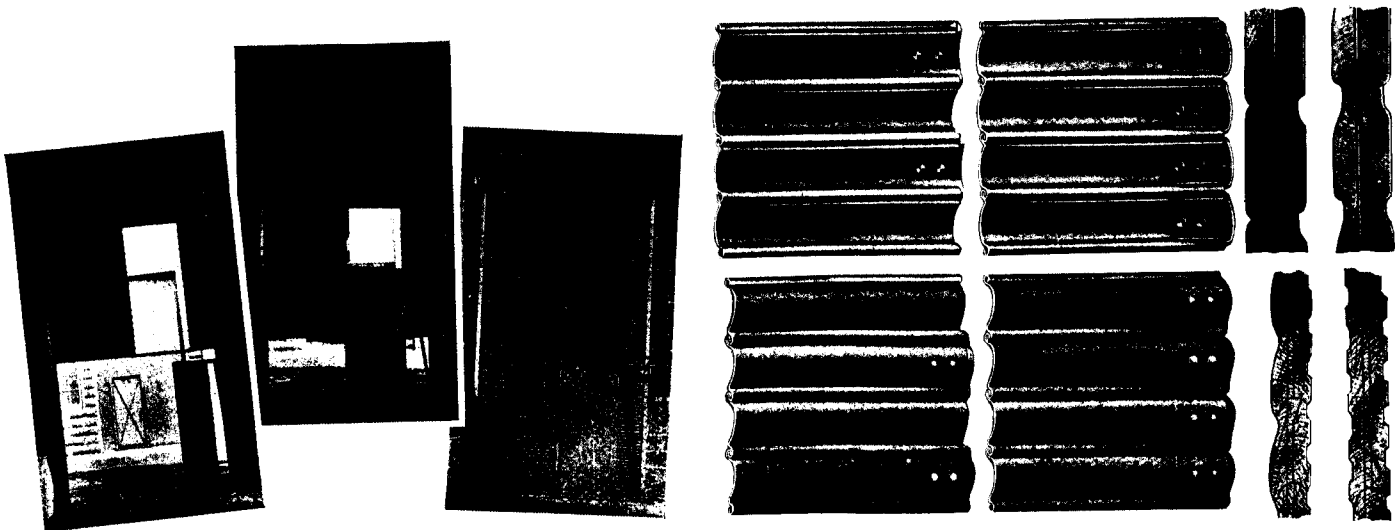


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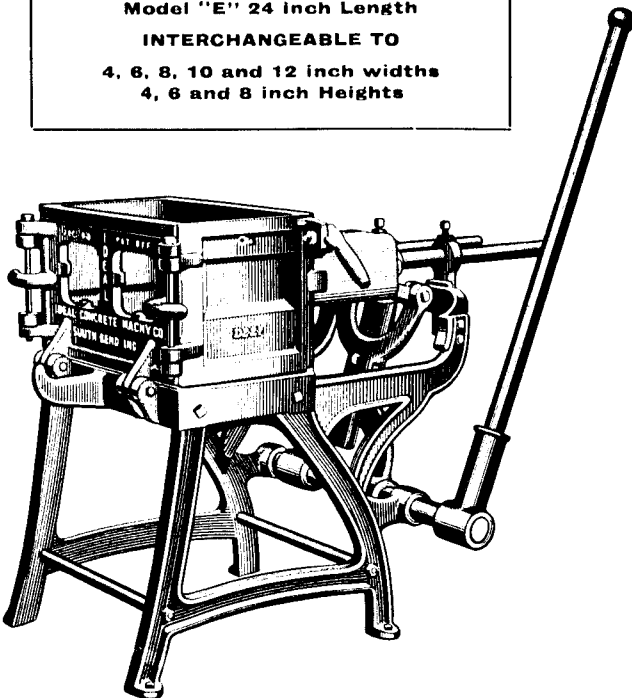
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Some of these statements are entirely false and misleading, and we herein quote in part from an article entitled "Notes on Brick and Brick Piers," by Prof. P. Gillespie, of the School of Practical Science, Toronto, to establish our claims.

In the summary this article says:

"Where the absorption in bricks is low the strength is likely to be high and vice versa."

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*	*	*	*	*	*	1st Class	11.9
		"	"			2nd "	14.9
		"	"			3rd "	17.8
*	*	*	*	*	*	1st Class	22.7
		"	"			2nd "	26.7
*	*	*	*	*	*	1st Class	12.6
		"	"			2nd "	12.7
Don Valley						Red	9.3
"						Buff	....	....	....	9.7

Stars signify other well-known Brick manufacturer d in the vicinity of Toronto.

The Summary again says: *"The strongest piers are made from the strongest brick in conjunction with the strongest jointing."*

TEST AS TO COMPRESSION STRENGTH

CLASS OF BRICK.						Crushing strength in lbs. per square inch.			
*	*	*	*	*	*	1st Class	....	....	3,783
		"	"			2nd "	....	....	1,670
		"	"			3rd "	....	....	1,821
*	*	*	*	*	*	1st Class	....	....	4,637
		"	"			2nd "	....	....	3,057
*	*	*	*	*	*	1st Class	....	....	1,449
		"	"			2nd "	....	....	1,748
Don Valley						Red	....	....	5,372

The complete article from which these figures were taken may be found in the December (1908) number of "Applied Science," a publication recording the transactions of the University of Toronto Engineering Society.

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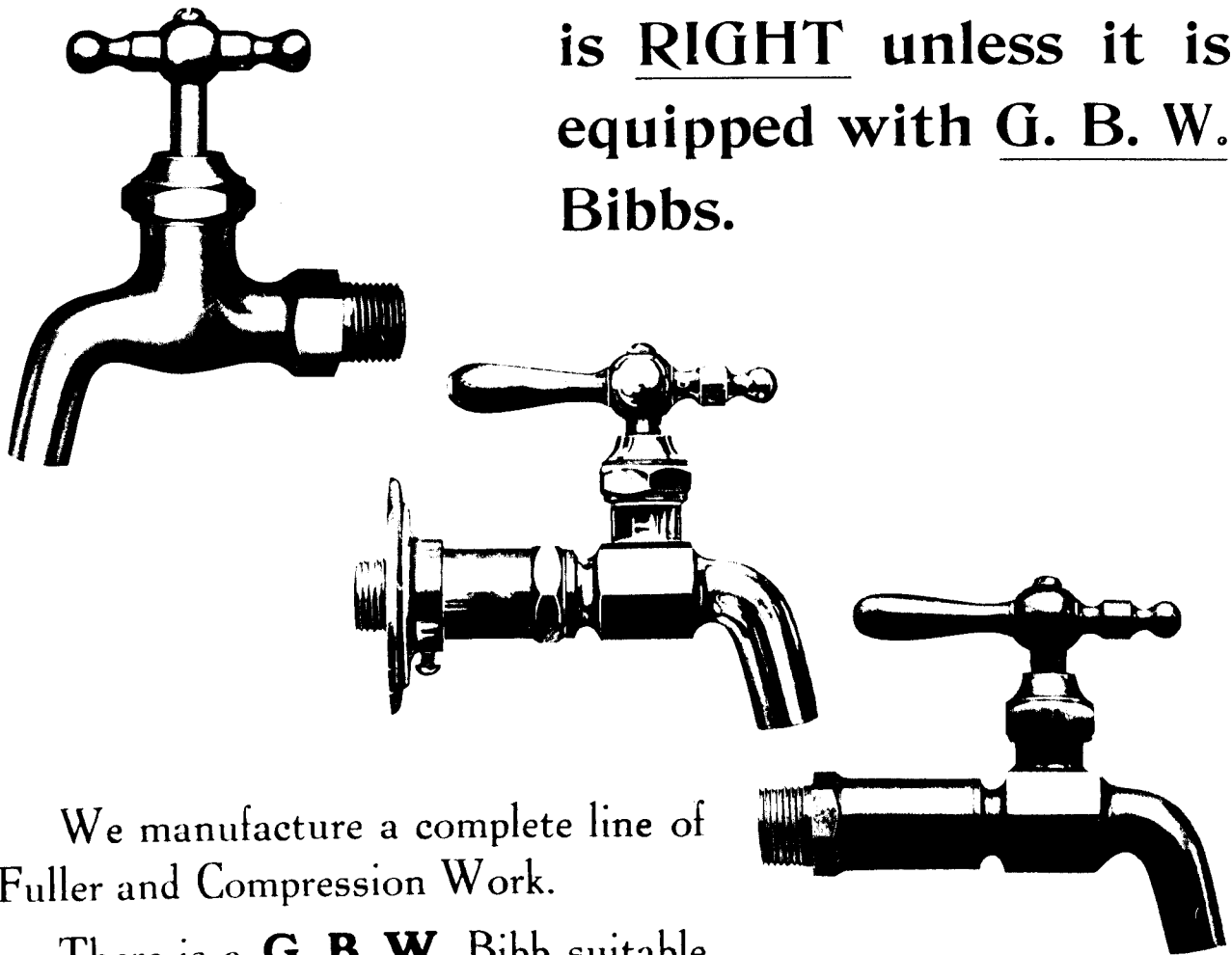
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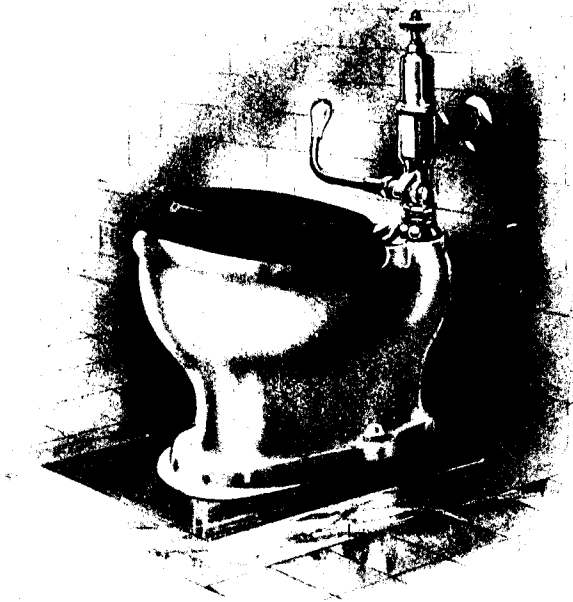
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The evolution from this vault system to the modern porcelain Closet is remarkable in that while the *surroundings and appearance* of the Closet have greatly improved, especially from a Sanitary point of view, this really limits the advance, the crude principles as first conceived being continued practically unchanged to the present day, even the height of the Seat from the floor being carried down to us.

To the general public, interested only in the appearance of the plumbing fixtures as from time to time improved, it has probably never occurred to note that, notwithstanding these improvements, the shape and height of the Water Closet Bowl has undergone no change, and this fact becomes really remarkable when it is understood that the high, horizontal seat is not only uncomfortable, but physiologically incorrect.

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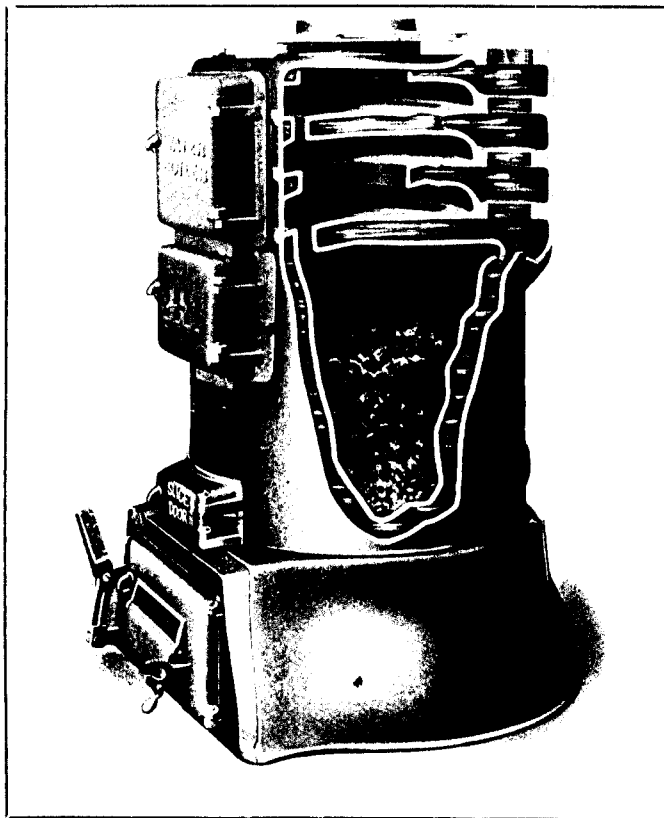
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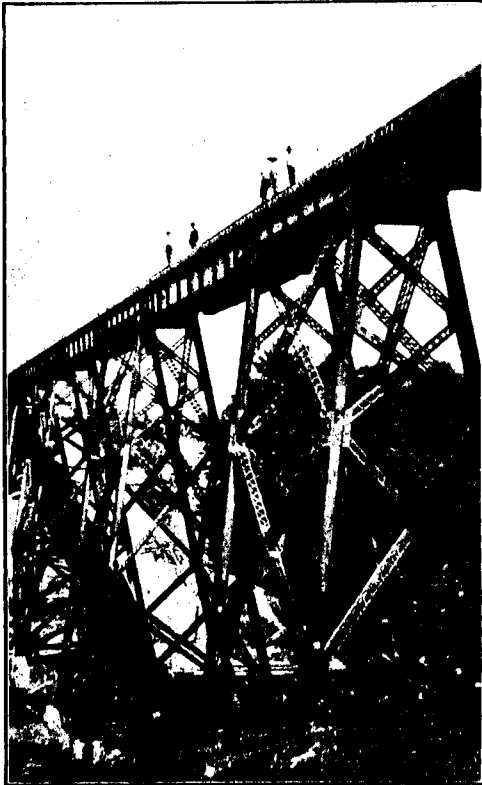
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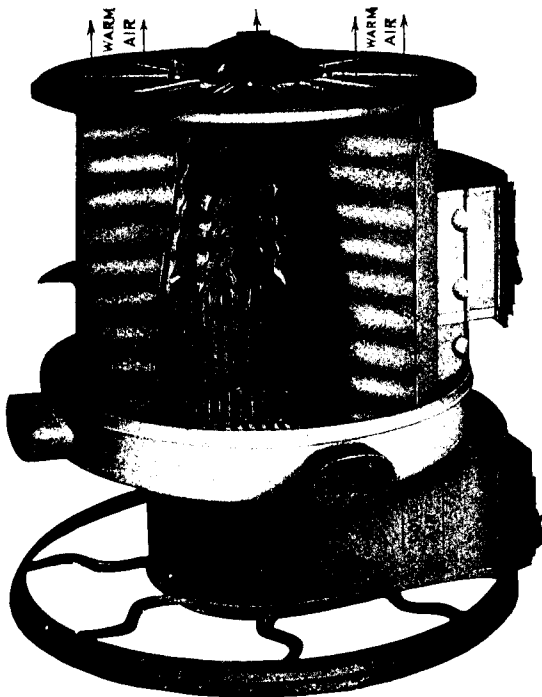
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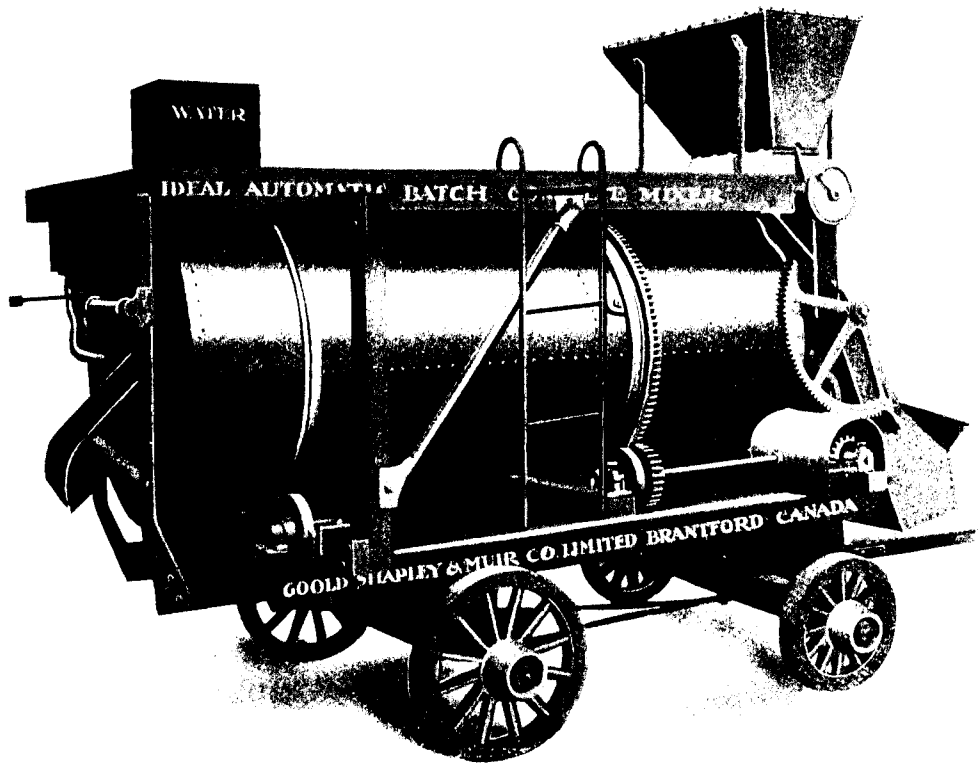
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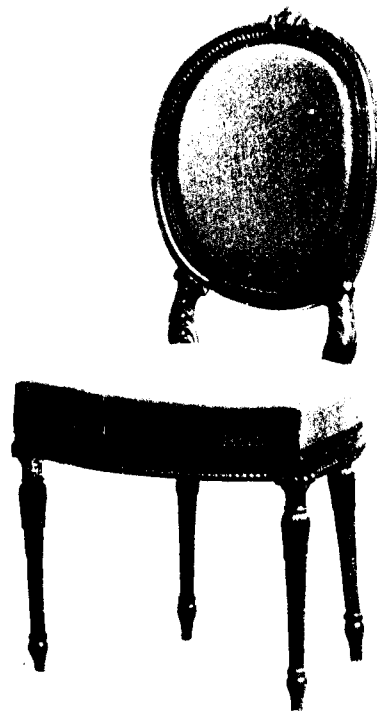
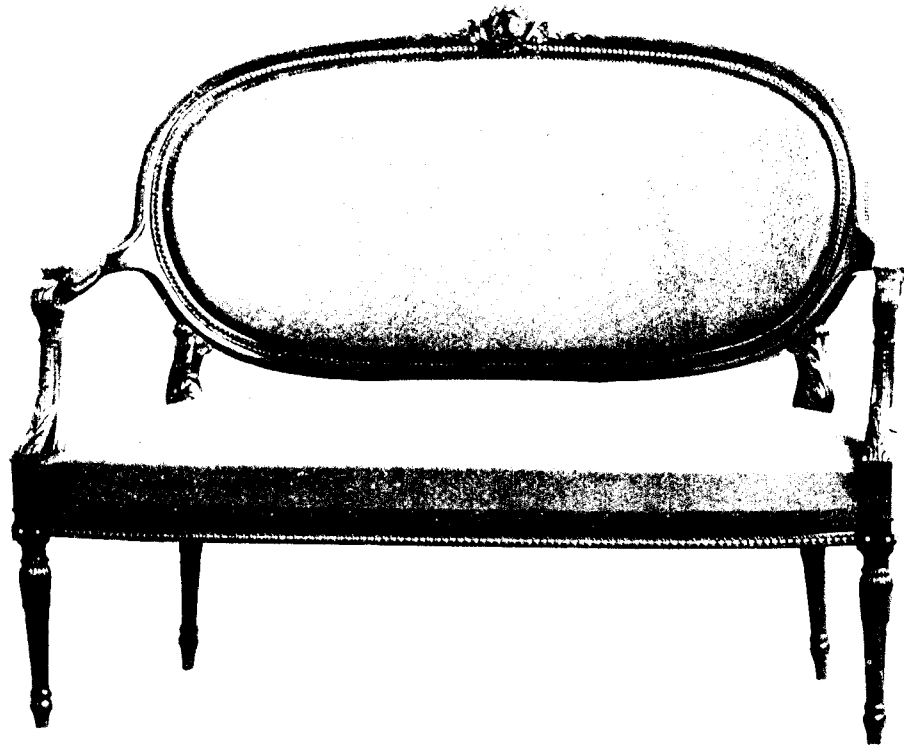
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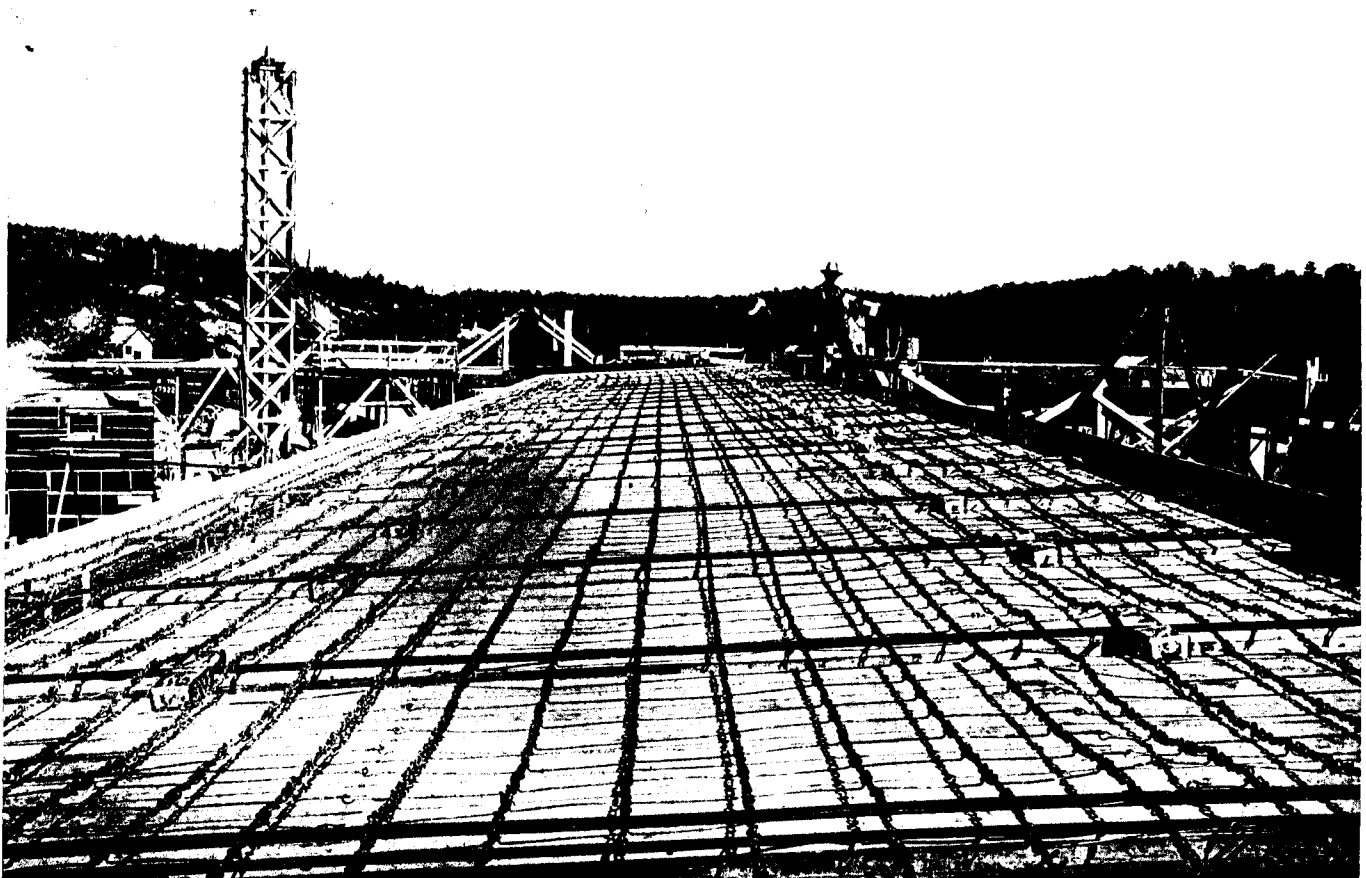


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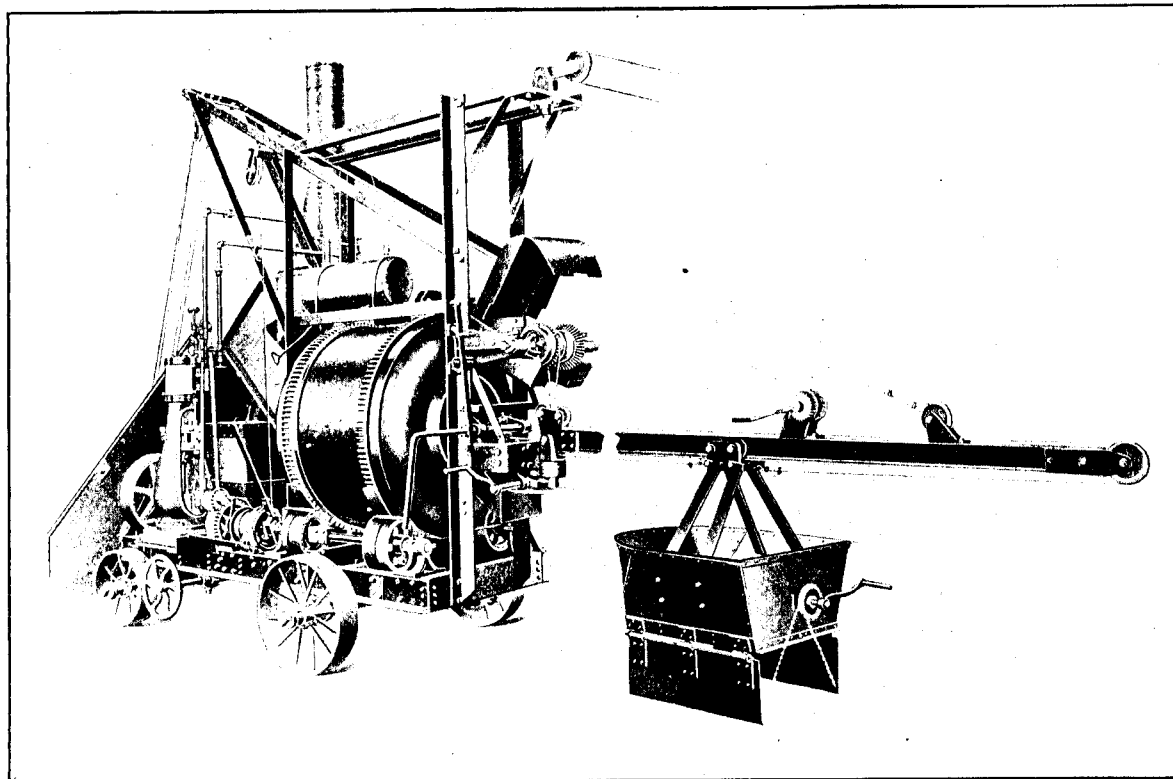
Plain wire has no mechanical bond, and sheet metal Fabric is apt to be of low working stress, and poor in quality.

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Material carried up by the mixing scoops at the side is discharged onto the inwardly and downwardly extending chute and descends from the inner end in a continuous flow, the entire width of the chute, and falls to the bottom at right angles to that from the mixing scoops and the end-to-end mixing.

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But known mixing is not its only improvements over old style batch mixers.

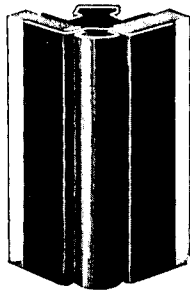
The trunnion rollers are cast with wide flat faces, chilled to extreme hardness and placed wide apart at the extreme ends of the drum. This not only guarantees a stable equilibrium to the drum but insures its maintaining perfect alignment even after years of service. The outer end of the discharge chute does not tilt backwards, affording ample clearance for wheelbarrows, even in the smallest sizes. There are other worth considering features that every mechanical mind knows are correct in principle, explained in our new catalogue.

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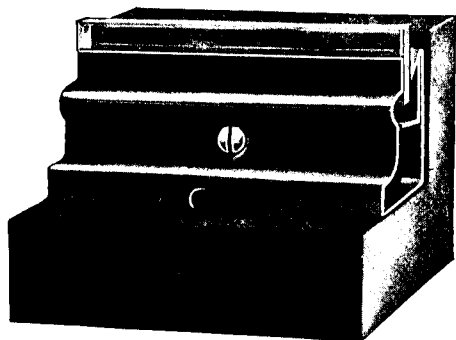
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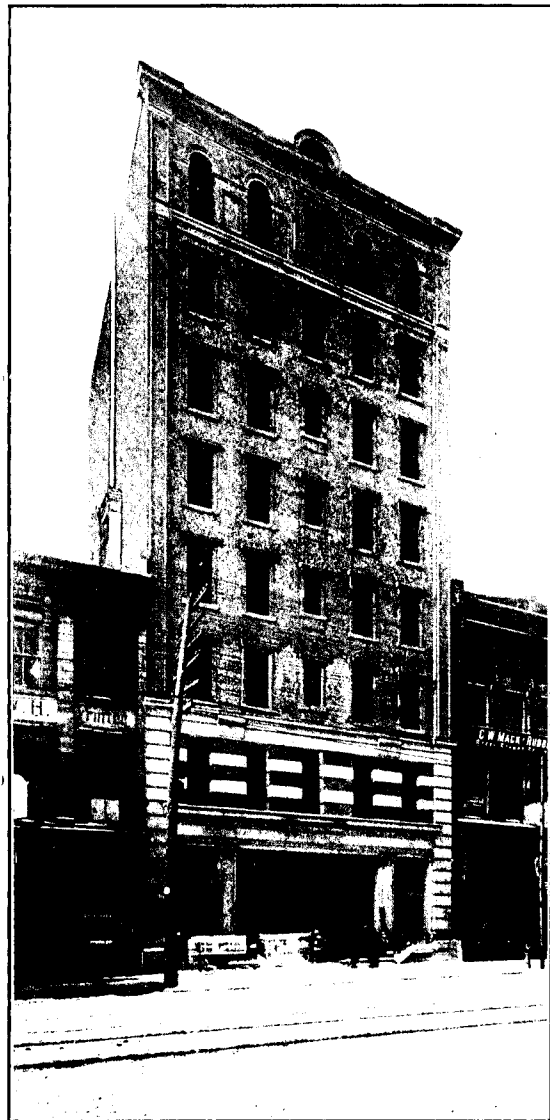


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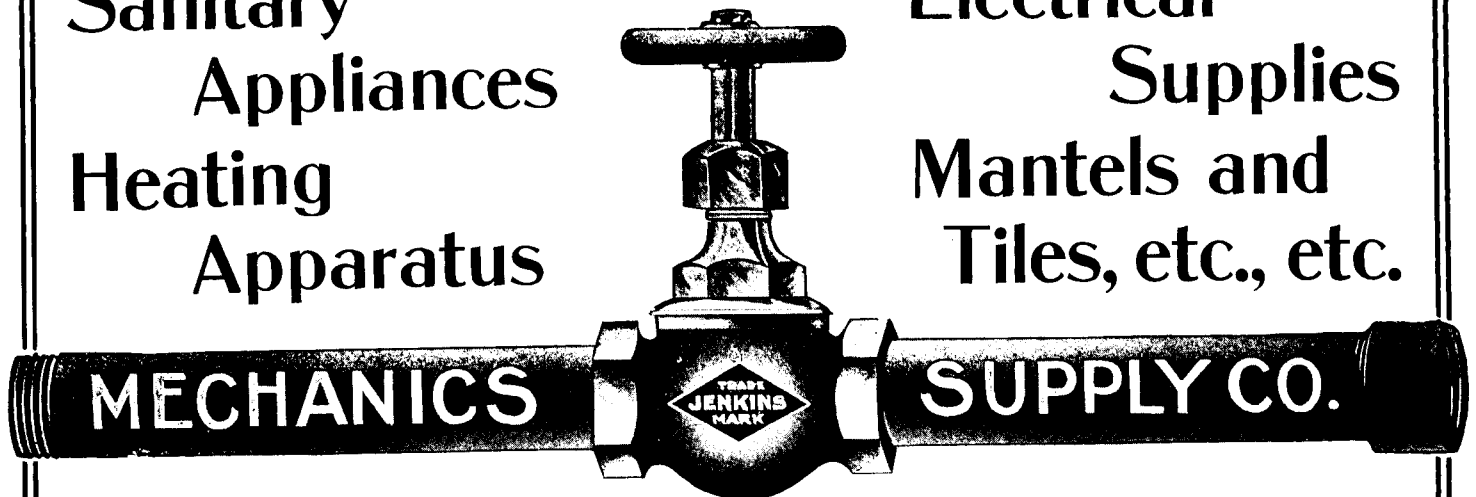
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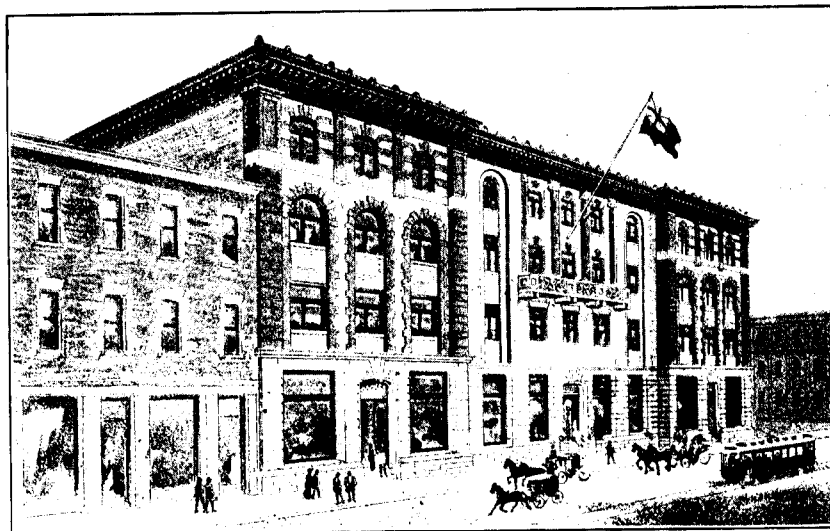
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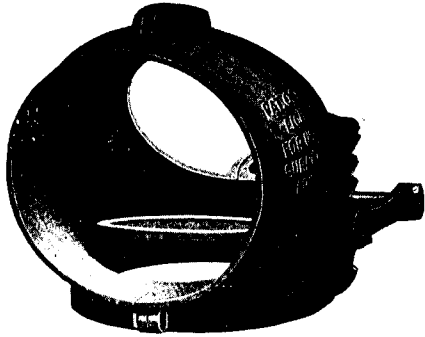
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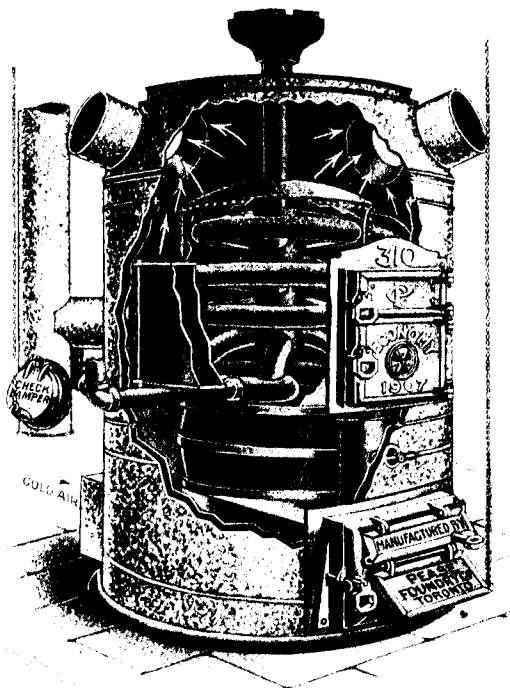
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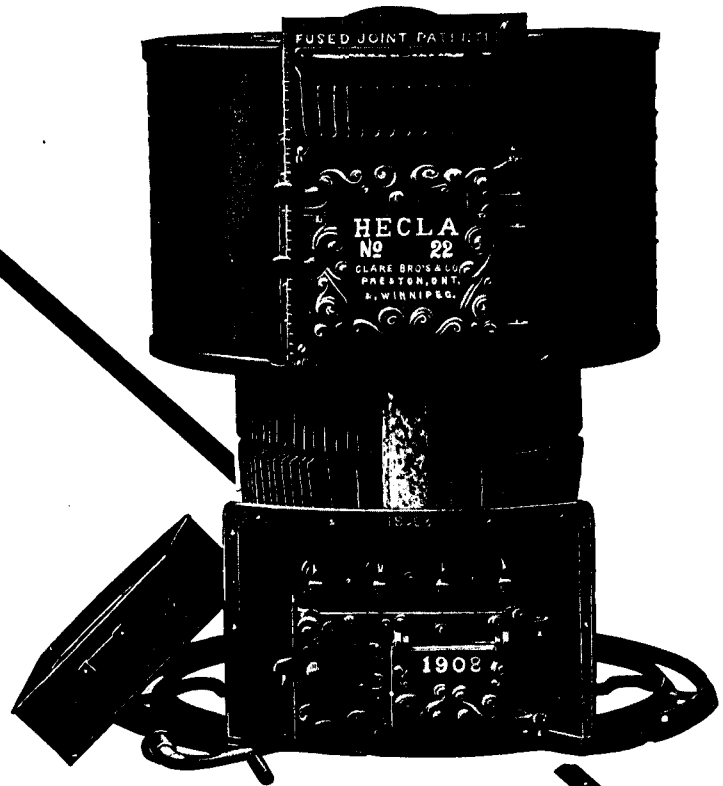
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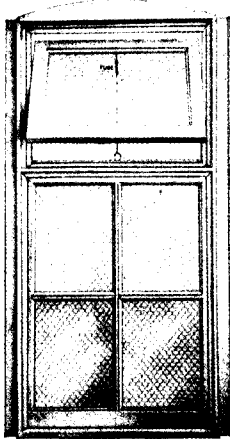
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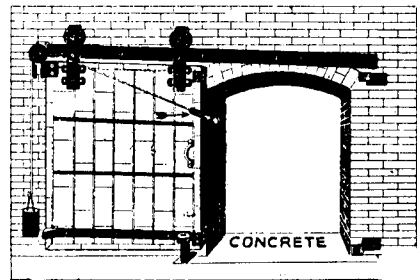
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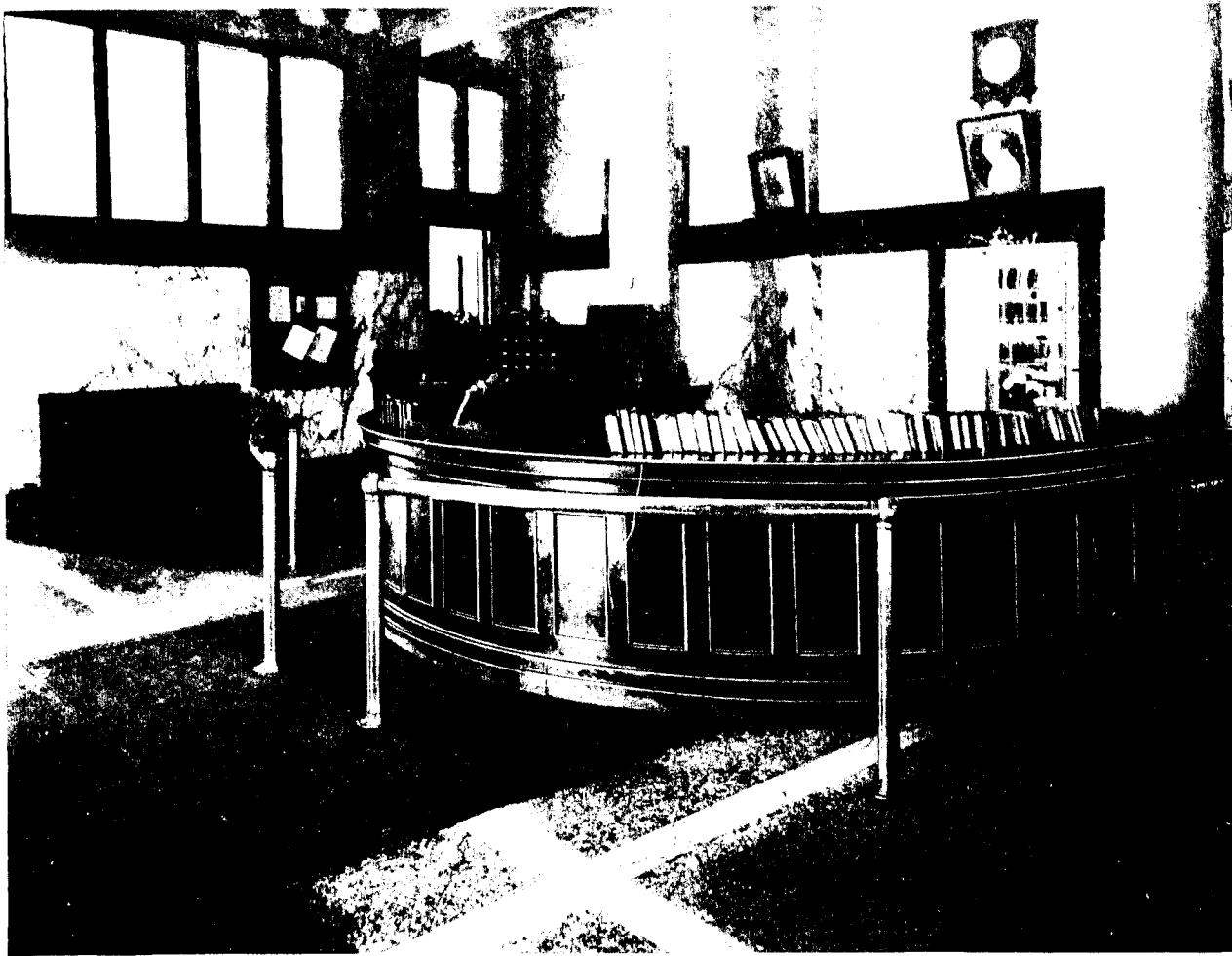
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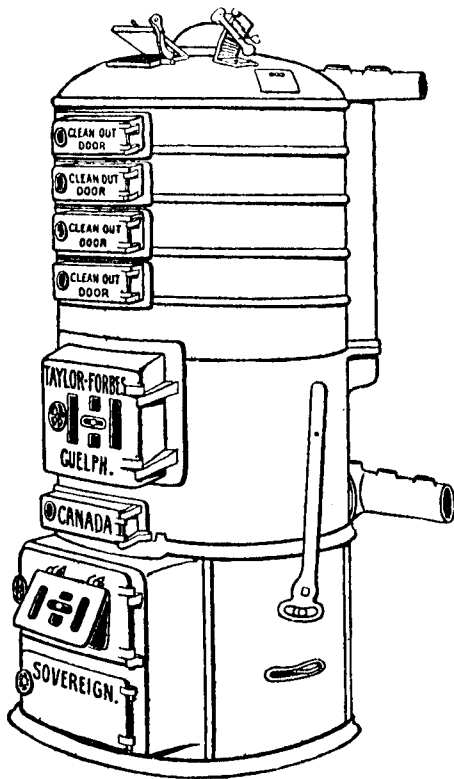
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'CONSTRUCTION'

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

Vol. 2

Toronto, April, 1909

No. 6

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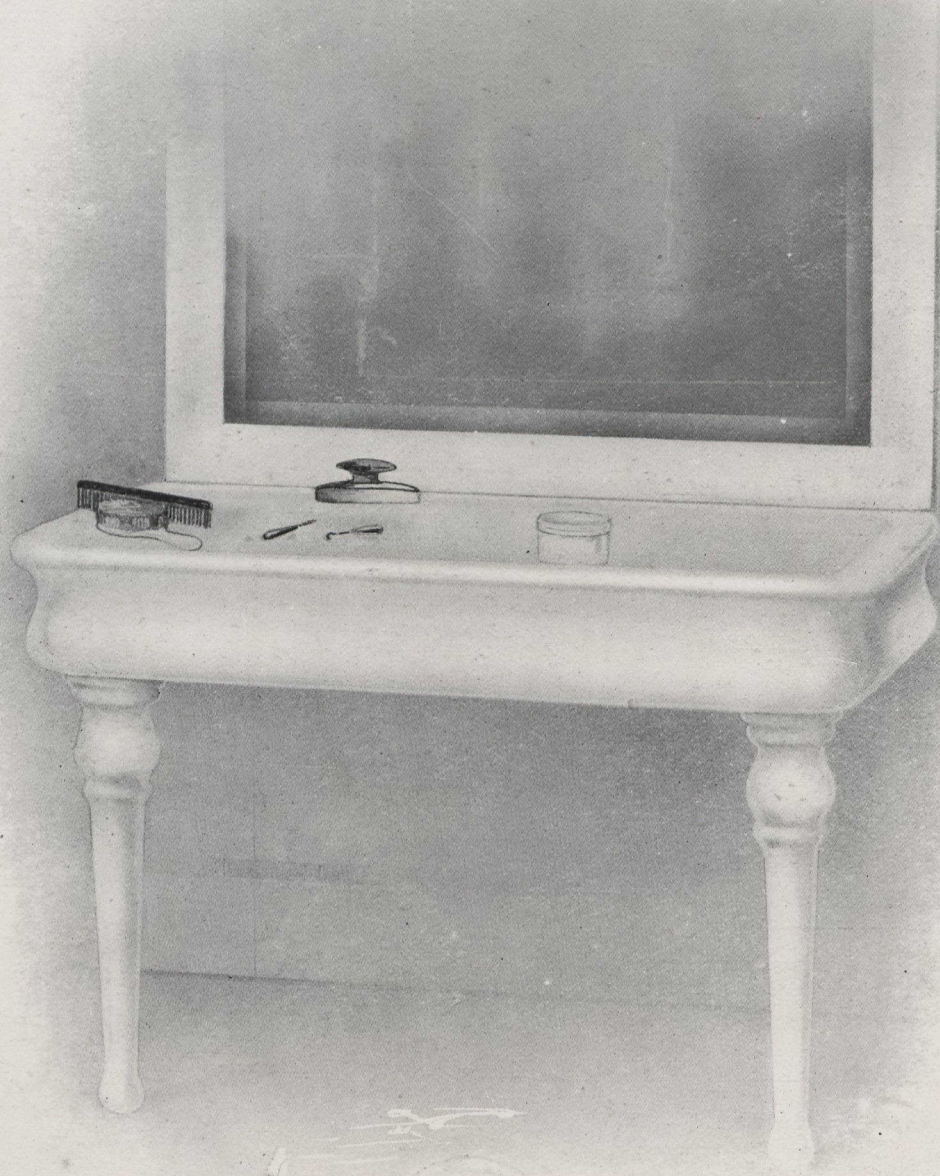
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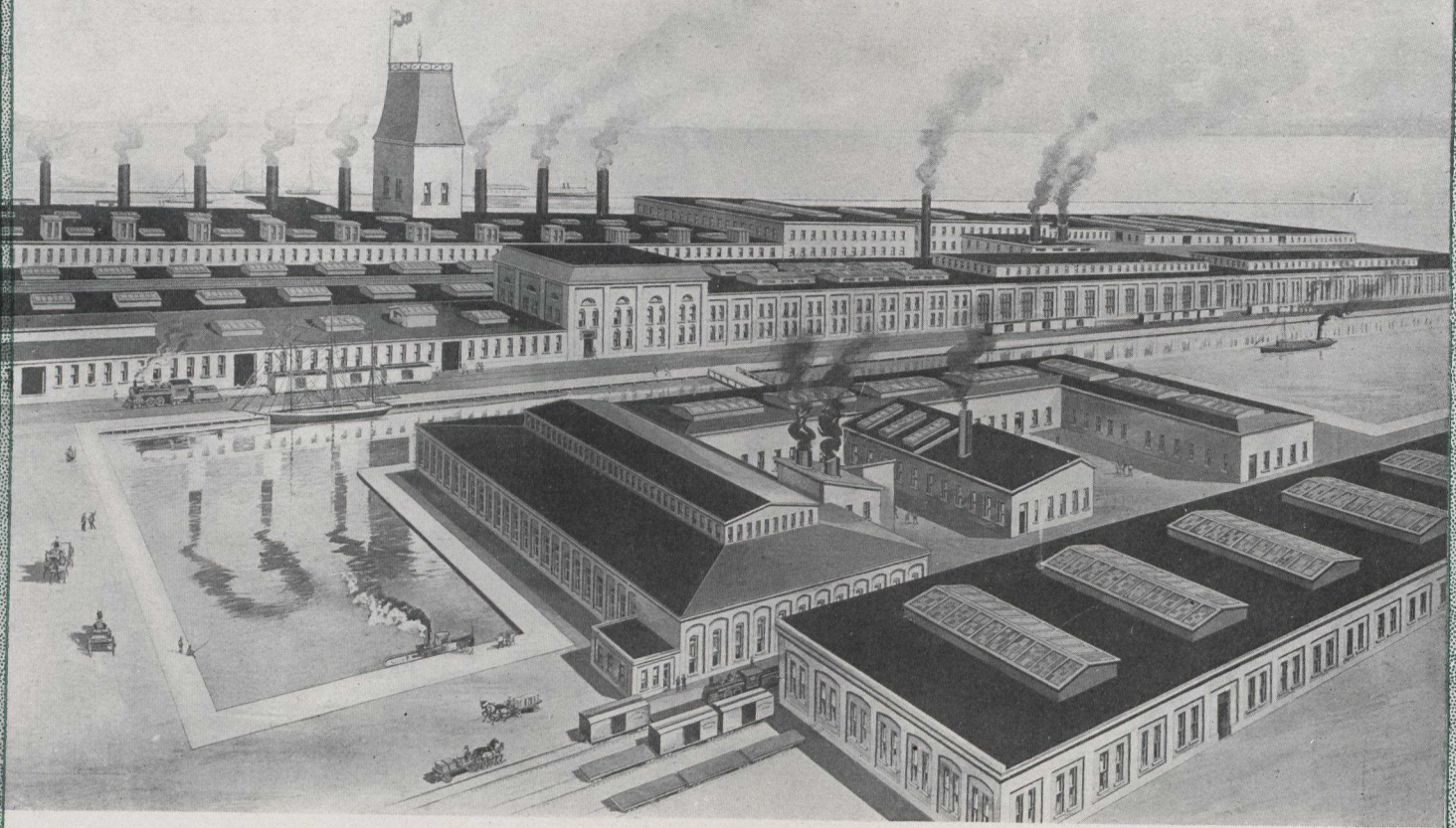
“Alexandra” Manicure Tables

Owners of fine residences invariably give as much or more attention to the *bathroom* than to any other individual room in the house. The fixtures of *that* bathroom must not only be *sanitary*, but in design they must have *artistic lines* and *aesthetic proportions*; in color they must be a pure, *snowy white*, to give the effect of *purity* and *cleanliness*. The bathroom should be the toilet room, in fact, as well as in name. The place for the *Manicure Table* is in the bath room, and this fixture should be of that beautiful white enamel ware, as well as any other fixture. The model bathroom is not complete without an “ALEXANDRA MANICURE TABLE.”



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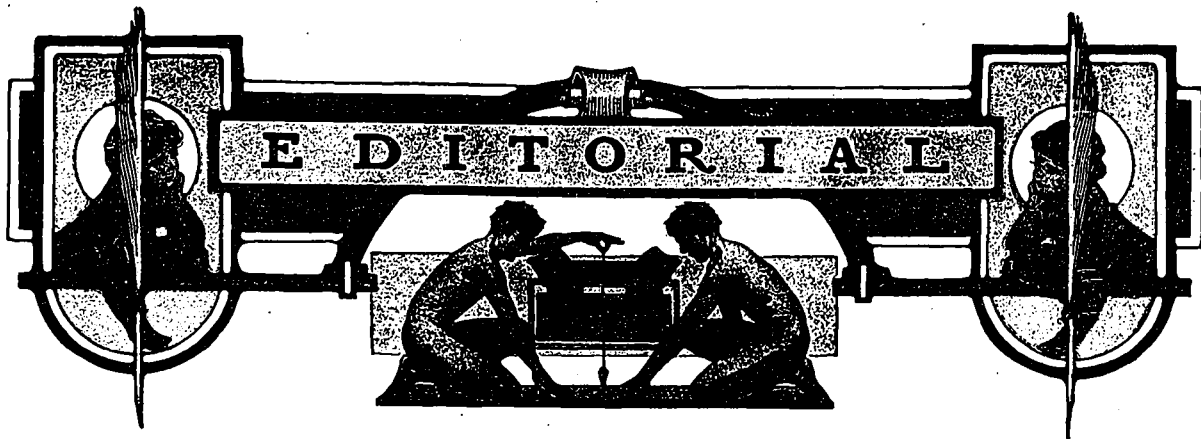
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Wolves in Sheep's Clothing

PROFESSIONAL DISHONESTY is the most vicious form of modern graft. There is no sphere of human endeavor that provides dishonestly inclined adventurers, with the cloak of immunity and deception that professionalism offers. Professionalism furnishes the most effective *purely white* sheep's pelt, for the wily wolves who aim to prey upon the weaknesses of society.

The man who undertakes to apply tricky methods and sharp practice in business, cannot successfully operate long. He deals in a tangible commodity and his own shaggy pelt is soon in open evidence, and society is enabled to deal with him for what he is.

The professional man on the other hand, does not deal in a tangible commodity. He sells his advice and his services to society and society accepts them and pays for them, not according to their intrinsic worth, but in accordance with the value, placed upon them by the professional man, upon whose honesty and integrity society is absolutely and entirely dependent, for a square deal.

In business, every commodity has a certain set market value, or a basis is established by which the value of any and every commodity may be determined. Not so with the services of the doctor, the dentist, the lawyer or the architect. A professional man may have an established code of charges, but there is no established standard of advice or service which he is obliged to render for any given charge.

If a man desires to buy a suit of clothes, he goes to his tailor, examines the cloth, asks the price, when suited gives his order and pays for same when it is completed and delivered according to his order. But when he gets a pain and consults a doctor, he depends upon the professional integrity of his physician, for his illness may be serious or trifling. It may take one bottle of medicine to effect a remedy, or it may take a long treatment and an apothecary shop of drugs to cure him. He cannot himself determine the extent of the medical service and advice his case requires. Here is where the unscrupulous operator finds the practice of medicine a profitable occupation.

When a man has trouble with his teeth, the dentist may find that long treatment is required before the job can be completed. But the dentist must always be the judge of the services required.

A lawyer is consulted when a man gets into legal difficulty. His case may be a complicated one that has to be appealed from one court to another, thus involving large sums for legal services. The legal adviser must, however, be judge as to the extent of the services required, and the charges to be made.

While in the case of the architect there is a little difference, in that the character of service required and the cost of same, are fairly well established before he is employed, the prospective builder, however, is obliged to depend absolutely upon the professional integrity of his architect in the selection of the contractor

to do the work, the selection of materials and the honest erection of the structure, according to the approved plans.

It is because of these great opportunities for dishonest practice in professions that the truly high-minded and honorable men, who have chosen professional careers, have safeguarded their professions by carefully and thoughtfully formulated codes of ethics to regulate the actions of professional men. These ethics have been designed to enable society to differentiate between honest and dishonest practitioners.

Society, on the other hand, realizing the necessity for high-mindedness and integrity among these men, who have been entrusted to serve society, has enshrouded these professions with a cloak of respect, confidence and dignity that serves to impress upon the clean minded, well meaning man the sacredness of his professional responsibilities.

It is this condition that renders dishonesty in professional practice, the most pernicious, despicable and vicious of all modern methods of graft, and for the preservation of the dignity and standing of his profession, every honorable professional man should do all in his power to discourage, expose and stamp out professional graft.

Graft in almost every conceivable form, has gradually, surely and stealthfully crept into the building industry, the evils of which are not one whit less than the most despicable practised in other professions.

When an owner employs an architect to prepare plans for a structure, he undertakes to buy his advice and his services. He employs him, because he has knowledge of building methods and materials, because he has ability to design and superintend. The architect becomes the agent of the owner, and, if, through any illegitimate method, procedure or condition, he permits his advice to be biased, or his services rendered less efficient through any pecuniary influence from any source, he becomes an enemy to society and a fester on his profession.

Some architects are charged with openly and flatly demanding a rake-off either in the form of a lump sum or a regular percentage on the amount of the contract. Others are timid recipients of tidy little sums from dealers or contractors. Others have been presented with or sold at a small nominal sum, blocks of stock in firms, manufacturing building appliances or materials, or engaged in contracting work. While it is considered non-professional by many practitioners for an architect to in any way, shape or form, be financially interested in any firm engaged in the manufacture or sale of building materials or appliances, or engaged in the contracting business, it cannot be said to be dishonest if the architect procured such interest in the ordinary course of legitimate business transactions, and has made his ownership of such interest, known to his clientele. It is when an interest in a business has been secretly transferred to him with the object of buying his influence or corrupting his professional advice, that the practice becomes perfidious.

Professional graft of this nature not only operates against the interests of the owner, but the clean contractor and the honest architect are placed in a false light and their legitimate interests and inherent rights are grossly encroached upon. It creates a condition that places a premium upon all work the contractor would aim to be successful in securing. When the architect has become so biased by monetary influence in favor of some contractor or some material that it is a foregone conclusion whom the successful tenderers shall be, every conscientious tender other contractors have taken the time and trouble to prepare, simply becomes a *dummy*. The owner in the meantime is the victim of the corrupted professional advice of his Architect.

Apart from honeycombing the whole building industry with bribery and graft and bringing discredit upon the profession at large, the professional grafter, by having an unseen, illegitimate source of revenue, is in a position to give his services to a prospective client at a commission lower than it is possible for the honest practitioner to undertake the same work for, who has only his legitimate commission to reckon on.

If an architect who has been successful in corrupting a sufficient number of

contractors, dealers and manufacturers, realizes that in a certain job, \$100,000 in contracts will be awarded, he can figure upon a goodly revenue beyond his commission from the owner. He can afford to accept the work on a commission of from one to two per cent. lower than the practitioner whose only revenue would be his commission from his client. It can therefore be seen that it is to the interest of every honest architect and contractor to aid in stamping out this ruinous practice of graft and rake-off in the building-fraternity.

An architect has no right, professional or otherwise, to demand, accept, or look for revenue, profit, or commission, or gifts, in connection with the planning, erection or superintending the construction of a building, other than that which he receives as his legitimate commission from his client. Any consideration he receives from any other source, whether it be in the form of money or gifts of any nature, is designed to secure his favor, to the detriment of the interests of his client and at the expense of his personal honesty and professional integrity.

Any architect who uses or allows to be used, his professional influence, his professional connection, his power, as the purchaser of materials for private gain in any undertaking outside of the confines of his profession, is guilty of a gross breach of professional ethics, an enemy to the profession, and a leech upon the industry.

The architect who accepts a bribe from a contractor is guilty of professional graft just as much as the medical faker who prolongs the illness of his patient, in order to pile up a big account. The architect who allows his professional advice to be corrupted or biased by private interest, robs his client to as great an extent as the dentist who digs holes in his patients' teeth in order to create the job of filling them up.

The architect who uses or permits to be used, his professional prestige, his purchasing power, given him by virtue of his professional standing, for the promotion of a private business apart from his profession, is guilty of legalized blackmail just as much as the lawyer who creates a legal difficulty for his client and derives a revenue by getting him out of it.

Fortunately the majority of our architects are professionally honest and clean, and we do not want it understood that these comments are designed to serve as an indictment of the profession generally. Our aim has been to show the possibilities for graft, by unscrupulously inclined individuals through the use of the cloak of public confidence and professional dignity to cover up their wolfish pelts.

This condition does exist to an alarming extent, and it is to the interest of architects, contractors, manufacturers and dealers, alike, to purge the industry of the great, growing evil of graft.

The thief with the characteristics and appearance of a tough is much less dangerous than the thief with the manners and clothes of a gentleman.

A Pertinent Instance

A MOST GLARING INSTANCE of the many methods and means employed by some architects (or those who have been permitted to barter with their names) in using their professional influence and purchasing power for the promotion of private enterprise, was recently brought to our notice. In this case, the name of one of the largest architectural firms in Canada (if not the largest) has been carted about the country in the promotion of a scheme. Contractors, manufacturers and dealers have been approached in the interests of this undertaking, and have been *loosened up*, through the fact that the name of this architectural firm, that purchases annually vast

quantities of materials, is associated with the project, either with or without their consent.

Some of the stragglers, who were not so ready to pay their allotment, were whipped into line by a casual call from individuals who were associated with this architectural firm, and it has even been whispered, confidentially, that one of the members of the firm was financially interested in the enterprise. Few have dared to resist the solicitations of this PLUNDERBUND. Their demands were most persistent and if a man were so inconsiderate, discourteous and ungrateful as to refuse to "loosen" at least, a little bit, he would thoroughly understand that his business relations with this great architectural firm were seriously strained and in danger of being completely severed, forthwith.

The man, thus solicited, was not left free to be governed in his actions by his judgment as to the merits or demerits of the proposed investment. It remained simply for him to decide if he could afford to spend a certain sum to be "*in right.*"

Some few have been brave enough to show their resentment of this new form of professional graft, by refusing to "*cough up*" and decided to attempt to weather the storm to follow. Others have "*given up*" under protest with a hope of sometime in the future getting a "*look in*" on a job that will let them get this money back.

This, it appears to us, is carrying professional influence a trifle too far. Such a wholesale attempt to use the purchasing power of an architect to whip into line unwilling prospective patrons of a purely commercial undertaking, never before came to our notice.

Why should any individual or firm that is engaged in any branch of the building industry, be forced to consent to patronize any undertaking, upon the penalty of losing his chances to secure a "*fair shake*" for the work of a certain architect, simply because that architect's name is flaunted in front of him, as being interested.

The architect is only the agent of the owner and he has no more right to permit private interest to influence him, for or against a certain contractor or a certain material or appliance, than has the purchasing agent of a business institution, to become biased because of personal friendship.

The architect, who so commits himself through any private interest or deal with firms or individuals, with whom he is obliged to deal in the interests of his client, is not in a position to give conscientious service to his client and cannot be looked upon as professionally honest.

Dozens of propositions are promoted every year and high pressure solicitors are sent out to gather in the money from contractors, material dealers and manufacturers. These solicitors always aim to get the consent to use certain architects' names, and nine times out of ten, these names are used in an entirely different manner from that intended or anticipated by the architect, when he gave his permission.

If the solicitor makes the representation strong enough, the contractor or dealer falls a victim. Architects should therefore be exceedingly careful as to how they permit their names to be used in connection with such schemes and should individually and collectively do everything in their power to discourage this system of petty graft.

It is almost unthinkable that one of Canada's largest architectural firms should allow their name, their professional dignity, their prestige and their reputation to be dragged in the mire of professional indecency by an organized system of hold-up.

There should be a limit to the tolerance of this character of practice and that limit may be determined by the architects throughout the Dominion, who should show in no unmistakable manner and express in the strongest terms, their disapproval of this gross breach of professional ethics.

**MONTREAL'S NEW POLICE STATION—
WHAT THE PLANS CALLED FOR—WHAT
THE CITY WILL GET—ARCHITECT AND
OFFICIAL IN COMPROMISING POSITION
—STRONG INDICATION OF GRAFT.**

THIRTEEN IS AN UNLUCKY NUMBER. There is every reason to believe that the evil powers ascribed to it, in the dark ages, still obtains. Nothing is more demonstrative of this than the sinister influences which have attended the erection of Montreal's new police station, so designated. Plans accepted by the city council, provided for a well-built, substantial structure, 45 by 90 feet ground dimensions, the supposed size of the lot purchased at a site. Instead, the city will get, if the structure is taken over, a building which is ten feet shorter in depth and three feet less in height; a building which in no way reconciles itself to the original plans; a building in which this unpropitious number, through human agency, has seemingly exerted its subtle force with all the potency it possesses; in short, an abortive mass of brick and stone reared under most suspicious circumstances.

Both the reports of Architect Browne and Architect Marchand, as submitted to the special committee investigating the charge preferred by Alderman Robinson, show that the building is about as complete a "botch" as can possibly be imagined. Throughout its entire construction are gross instances of "skimping," "substitutions" and "omissions." The basement and upper walls do not conform with the building by-law. They are six and three inches, respectively, less in thickness than the plans called for. In addition, certain pilasters of the main elevations are out of plumb; old stone was used in the masonry where new stone was specified; and artificial stone was substituted for the window trimmings in place of terra cotta. This simply relates to the exterior of the building.

Other discrepancies equally as glaring were also found in the interior. To quote Mr. Marchand's finding in part.

"The interior columns specified to have been built in steel and cast iron have been substituted by wooden columns. The two transverse walls on-ground floor, specified and shown to be brick 1 foot 1 inch thick, are built in reinforced concrete four inches thick. The brick wall between cells shown 8 inches thick and 8 feet high, has been substituted by a 4 inch reinforced concrete wall 14 feet 6 inches high, and the two columns shown on top of 8 inch brick wall to under side of first floor girder, are omitted.

"Plaster work in some places is only two coats, instead of three coats, as specified, and generally of poor asbestos plaster, and surface not very true. The plaster cornices are specified to have a development of 5 ft., but are shown to have only 2 ft. on drawings, the latter having been followed and badly executed."

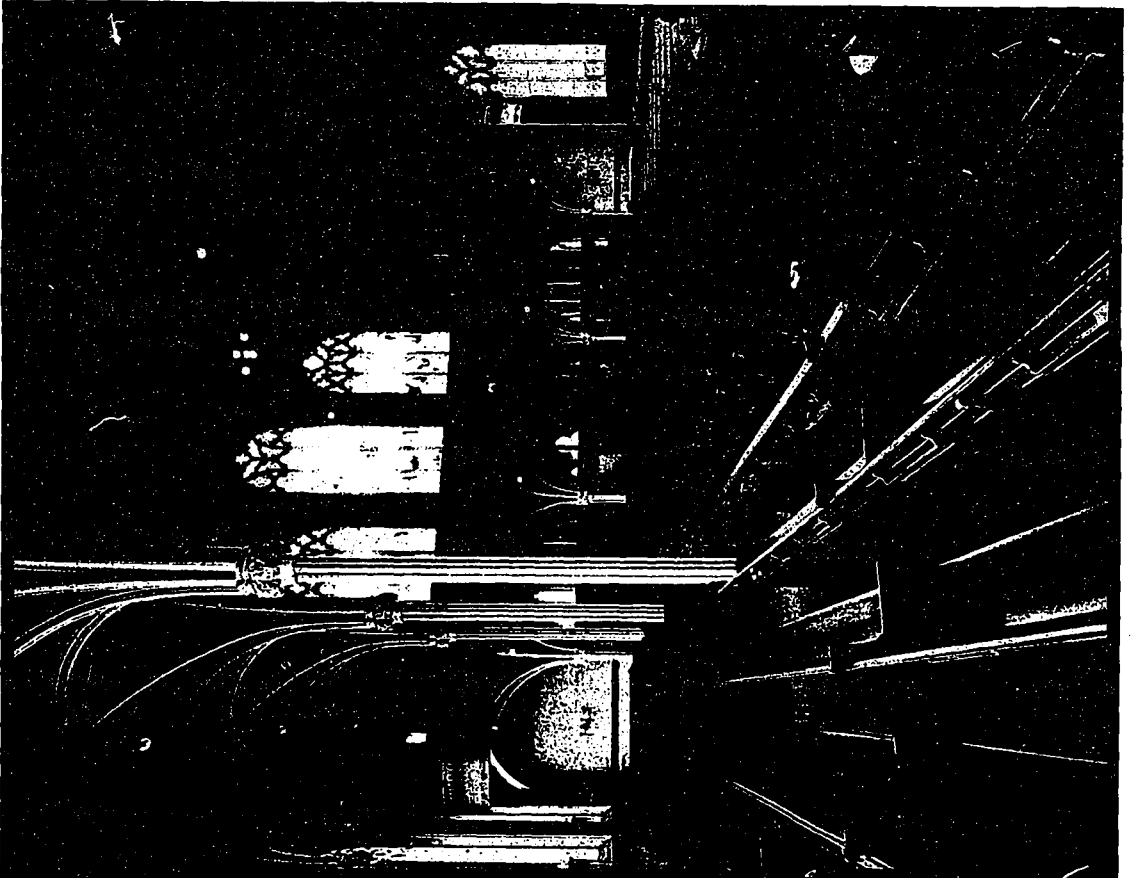
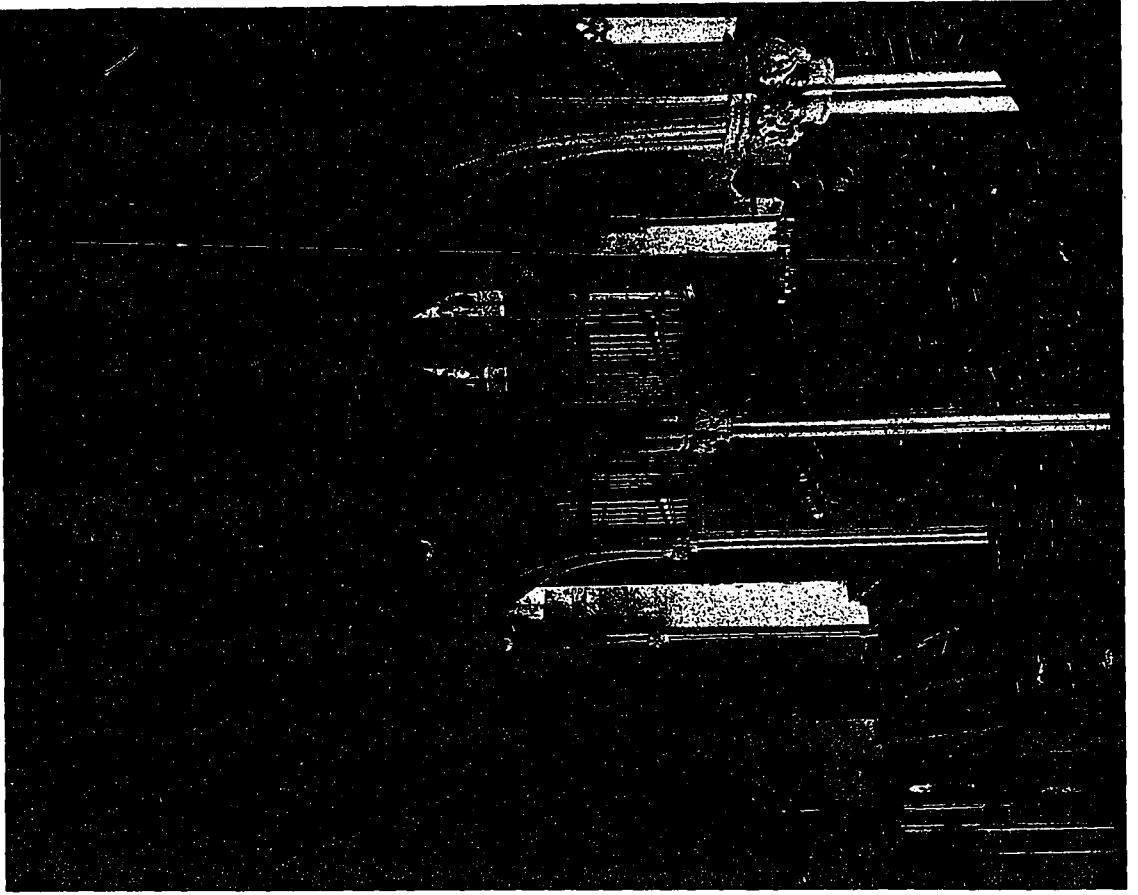
From the evidence which has so far been adduced it looks very much as though a short lot, an architect with unusual powers, a well developed case of nepotism, official laxity, tricky tendering, and dishonest workmanship, have conspired to give the city decidedly the worst of it. At least enough has been established to warrant the opinion that the whole transaction was a cut and dried family affair, well understood by certain individuals in official circles. Nothing strengthens this theory more than the rather startling disclosure made before the enquiry by those who were directly connected with the erection of the building.

It has developed that Francis and J. Oscar Proulx, brothers of Alderman Proulx, Chairman of the Police Committee, were surreptitiously awarded the general contract, instead of F. X. Aube; who was ostensibly given the work. According to Mr. Aube's own testimony, he had never had in his possession the plans and specifications, nor were they explained to him by the architect. His tender was prepared by J. Oscar Proulx and he had simply acted as a cover for the Proulx brothers, in consideration for which he obtained the contract for the brick work at \$16.00 per thousand. This procedure, Mr.

Aube explained, was necessary in order to avert suspicion when one, who has a relative in office, wanted to secure public work. It was also brought out that Mr. L. J. Forget, who had been granted the sub-contract for the plumbing, heating and roofing, was also a relative of Alderman Proulx, a cousin, while the painting contractor proved to be a Mr. Ernest David, a former painting contractor, now engaged in the restaurant business, who deemed this a sufficient inducement to try his hand once more at the brush. Both of these parties were given a "quiet tip" to shade their tenders, which they did materially, the former from \$5,000 to \$3,300, the latter from \$1,250 to \$850.

That Alderman Proulx had full knowledge of the underhand methods which were employed, cannot be doubted. Notary Bouvier, Mr. Proulx's partner and confidential friend, drew up the papers transferring the contract of Mr. Aube over to Francis and J. Oscar Proulx. Does it seem likely to their close relationship, that this matter was not discussed by them? In fact, J. Oscar Proulx testified that he had tried to broach the matter of his intimate connection with Mr. Aube to his brother (Ald. Proulx), but that the latter had shut him up by the statement, "This is none of my business. I do not want to have anything to do with it." Why Alderman Proulx did not consider it any of his business, especially so in view of the fact that he was chairman of the Police Commission which had the erection of the building in hand, is rather strange. The question of his own reputation and a desire to have everything over and above board, should have made it of utmost concern to him. However, he apparently had faith that the deal would go through successfully. This much is to be inferred from the *carte blanche* given Architect Godin, or at least what appeared to be such in the rather free manner in which he was permitted to make changes so revolutionary in character as to result in a building that was anything but what it should be. Mr. Godin did not find it necessary or expedient when the shortage of the lot was discovered (which was after the work had been started), to call the matter to the attention of the Police Board or Aldermanic body. It was something purely of an escoteric nature and that he and Ald. Proulx had fully discussed it is quite probable. He at least discussed it with Chief Campeau, whom he told not to apprise the Board, as he was vested with full power to make any necessary alterations. With subtle skill he directed the erection of the building, pointing out what was to be done and what was not to be done. He had prepared 120 typewritten pages of specifications but these were obviously ignored, as Francis Proulx, who attended to the work himself, stated before the investigation committee that he had never read them. And probably it was just as well, as the reports of Mr. Browne and Mr. Marchand show that they did not agree with the plans, that they were involved and self contradictory, and that they were never intended to be understood. In fact, it is said that no translator has yet been able to intelligently interpret either the English or French version of them.

As to who granted Mr. Godin this unbounded latitude, or as to whether he assumed the responsibility himself, is still unknown. It would be unfair to attach the entire blame for this oblique deal to Ald. Proulx alone. Even though Chairman of the Police Board, we can hardly believe that he had an arbitrary power, unless vested with it by his colleagues. The other members of the Board are involved at least to the extent that they either had a guilty knowledge of what was going on, or were derelict in the performance of their official duties. It may have been a case of "returning a favor," that the



ECCLESIASTICAL ARCHITECTURE.---Gothic and Modern.--- A Contrast and an Appeal for a Beautiful Church.---The Early Church Work of England and Scotland.---A Present Day Example.---Time and Care Necessary to Attain Satisfactory Results.

BY HERBERT M. CLARK
DRAWINGS BY LAURENCE DAVIS

THIS IS AN UTILITARIAN AGE, even the church has not escaped it. One expects the building of a skyscraper to be rushed since it is a purely commercial undertaking, but less hurried measures are requisite in the building of a church. One would wish for careful consideration of plans, for a determination to have the most beautiful building possible, and for measures to secure an architect competent to create such a building and to equip it with a perfection of practical but subservient details, such as lighting, heating, ventilation.

The newspaper reports with regard to the new St. Paul's Church, Toronto, indicate "rush" methods. We are told that it is "to be ready within one year," also "that the congregation leaders go about the task with a lot of energy." It is to be hoped that they will exercise such care and taste as will preclude the rush methods of commerce which lack dignity when applied to an ecclesiastical work, and that they will realize that though theatres and freight sheds can be built in haste, the construction of a beautiful building, such as a church, should necessarily be, demands time and care. The architect should have an opportunity to profit by a study and comparison of some European examples in the maturing of his plans.

St. Paul's Anglican Parish is to have a \$150,000 edifice, the "largest Anglican church in Canada." Furthermore, it is to be in some measure a testimonial to a popular minister.

Here is an opportunity for broad minds to offer a worthy building, one in which beauty shall be the dominant feature, since Toronto already has numerous churches utterly lacking it. The need of more room is doubtless urgent, but the congregation would prefer a few months' delay knowing that time had been found for the consideration of every detail. A gift on which thoughtful care has been exercised is the more satisfactory to both donor and recipient.

Such were the beautiful cathedrals, abbey and parish churches of the old country. No time was wasted in

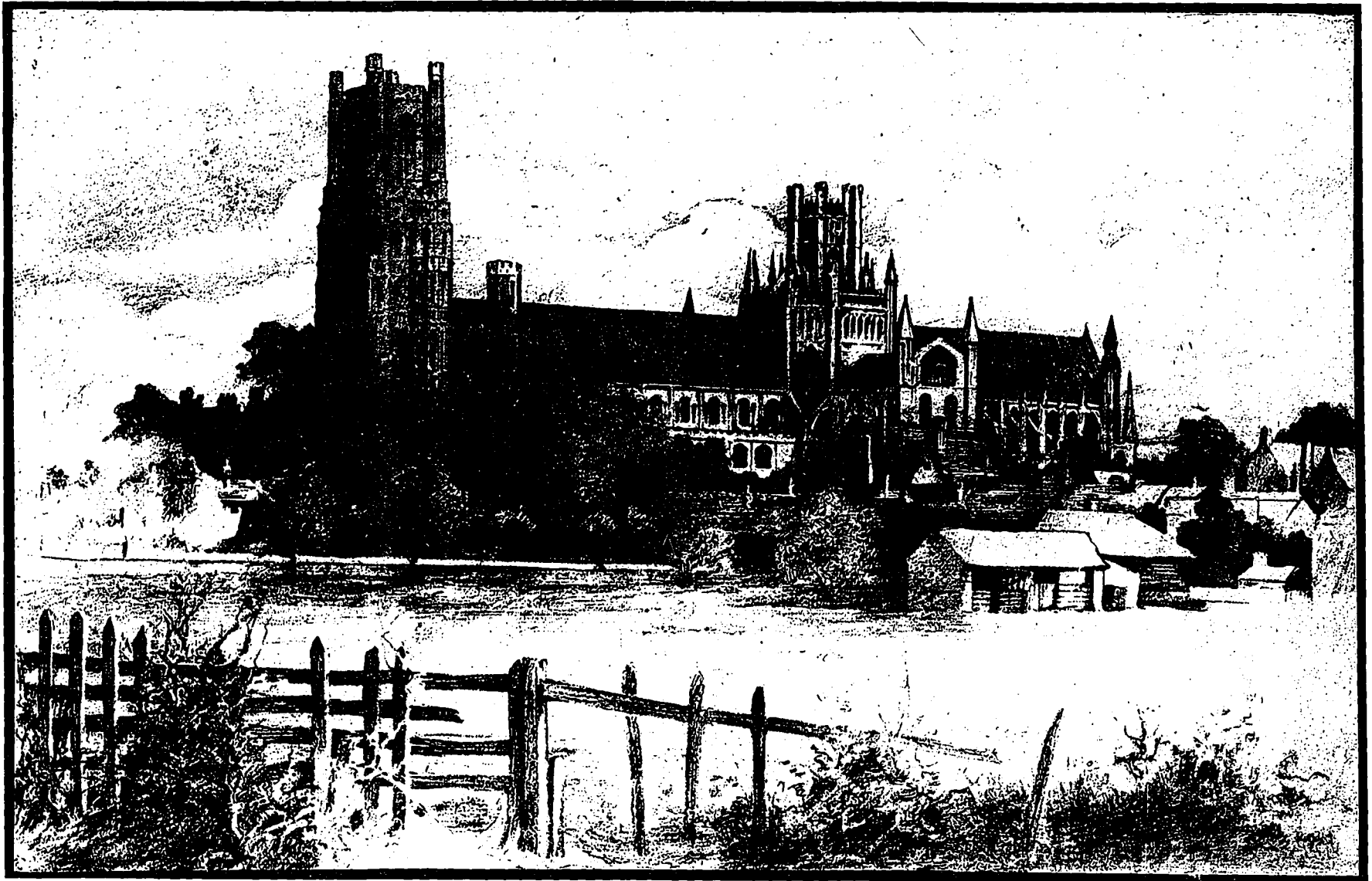
their construction, neither was there undue haste, for haste is not compatible with beauty, which was an essential feature of the church of those days. All the skill and craftsmanship of the community were lavished upon the church, and masons and wood carvers put their hearts into their work. Even a dripstone was carved and ornamented, as in the graceful recessed arch illustrated, whilst the photograph of detail at top of the Percy Shrine monument at Beverley shows another example of their handiwork for which "pressed out" imitation does not form a substitute. Nor was such decoration meaningless. Scriptural episodes and allegories, in which the symbolical grotesqueness of miserere seat and gargoyle have their part, are frequently related by the stones of the Gothic architect. "An art of peasants rather than of merchant princes or courtiers, and it must be a hard heart that does not love it." Can we wonder that such a building has an atmosphere which stirs us, and an added beauty, felt rather than seen, reflected through the centuries?

Goethe, admiring the beautiful lines and decoration of a Gothic church, described it as "frozen music." No poet of our own days will so apostrophize the modern church; not only is it usually without beauty, but frequently, is so lacking in architectural dignity that its effect is purely negative. I am aware that under modern conditions, the best results are difficult of attainment. In place of the Church, we must provide several churches in a commun-

ity. Funds are thus split up. We have not the old time executive force of voluntary workers to draw on. Every mason of to-day expects and gets union scale wages. The days are gone when a craftsman gave his work freely, because he loved his church and his work, and too often, beyond subscribing to the building or decoration fund and serving perhaps on a committee to appoint an architect or approve plans, the modern worshippers' personal interest in the execution of the work ceases. Coupled with this is usually an urgent desire to have the church "completed" in all its ugliness of machine made carving and shiny

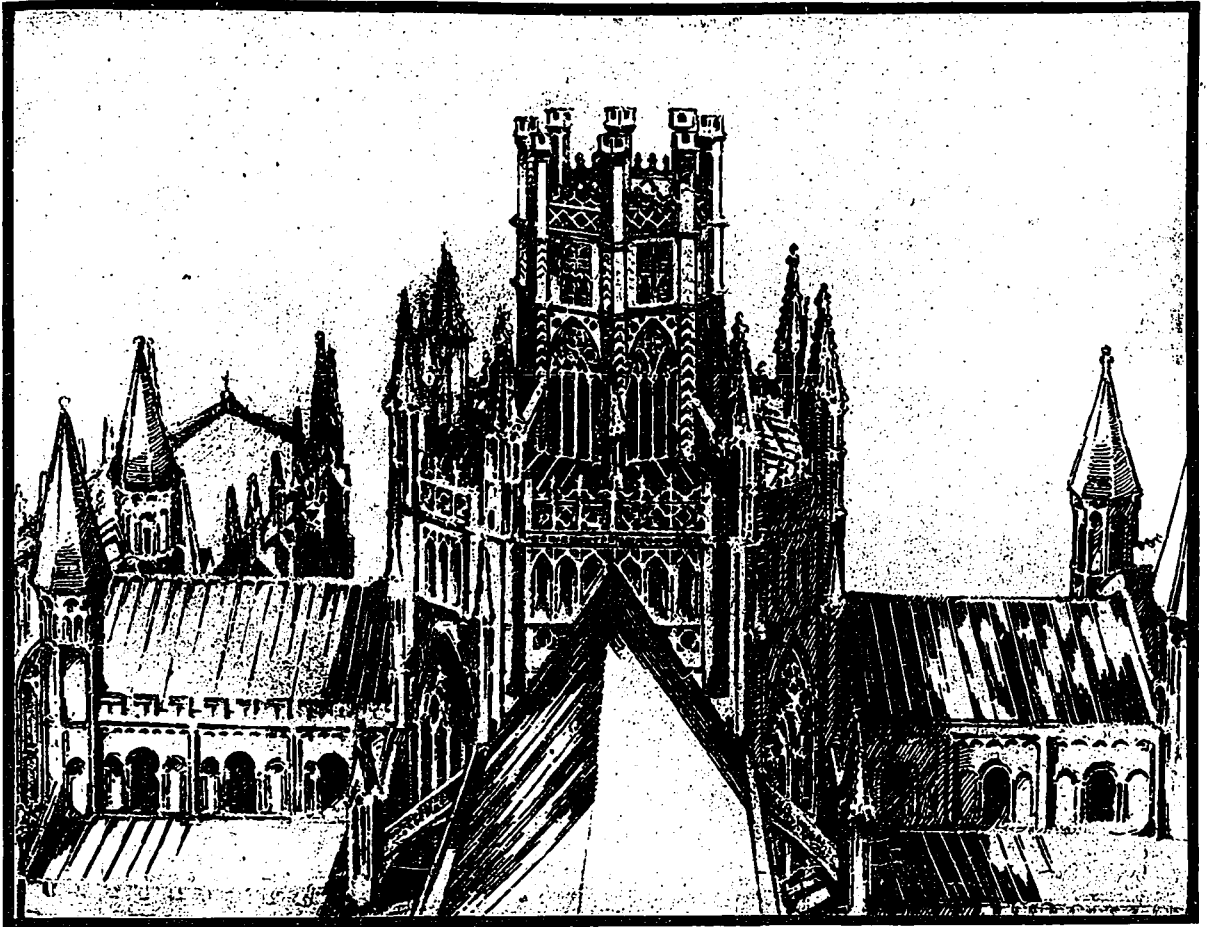


KNOX CHURCH, TORONTO, ONE OF THE RECENT EXAMPLES OF ECCLESIASTICAL ARCHITECTURE WHICH SHOW A STRONG MODERN OR UTILITARIAN INFLUENCE. WHEN COMPLETE THIS BUILDING, IT IS ESTIMATED, WILL COST \$250,000. MR. J. WILSON GRAY, ARCHITECT.

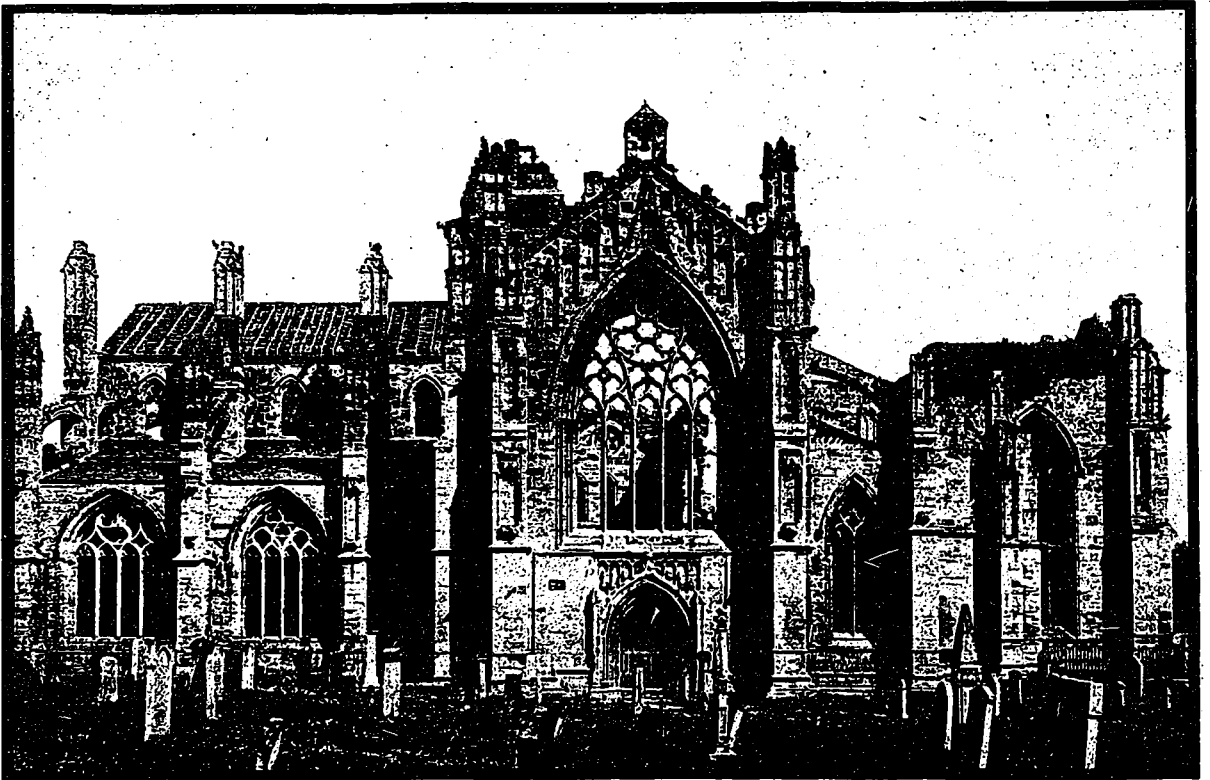


ELY CATHEDRAL, ONE OF NOTABLE ECCLESIASTICAL EDIFICES OF ENGLAND. ITS WHOLE FABRIC, WITH THE SYMMETRICAL LANTERN TOWER, PRESENTS A UNIQUELY COMPOSED OUTLINE.

CONSTRUCTION, APRIL, 1909.



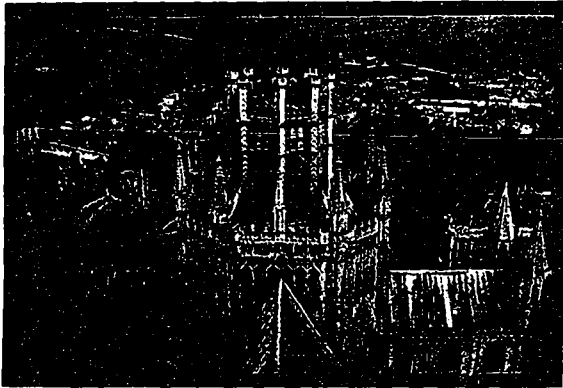
OCTAGONAL LANTERN OF ELY CATHEDRAL,—“ST. ANDREY’S CROWN,”— A PRODUCTION OF THE DECORATED PERIOD, EXECUTED IN STONE AND WOOD, WHICH IS THE MOST PERFECT EXAMPLE OF THIS TYPE OF WORK EXTANT. REPRODUCED FROM PEN DRAWING (UNFINISHED) MADE AT TOP OF WEST TOWER.



MELROSE ABBEY, A SPLENDID EXAMPLE OF THE LATE DECORATED PERIOD OF GOTHIC ARCHITECTURE. EVEN WITH LESS ORNAMENTATION, THE TREATMENT OF THE LINES AND SURFACES AND THE UNIFORMITY OF STYLE THROUGHOUT WOULD HAVE RESULTED IN A MOST SATISFACTORY APPEARANCE.

paint in record time.

In many cases this rapidity of execution causes errors of interior construction or arrangement, the rectification of which involves unnecessary expenditure later. It may



LANTERN TOWER OF ELY CATHEDRAL. NOTE HOW ACCURATELY THIS FEATURE HAS BEEN REPRODUCED IN PEN-DRAWING.

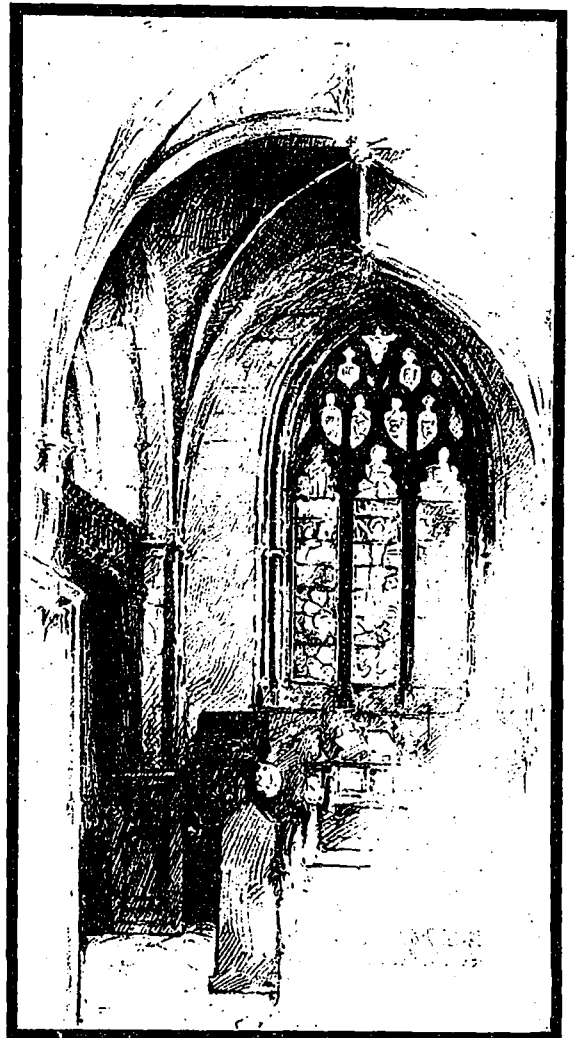
be pleaded that we are a young people in a new country so busily occupied that we have little time to devote to cultivation of the arts. Similar conditions prevailed in England in the year 700 A.D., yet the Saxons built several small churches of merit, an example being that at Bradford-on-Avon, whilst the beautiful St. Bartholomews, Smithfield, London, amongst others testifies to the artistic taste of the Normans. The early Gothic work, too, though massive in construction, as illustrated in the



TRANSEPT ARCH, NORTH AISLE, MELROSE ABBEY.

rounded arches of the nave of Malvern Abbey and the later, pointed, north aisle, displayed a perfect curve and proportion. From these early stages on to the best phase

of Gothic architecture, ecclesiastical construction, while planned to fulfil practical requirements, combined an essential beauty of line and detail with distinctive characteristics throughout. To enter such a building was to have the aesthetic sense appealed to. With few exceptions, these two latter features become subordinate in the hands of the modern ecclesiastical architect, whether in this country or in England, a fact providing food for thought when the intimate relations of beauty and religion in all ages is considered. Salisbury, Amiens, St. Peter's, St. Sofia, the cedar wood and gold of Solomon's temple, and the rope of human hair suspending a bell in



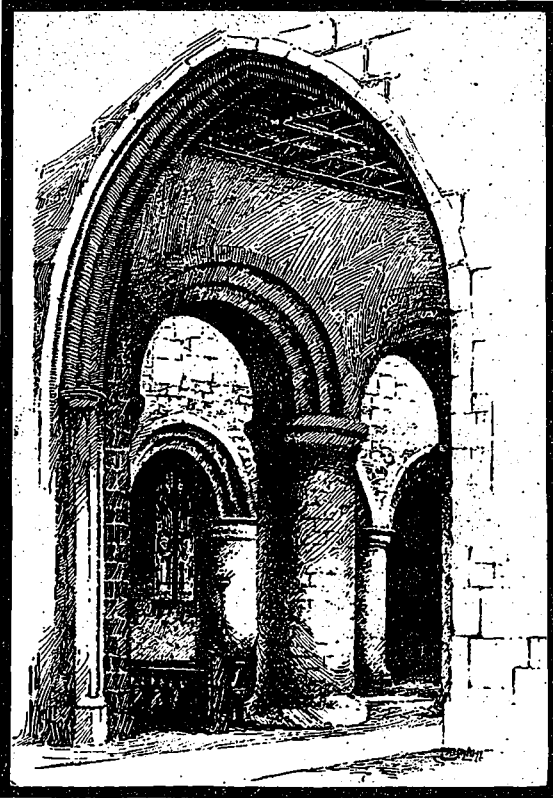
ST. ANNE'S CHAPEL, MALVERN ABBEY, SHOWING A WINDOW OF THE THIRTEENTH CENTURY IN WHICH THE LIGHTS ARE BEAUTIFULLY DESIGNED AND PROPORTIONED.

a Buddhist shrine all tell one story—the desire to beautify the place of worship.

Limited funds cannot be pleaded as justification for an ugly church, since it need cost no more to build a beautiful church than an ugly one. Indeed, in many cases money is not lacking. Consider, for example, the new Knox church, Spadina ave., Toronto. It is estimated to cost complete, \$250,000, of which \$200,000 has already been expended, so the writer is informed. The offices of this church comprise separate rooms for ministers, deacons, trustees, and treasurer, a kitchen, also a social room, a large lecture room and a very large Sunday school room, the latter surrounded by small class rooms

expensively fitted. To some this will seem a lavish equipment. In apportioning the ground space, the claims of the church have been subordinated to those of these offices, which have been placed at the east end, thus precluding any possibility of length to the church.

The plan expresses faintly the Roman basilica model



INTERIOR VIEW OF MALVERN ABBEY, SHOWING THE MASSIVELY CONSTRUCTED AND PERFECTLY PROPORTIONED ARCHES OF THE EARLY GOTHIC PERIOD.

(the semi-circular space corresponding to the apse, here containing the organ), though the interior is practically a square, a form very difficult to treat successfully. Standing at the west end, one sees a square hall of secular appearance, constructed for strictly utilitarian purposes, everything being sacrificed to giving an unobstructed view from all the seats, which are "raked." To ensure this, the pillars which support the roof are of metal and gilded. The walls are brown. In the east wall is the organ which, with a platform and reading desk before it, is contained within a marble arch flanked by gilt pillars. The effect suggests the proscenium arch of a theatre, while the general appearance is, at best, that of a concert hall. Yet, this is a Presbyterian church, a strange contrast to the dignified church in Edinburgh.

Better work would have been secured by following more or less closely, the lines of some Gothic model, if only to secure that "decency and beauty" which should be the essential characteristics of the House of God. We cannot reproduce a Salisbury or a Rheims, such dimensions alone surpass our requirements, but England is rich in beautiful examples both large and small, which our architects might well study, evolving the best from each. Most of these old churches lie east and west, the deviation from due east having been determined by the point in the horizon at which the sun rose on the day of the saint to whom the church was dedicated. Such was our ancestors' spirit of thoroughness.

Wherever possible stone was the material of construc-

tion, and when the state of the building fund prompted economy, a simple style was selected, for example, plain pointed Gothic. Simple but good lines in a well proportioned construction have a beautiful effect, and need little ornamentation. In Melrose Abbey, a fine example of the late decorated period, had the exterior received even less ornamentation it would still have presented a satisfying appearance, a result due to skillful treatment of lines and surfaces and a uniformity of style throughout. Supplementary buildings were avoided; indeed, in some cases where a tower was erected at the east end of one of the aisles, the lower part was used as a vestry. In those having only a central tower forming a lantern to the interior of the edifice, or when from want of funds the erection of the steeple had to be postponed, a place in which to suspend the bells was found in a perforated turret or gable. Incidentally, all church chimneys should be concealed in a turret or pinnacle. The most perfect example extant of the lantern tower, a production of the decorated period, is the exquisite octagonal lantern of Ely Cathedral, which is constructed of stone and wood. The unique pen-drawing, unfortunately unfinished, was made from the top of the west tower.

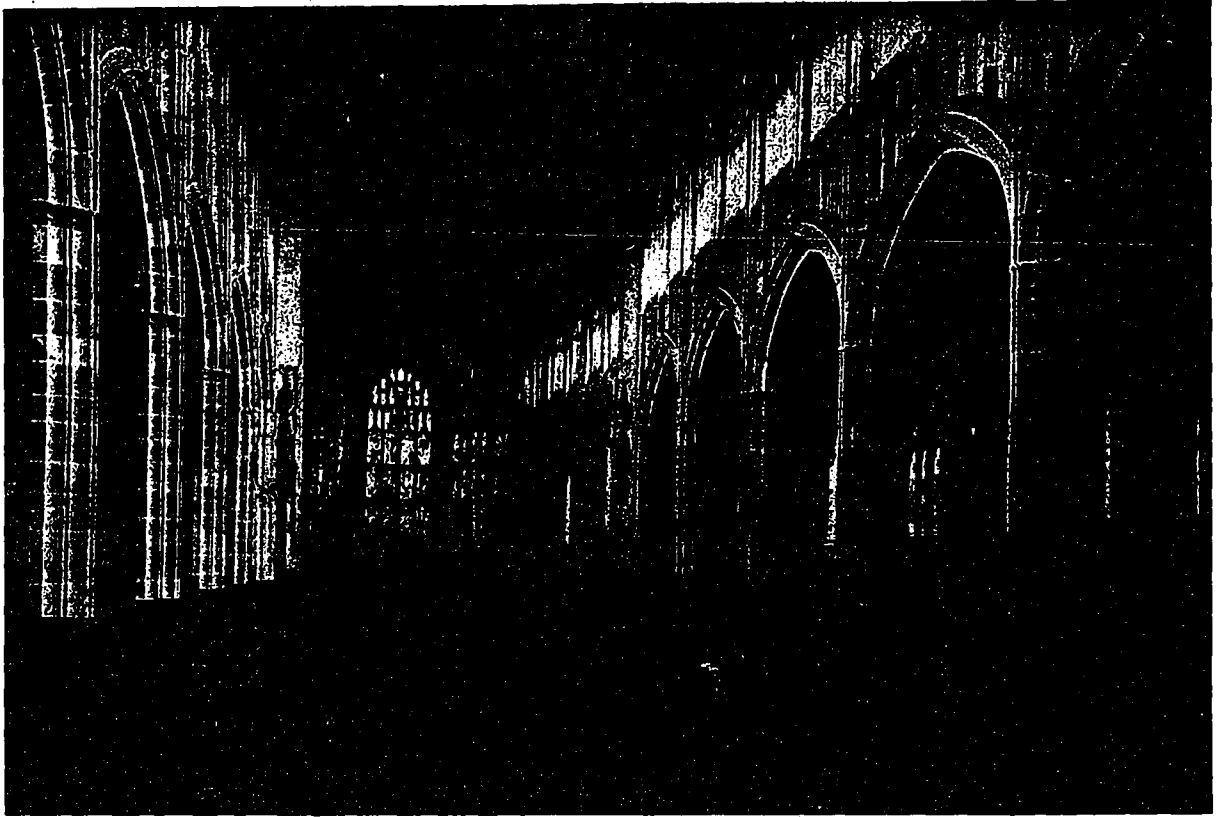
A timber roof is certainly cheaper than stone, and the open timber roof with braced arches, such as that of St. Michael's, Coventry, which dates from the perpendicular period, has a beautiful effect. It may be remarked that the chestnut wood ceiling in the nave of Winchester Cathedral is in a wonderful state of preservation. It is supposed that chestnut wood is too bitter for insects to



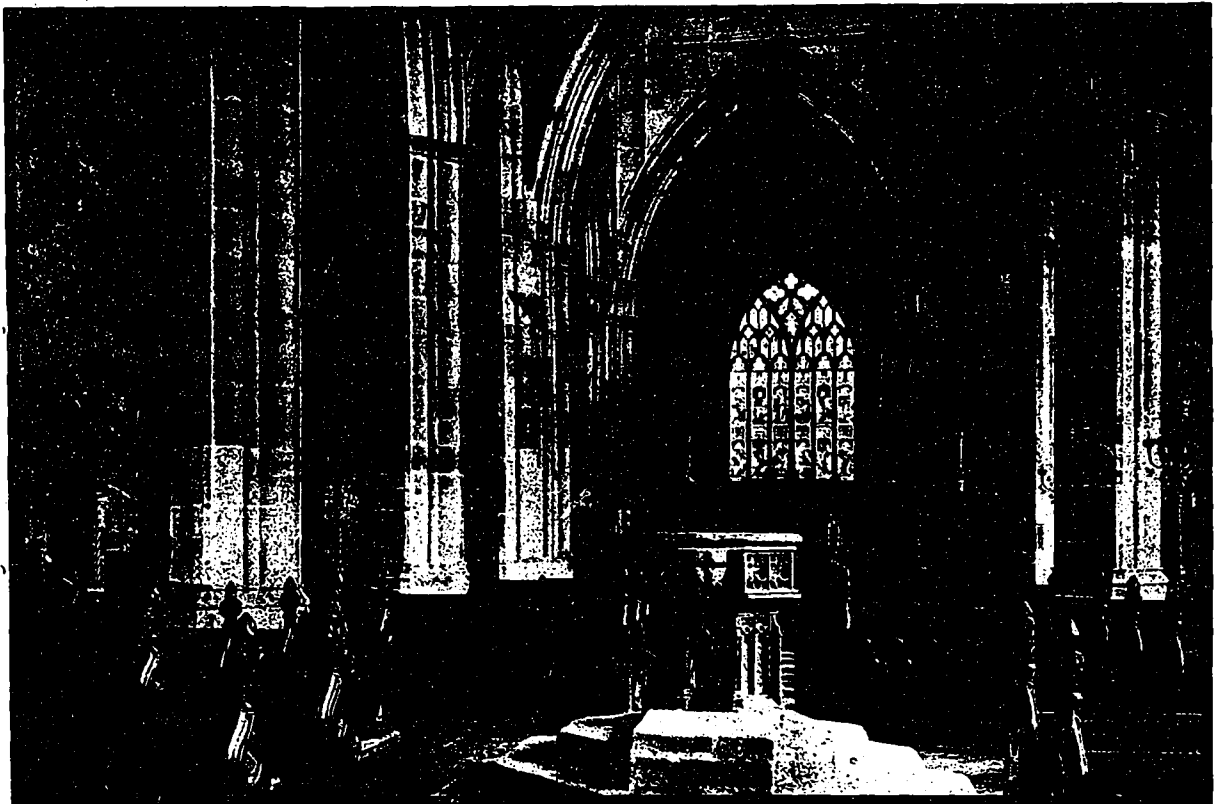
NORTH AISLE, MALVERN ABBEY, SHOWING THE SYMMETRICAL CONSTRUCTION OF THE ARCHES AND SIMPLE DECORATION.

attack. The high, steep roof, too, so essential to early Gothic, is well adapted to our climate and presents a fine exterior, while the side thrust is so inconsiderable as to require little abutment and beams may be safely dispensed with.

The lighting of a church requires much thought.



INTERIOR VIEW ST. MICHAEL'S COVENTRY, SHOWING THE OPEN TIMBER ROOF WITH BRACED ARCHES WHICH DATES FROM THE PERPENDICULAR PERIOD, AND THE BEAUTIFUL EFFECT IT HAS PRODUCED.



INTERIOR OF TRINITY CHURCH, COVENTRY. THE FONT AND PULPIT ARE GOOD EXAMPLES OF THE PERPENDICULAR DESIGN. NOTE THE EXQUISITE TRACERY OF THE WINDOW WITH ITS SIX LARGE LIGHTS, AND THE DECORATION OF TERMINAL PEWS.

Modern churches are generally too light, and many have badly disposed window space, whilst the lights in each window are usually too large. The drawing of St. Ann's Chapel, Malvern Abbey, illustrates a window (thirteenth century) in which the lights are beautifully designed and proportioned. A consideration of the glass to be employed is essential. If plain, it should be coarse and greenish in color, in small well-lead panes, disposed diagonally, the interiors of the windows being well splayed. Windows spaced for colored glass have naturally greater dimensions. Uniformity of style in windows and doorways is very necessary to a good effect. Compare the beautiful arch of the N. aisle of Melrose with the windows.

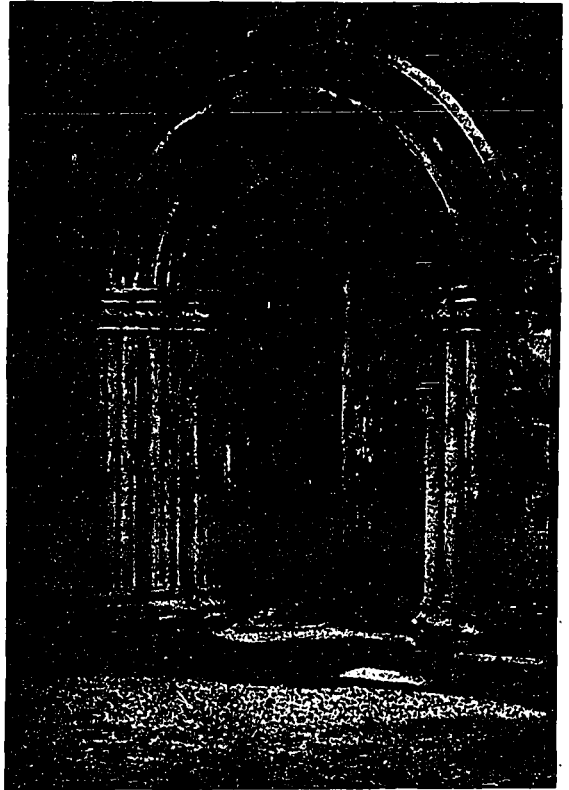
Uniformity is necessary also in the furniture, which should harmonize with the general scheme. The altar should be of stone, with simple decoration or panels at front and sides sufficiently low, that no part is concealed by the altar-cloth. The pews disposed at right angles, should be open and straight backed seats of simple design rather than ornamental. The backs of the terminal pews may be carved or panelled, as in Trinity church, Coventry. The section of the bench ends of St. Michael's, Coventry, is simple and effective, without being costly. In the font and pulpit, a careful treatment of lines will produce a beautiful form in which little decoration is necessary. If any is attempted, panelling lends itself well. The font and pulpit of Trinity church, Coventry are good examples of perpendicular design and stonework. Perpendicular Gothic has many features which should be



THE PERCY SHRINE, BEVERLY MINSTER, SHOWING THE DETAIL OF TOP OVER MONUMENT, A SPLENDID EXAMPLE OF DECORATED CARVING.

studied, especially the panelling, a method of decoration which, in some measure, took the place of the intricate carving of preceding styles. It affords a particularly suitable medium for modern ornamentation, and lends itself well to modern methods of construction. We might also consider the plain wooden doors with metal scroll

hinges. Most difficult to obtain in a city is an open space around the building permitting a view from a reasonable distance. The situation of Ely Cathedral permits of a magnificent view, on the south side, of the whole fabric



RECESSED DOORWAY, A GRACEFUL EXAMPLE IN EARLY WORK OF THE ROUNDED ARCH.

which, with the symmetrical lantern tower, presents a uniquely composed outline.

The writer does not offer these suggestions, nor the accompanying illustrations as being the best. Neither is it intended that the latter should serve as specimens to be reproduced. But their form and line contain ideas for a beautiful work at the hands of a skilful architect. One who realizes that "an absence of architectural feature" is totally incompatible with an ecclesiastical edifice, and who knows that, even if it be true that critical faculty or appreciation of beauty is less developed here than in Europe, it is still his duty, doubly so, to educate us to a keener sense of artistic appreciation by providing the most beautiful work in his power, impressing the importance of so doing, on those who retain his services.

It has been said that "art is life and can belong only to its own age." The spirit of this age is reflected in wonderful utilitarian structures, and such great strides has this branch made that one may now hope for some attention to be directed to the aesthetic. The opportunity is ripe for the man who, possessing that "union of genius with imitation" will produce ecclesiastical works worthy to be compared with some of the shrines of ancient faith.

MANCHURIAN CITIES, states a correspondent of the London and China Telegraph, are undergoing a radical change in the architectural character of their buildings. Many public offices, official residences and even private residences of the European style have sprung up following the erection of a handsome exhibition building at Mukden, and not a few modern double-storied shops are to be found in the business districts.

THE EVOLUTION OF ARCHITECTURE.---Address of President E. Bradbury at the Annual Inaugural Meeting of the Architectural Association of Ireland.---The Growth of Architecture with Civilization.

SO far the greatest difficulty I have had to face in the presidential capacity has been the selection of a suitable subject on which to address you in this, my inaugural address. My predecessors have left me very little to talk about. They seem to have dealt with architecture and architectural education in every possible aspect. However, it occurs to me that something might be said about the architect, and I have thought that it might be useful to try and express my thoughts as to the qualities and ambitions which should animate the architect in his work. And in order to do this I want first to endeavor to show how architecture grew with civilization, and to ascertain what were the motives animating the builders and architects during the stages of the world's history.

Let us look at Egypt—the land of mysteries!—and what do we see? A vast multitude of people, many of them ignorant slaves who struggle under the lash of men who have been placed in command over them by others who have gathered to themselves the lore and wisdom of many dim centuries. What are those multitudes of people laboring at? Some draw water to irrigate the land and produce food—the water soaks in the ground, the food is eaten. Some weave cloth and make clothing—the clothing is worn away and rots. Some make roads, some herd the cattle, some go out to fight; and of all these men and their work there is nothing remaining but tradition. But there are others who build houses and monuments. Some of the houses they are to live in, and knowing themselves to be short lived, they do not trouble to make their dwellings anything but perishable. But these people believe their gods to be immortal, and consequently the houses they build to worship in are built to last on into the future; and such was the skill and knowledge of those ancient Egyptians, and so fine their tools, that to this day people will journey from the uttermost parts of the world to gaze upon and marvel at the temples and pyramids which have stood through all these ages as monuments of a marvellous civilization, and of an enthusiasm which set upon the face of the earth the best and grandest structures that man could devise and hands could erect; and directing all this building of the temples and pyramids there must have been architects, and whether they drew their plans on papyrus or brick, or planned directly upon the ground, it is very certain that they must have been men of exceptional ability and of an intelligence acquired only by deep study and concentration.

Consider the men who built the Pantheon. They were wonderful artists! How did they learn all those little niceties of construction and design? How did they learn that a column, to look its best and truest, must be smaller at the top than at the bottom, and must have a slight curve in profile? How did they arrive at such perfect shapes and proportions for their mouldings so as to give exactly the correct amount and gradation of light and shade? Where did those builders learn to carve beautiful volutes on their capitals, and others again gorgeous conventional copies of foliage? We modern architects are content to accept and adopt and copy these niceties of refinement, but which of us has considered their evolution? In those past ages men must have labored and studied and devoted themselves absolutely to their art to have discovered the value of these refinements of perfection in design and construction. We pride ourselves when we occasionally apply successfully the methods of the ancient designers; let us humble ourselves before those great men who, by enthusiastic perseverance, evolved those methods.

Now let us go to Rome. Here we find a military nation,

a vast and wealthy people who have acquired their vastness and their wealth by conquest, a people who live a life part of which is spent in the midst of warfare, the other part surrounded by immense, gorgeous luxury. They are a cruel race also, and as they have won their might by warfare they delight in the sight of combat, and build vast places of amusement to gratify their lust. They have a little contemptuous reverence for a variety of gods and goddesses, and they erect temples wherein to worship these deities. But it is in their theatres, their amphitheatres, their baths, their triumphal arches, their dwellings, that we find the greatest lavishness of wealth. Yet whilst we find great building and great engineering, we fail to find quite that artistic refinement which characterized the architecture of their predecessors. They erect their mansions and theatres in all quarters of their territory, but it is rather in their pride of strength and wealth than in the enthusiasm of artists. But still the Roman architect must have been enthusiastic, for they were the first real users of the arch and the dome, and during the period of Rome's pride there must have been men earnestly applying themselves to the originating and elaborating of new methods of construction and design and adapting the old and new methods one to another. And we all know how successful were the results of the labor and perseverance of the architects of ancient Rome.

What a change the Roman Conquest made upon the world's history and upon its architecture! Northern Europe had no architecture worthy the name until the advent of the Romans, and when under stress of circumstance the Romans were compelled to abandon their conquered territory, they left behind them the ground work of all succeeding periods of architecture.

The conquered nations, deserted by their conquerors, were weak, ignorant people, having at first but little ambition. And it is vastly interesting to study the people of this intermediary period. They were people almost childish in their ignorance—the ignorance which is the outcome of serfdom and poverty. But by degrees their wits became sharpened as they found they must think and originate for themselves. They sheltered themselves from the weather, as did their prehistoric ancestors, within dwellings of rough timber, and later in wooden houses of more elaborate construction. But it was in the designing and erecting of their places of worship that they put forth their greatest energies. Some, indeed the major part of the early Christian churches, were built of timber, perishable: but others were more pretentious and lasting, built of stone. Those builders had no models from which to copy, excepting such remains as had been left by the Romans, and the traditions of the Roman times, and they could but do their best in a childish effort to copy what had been done before. We can imagine these ignorant men striving their utmost with stubborn stone, having only the most primitive tools to work with, their minds dulled and inactive. But they persevered and built as best they could, and they even attempted in a vague manner to ornament their buildings. Their ideas were primitive; and their means were small; but we can believe that they had some enthusiasm, for their methods and their tools rapidly improved. Moreover, Christianity was spreading light and learning among the nations, and the exponents of the religion were converting and inciting the people to worship. And soon we see the beginning of that great church-building period when on all sides were being erected places of worship and of religious retreat, which are to be found on every side to this day. What a time of

enthusiasm must that have been! Through all the land we should see monks planning and contriving, masons cutting and building sturdy piers and walls, turning heavy round arches, carving capitals and corbels, and always and ever striving and straining to improve on their past work and the work of their neighbors, seeking to discover new methods, and always aspiring to perfection.

And as the years pass by we find the round arch giving place to the pointed, heavy, cylindrical-built piers changing to light, delicate shafts, with beautiful carved caps, plain, rough detail being superseded by fine mouldings. The stone roof is lightly poised on the walls and shafts, and the plain little window openings give place to beautifully traced lights.

Later, Gothic design has reached and passed its limit of perfection, and designers are ready to accept and adopt this revived Italian art and architecture. First comes a period when the two schools—Gothic and classic—struggle and intermingle, and then we see the final conquest and the adoption of classic methods of design. A new school is born, and eventually creates some of the most magnificent of structures, combining, as they do, the ancient classic forms and detail with improved methods of construction, and adapting both to the more modern requirements of mankind. This perfect adaptation was attained by the exercise of patience, severe application, and constant study. We nowadays see many faults in the designs of the Classic Revival period—dark, crypt-like basements, fearful waste of space, terrible incongruities, lavishness of expense on exteriors without compensating benefits to interiors—but in it all we cannot fail to see the results of intense enthusiasm—the desire to create buildings in emulation of the ancients, and to adorn them with carvings and decorations in perfect accord with classic ideas.

The Grecians and the Romans have left us more evidence of their skill. Who can fail to admire the delicacy and proportion of the Greek trabeated buildings, and the admirable skill displayed by the Romans in their use of the arch and in their adaptations of the orders in conjunction with arcuation? The Pantheon, the Triumphal Arches, the Colosseum, who has not heard of them? Do these structures not remain still as some of the sights of the world? Should it not inspire us when we think that in all ages notable events and great men have been commemorated by means of architectural monuments? And can we not admit that in practically every minute detail those ancients approached as nearly to perfection of design as was, and is, possible?

What wonderful changes were made in the scenery of Europe during the middle ages by man's additions! Castles, cathedrals, churches, palaces, sprang up on all hands and added that touch of humanity to the aspect which I fear we should, many of us, very quickly sigh for if we were translated to an absolutely natural country. Let us examine one of these glorious edifices. Lofty, buttressed walls, pierced with beautifully shaped and proportioned windows, filled with delicate tracery and with graceful pinnacles above; delicately poised flying buttresses; elaborately decorated, yet imposing doorways, thickly moulded and carved, lofty gables, and, above all, heaven-aspiring steeples; and inside are the lofty arcades, the wonderful groined vaults, and all those marvellous adjuncts which have made the Gothic cathedrals amongst the great sights and wonders which attract the sightseer in his thousands. And as it is with the cathedrals, so it is with the smaller churches and the castles. These buildings of the middle ages are not by any means always perfect specimens of design, although I am afraid that even among architects there are many who are ready to give unstinted praise and admiration to positively badly designed work, simply because it happens to be old. Why, if we were logical, we should surely see that the mediæval builders ought to have produced only a small

proportion of perfect work. They had no text-books. They had not the work of many past generations to study and possibly improve on. They were inventors, originators, people struggling in the dark to find ways out of difficulties of construction, but yet so ambitious that they disdained to take any easy ways out of their difficulties, but rather preferred to invite trouble in order to be able to combat and conquer it. And I think that it is a perfectly marvelous thing that amongst the hundreds of thousands of buildings erected during the Gothic period there occurred such a startlingly small percentage of badly or even indifferently designed buildings. I can only assume that the people who were responsible for the designing of these buildings were absolute enthusiasts who devoted their whole energies to their work, and spared no efforts in endeavoring to attain perfection.

So far I have dealt entirely with past days and periods of architecture, and I have attempted to show how the keynote to success in design in the past has been enthusiasm and hard work. But, you will say, perhaps, that there can be no possible comparison between these past ages and the present day. The conditions are so utterly different. Those dead and gone predecessors of ours had a constant succession of new discoveries to deal with and to wax enthusiastic over. Imagine the ferment, the delighted surprise, when the arch was first used. And again when it was found possible to build it with a pointed apex. Again, what a delight it must have been to work out new patterns of window tracery! And yet more, those old architects had no worrying about building by-laws, minutely detailed specifications, competitive tendering and its attendant evils, bills of extras, and so forth; nor had he to run such a number of "sidelines" as we have to do. Then again, he had not to worry about how he should pay his gas-bill, his income tax, or his office rent, nor had he the incubus of poor rate and old age pensions. Small wonder, you will say, that a man could lose himself in his work and so devote himself to it that he was able to do his best.

Yes, the conditions of modern architectural practice are vastly different from those that have obtained in past ages. But though the conditions are different, I hold that the same motive must animate us now, as then, and that is the desire to do our best. And, as in the past the best was only obtained by earnest devotion, so we must be devotees to our work and enthusiasts if would carry on the traditions of our art. And when I say this I do not mean devotion during office hours and enthusiasm when we get a new client. I mean that our whole life and energies must be spent in the study of architecture and the kindred arts and sciences, and that our enthusiasm must be as real over the smallest trifle as it is about the biggest commission entrusted to us.

Let us first go through some of the accomplishments demanded of an architect to-day. He must be more or less of a constructionist, an engineer—both civil and mechanical—a chemist, geologist, surveyor, arithmetician, lawyer.

He should be a good man of business or he will very quickly get into trouble. He must be able to discuss ritual with a clerical client, acoustics with the theatre proprietor, the best ways of storing or displaying all and sundry sorts of goods with shopkeepers of all descriptions, the Public Health Act and building by-laws with the city architect, cubic space per patient with the hospital authorities. He must know the size of a billiard table and the length of a cue before he can plan a billiard room; he must be able to discuss the business room and smoke room with the master of a house, the kitchen and linen room with the lady, the drawing room with the grown-up daughters, the bicycle shed with the boys, the nursery with the children, the range with the cook—and he must please all of them or he'll hear about it; he must know more about bricks than a bricklayer, more about timber in all its

species and qualities than a carpenter, more about baths and sanitation than a plumber, more about plaster than a plasterer, and more about building than a builder. He must know the price of everything from a wire nail to a square of roofing, and he must be prepared to check and if necessary, fight every penny of a builder's account. He must know a little, at all events, about the law of ancient lights and other laws, and he must be able to define the mystic letters P.C. He must be able to advise as to the relative merits of luxfer, cats-eye, and scores of other glasses, frugal, perfection, and dozens of other ranges, opalite, britopal, and I don't know how many other opal wall coverings. He must understand something about O. H. M. S. and Watts, and the prices of a unit of electricity for light or power, to say nothing of such details as alternating and continuous currents. He must—but there, I'll leave the rest to you to fill in yourselves, with the passing remark that I rather fancy an architect needs to possess as general a knowledge as any man.

But there remains one other necessity for an architect, and that is that he must be an artist. And I come to this last, not because it is the least accomplishment of an architect, but because it is by far the greatest and most important of all. He must have an artist's eye for proportion, shape, light and shade, color. He may be less than an artist in that he need not necessarily reproduce nature on canvas, but he must be something more than an artist in that he must be able to picture in his mind and on paper what is to be afterwards constructed in solid materials.

Then again, building materials are really wonderfully interesting. We have to draw from minerals and from vegetable life for our supply of raw material; we have to use heat, water, and pressure in their manufacture, and there are generally from two to twenty methods of fixing the materials when made, to say nothing of the multitudes of different combinations which may be effected. And we have such a tremendous scope; there are dozens of ways of building a wall, and we can invent a new method if we need to. New building materials are being invented every day, and though many are useless, all are interesting. Yes, material is a vastly interesting part of our studies, and we can easily grow enthusiastic in selecting the proper materials for our building, provided we really are heart and soul in our profession.

Whilst I have pointed out that its human interest should make us enthusiastic in our profession, there is another aspect of the question, and that is that we must be enthusiastic if we want to make a living. Every profession and every trade is over-crowded, and nowadays those who have to work for their living are compelled to work in the midst of a crowd of keen competitors. And as with others, so it is with architects. Some plod along and make little or no headway: some go under and are heard of no more; but, as in all else, it is the best man who comes out on top, and the best men are those who take a lively interest in their work. So that, as I say, it is to our interest to be enthusiasts.

But after all, these are only paltry reasons for enthusiasm. They are mere nothings to the *real* reason, which is, that our profession is monumental in its records. True it is that we cannot all be John Thorpes, Christopher Wrens, or Aston Webbs. Cathedrals are not being built on every hand nowadays, and even parish churches do not often come our way. But we all have a chance of designing municipal buildings and libraries and other of the many structures which are the outcome of modern methods of government and of our advanced civilization, to say nothing of every-day dwelling-houses and places of business. Even the smallest and least important of our works is really monumental, because, under normal circumstances, it will last longer than we shall, and future generations will praise or condemn us. So that I think we should realize that we have a very serious trust reposed in us, and we should, nay, must, do all in our power

to make ourselves worthy of that trust. It lies with us to gain praise or condemnation. *We* are able to look back upon the work of our long dead predecessors, and most of it is good, and we can applaud those who had the designing of it. Let us for our part do what we can to merit the praise of our successors. Let us strive our utmost to put in all our work our very best; let us sketch, measure, study, draw, calculate, and concentrate ourselves upon our life's calling that we may infuse into our work some, at all events, of that spirit of enthusiasm which in the past has raised so many monuments for the admiration of all who pass by. Let us try sometimes to forget that we work to live; let us rather live that we may work and work, and put all our heart into our work, that we may emulate those old masters and rear to ourselves monuments which shall do us credit and add still more to the glory of our noble profession.

REINFORCED CONCRETE IN CHURCH DESIGN.—Two Recent Examples of Its Use. . . .

THE ADOPTION of reinforced concrete for ecclesiastical work is coming more strongly into evidence. In Russia there has lately been completed a cathedral which is carried out entirely according to this method of construction. This remarkable building is at Poti, a city in the mountainous regions of the Caucasus.

The original idea was to construct the cathedral in masonry and bricks, but these materials are costly in Russia, and it was finally decided that reinforced concrete would best answer the purpose, and be the most practical form of construction, owing to the peculiarity of the soil and the difficult position which had been selected for the site of edifice; and also to the fact that the erection could be carried on more expeditiously than if masonry had been employed.

The style of architecture adopted was that of the Byzantine period. The architectural plans were prepared by Professor Marfeld, and the reinforced concrete work was carried out in accordance to the Hennebique system. The building is enclosed by a double wall, the external and internal sections being 10 cm. and 8 cm. respectively, with an air space of 18 cm. between the two.

For a good architectural rendering it was necessary to build the large pillars very massively, and so it was possible to make allowance for the ventilation and hearing channels in these pillars. The cupolas are formed from a structure of 10 cm., reinforced by branches of 25 cm. in height, between which an isolating material was laid before laying on the large iron covering.

Another noteworthy example of this method of construction is to be found in Second Church of Christ Scientist at Los Angeles, Cal., which is now in process of construction. In this building all floors, beam columns and roof are of reinforced concrete.

The most important of the structural features are the four concrete trusses and the dome carried upon them. The trusses have a span of 68 feet each, carrying a total dead load of 350 tons; they have a depth of 20 feet at the supports and 10 feet at the center, and are 16 feet in width.

AT A MEETING of the creditors, bondholders and shareholders of the assigned Colonial Portland Cement Company, it was decided to bring about a reorganization and form a new company. A statement of the company's affairs showed assets of over \$500,000, while the liabilities, outside of a bond issue, were comparatively small. These will be taken over by the new company, which will pay off all creditors, except the bondholders, who will accept new bonds which will be issued instead of those they now hold. The new company will be provided with ample working capital, and it is expected that the company's plant at Warton, Ont., will shortly resume operations.

AN ATTRACTIVE CLINKER BRICK RESIDENCE.---

Simplicity and Individuality Predominant Factors in Treatment of General Scheme.---Interior Splendidly Arranged and Pleasing in Appointments.---Cost Moderate.---Designed by Owner.

MODERATE IN COST, simple in character, yet with a dignity and distinctiveness of outline which bespeaks hospitality and internal comfort, the home of Architect J. Hartley Galloway, Toronto, offers a most interesting study of domestic architecture in the smaller type of residence construction.

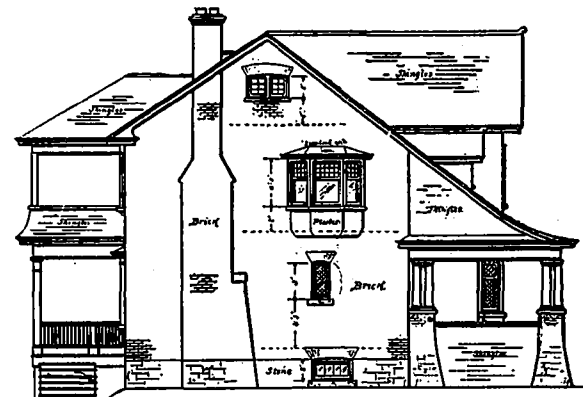
This delightful little home is one of the most recent residential additions to Moore Park, a beautiful suburb

rough pine boards stained a dark brown, while at the right end of the structure the roof is carried out in a hip arrangement attractively set off with a dormer window.

Another dormer window serves to effectively relieve the long pitch of the roof over the porch, while at the east end of the structure a pleasingly designed oriel suc-



FRONT ELEVATION, RESIDENCE OF ARCHITECT J. HARTLEY GALLOWAY, TORONTO.



EAST ELEVATION, RESIDENCE OF ARCHITECT J. HARTLEY GALLOWAY, TORONTO.

contiguous to Toronto on the north. It fronts on St. Clair avenue, and at the rear overlooks a deep ravine together with a picturesque stretch of country which extends northward beyond the slope on the opposite side.

In dimensions, the house is 36 by 30 feet. The external walls are built of clinker brick varying in tones from dark greens and browns to brighter buffs and reds, which effect an agreeable contrast with the white finish of the woodwork, the green stain of the shingles, and the gray hammer faced stone of the foundations.

An especially pleasing feature is the porch, sheltered by the slate covered roof which sweeps in a continuous

cessfully overcomes the monotony of the brick wall and adds to the home-like aspect of the general scheme.

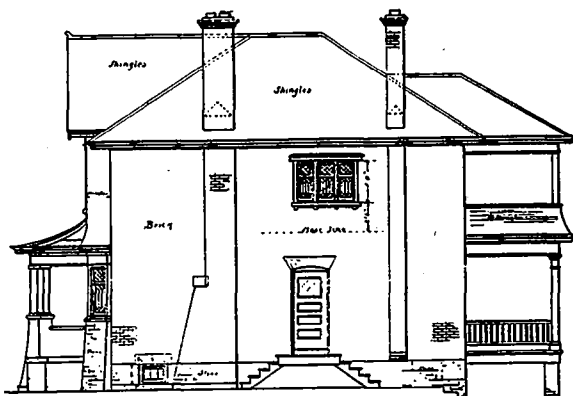
On the interior the grouping of the various rooms has resulted in a compact and conveniently arranged plan which utilizes to the utmost advantage all available space.

From a roomy vestibule, one enters a spacious reception hall which, owing to its splendid location, provides direct communication between the various rooms, with the exception of the kitchen.

The hall is finished in mission style, with beamed ceiling,



REAR ELEVATION, RESIDENCE OF ARCHITECT J. HARTLEY GALLOWAY, TORONTO.



WEST ELEVATION, RESIDENCE OF ARCHITECT J. HARTLEY GALLOWAY, TORONTO.

line from the ridge to its outer edge, a treatment which imparts an air of privacy to the entrance, which is further accentuated by placing the porch steps at the inner side towards the centre of the house.

Above the second story, the base of which slightly flares over the bay window at the centre to the right of the porch, is a cement plastered gable pannelled with

ing, a treatment which also lends itself in an admirable manner to the music alcove situated off the hall at the front of the house. Both of these rooms have black ash trimming with a dull wax finish, and floors of selected quartered-sawed oak, while in the alcove is a built-in bookcase and window seat, which heightens the effect and cosy appearance of this inviting retreat.

Opposite the entrance is the drawing-room, trimmed in white enamelled white pine, and having a tile mantel of delicate tint; while directly off the hall on coming in,



FRONT VIEW, RESIDENCE OF ARCHITECT J. HARTLEY GALLOWAY, LOCATED ON ST. CLAIR AVENUE, MOORE PARK, TORONTO.



RECEPTION HALL LOOKING TOWARD THE DRAWING ROOM AND SHOWING A CORNER OF THE MUSIC ALCOVE AT THE RIGHT. RESIDENCE OF ARCHITECT J. HARTLEY GALLOWAY, TORONTO.



VIEW OF SITTING ROOM, ON UPPER FLOOR, WHICH OPENS ONTO A LARGE VERANDAH AT THE REAR. RESIDENCE OF ARCHITECT J. HARTLEY GALLOWAY, TORONTO.



VIEW OF DINING ROOM, SHOWING BUILT-IN FIREPLACE OF ROMAN BRICK. RESIDENCE OF ARCHITECT J. HARTLEY GALLOWAY, TORONTO.

is the dining-room, where an air of comfort is suggested in the beamed ceiling and large Roman brick mantel. This room has large south windows, and opens onto a spacious verandah which overlooks the terraced lawn and garden at the rear.

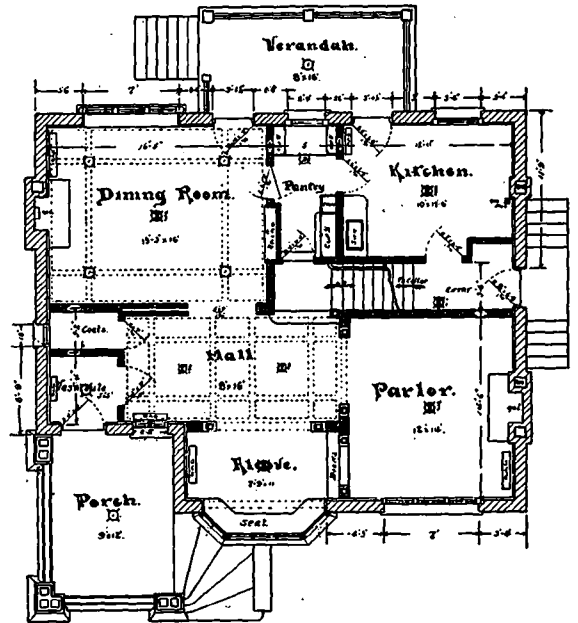
Direct access to the kitchen from the dining-room is obtained by a service passage off of which is the pantry with built-in china closets and cupboards.

The kitchen, which is well removed from the other portion of the house, is well lighted and ventilated. Entrance to this department is obtained, in addition to that afforded by the service passage, from either the rear verandah or the entrance at the side, this latter entrance also giving convenient access from the kitchen to the basement.

The upper floor, which is reached by the staircase leading up from the reception hall, is exceedingly well arranged. To the front are three good sized sleeping chambers, equipped with built-in clothes closets, while at the rear is the sitting room opening onto a large balcony from which a splendid view of the surrounding country is obtained.

Off the stair-hall is the bathroom and water-closet (each of which is separate from the other), together with a large linen closet having a chute leading to the laundry in the basement.

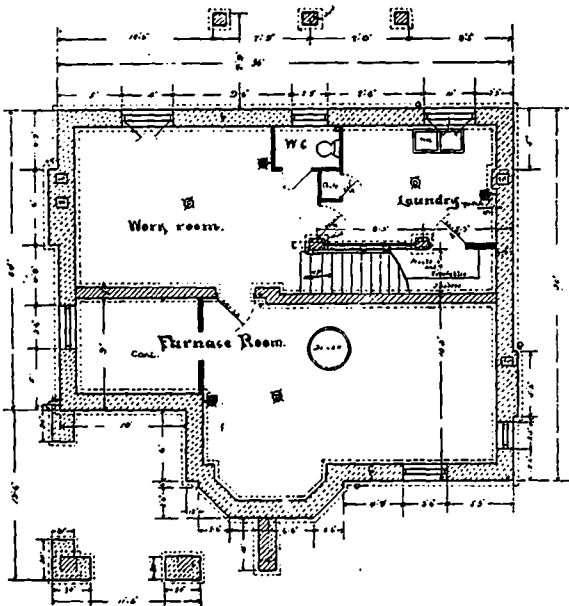
Slating and iron work	275.00
Hardware	75.00
Weather strips	85.00



FIRST-FLOOR PLAN, RESIDENCE OF ARCHITECT J. HARTLEY GALLOWAY, TORONTO.

Mantels	160.00
Tiling	150.00
Electric wiring	125.00
Painting	180.00
Glazing	85.00

Total \$5,430.00



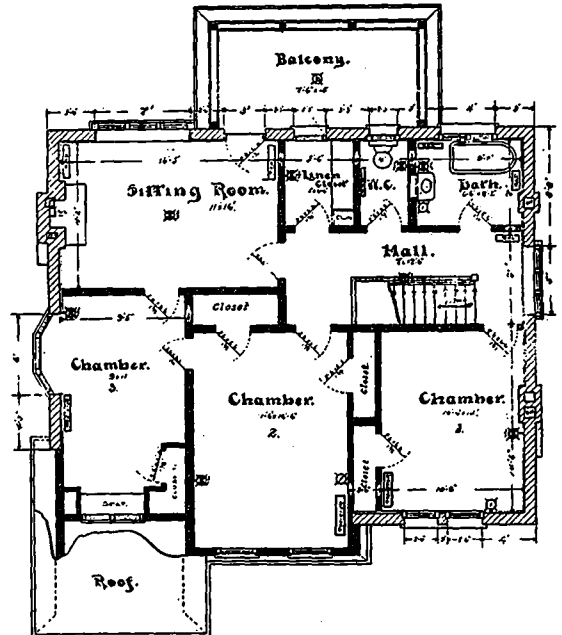
BASEMENT PLAN, RESIDENCE OF ARCHITECT J. HARTLEY GALLOWAY, TORONTO.

All the woodwork on this floor is of pine with the exception of the sitting room, which is trimmed in black ash. The sleeping chambers are finished in ivory-white enamel, and all rooms throughout have outside exposures and are well lighted and cheerful in character. The attic is of ample dimensions to permit of two good sized additional rooms if desired.

The house is heated by the "Safford" hot water system, and the plumbing throughout is of the very best type, all exposed pipes and fixtures being nickel plated.

The building complete represented an expenditure of \$5,430, the cost of each branch of the work being as follows:

Excavating	\$ 30.00
Grading and sodding	80.00
Concrete floors and walks	100.00
Masonry	1,395.00
Carpentry	1,565.00
Plumbing and heating	825.00
Plastering and lathing	300.00



SECOND-FLOOR PLAN, RESIDENCE OF ARCHITECT J. HARTLEY GALLOWAY, TORONTO.

The heating system was installed by the Dominion Radiator Company, while the brick used in the exterior walls is the product of the Don Valley Brick Works, Toronto.

NEW BARTHELMES BUILDING.---An Interesting Example in Factory Construction.---Introduces the Mushroom System of Reinforced Concrete.---Elimination of All Interior Beams Between Columns a Unique Feature.

AN INTERESTING EXAMPLE of reinforced concrete construction erected during the past season is the new Barthelmes Building on Carlaw avenue, Toronto, which is to be used as a factory for the manufacture of piano-playing devices.

The main building consists of a three-storey structure of the skeleton type of reinforced concrete construction with windows extending from column to column. The elevator, stairways and lavatories are isolated in an adjoining pent house from which the main building is protected by automatic closing fire doors, while the boiler and engine house is situated several feet distant from the rest of the plant.

In the construction of the building the Turner Mushroom System of reinforcement was used, whereby all interior beams between columns are eliminated so that the ceiling has the appearance of a flat slab resting on columns with slightly flared heads.

The only reinforcement employed are the plain round rods, both for the columns and floors. The eight rods generally used in the reinforcement of each of the columns are about four feet longer than the required height. This additional length is bent at a little more than a right angle, and thus extended out into the floor slab which is about 7 1-2 inches thick. A hoop of riveted or welded steel is placed around the steel of the columns just below the point where the bend is made and securely wired in position; while two rings of 4 1-2 and 8 feet diameter, respectively, constructed of round steel rods, are laid on top of the bent column rods to which they are securely fastened by wire tyings. This combination forms the mushroom head, on which is laid the main floor reinforcement bars.

As will be seen from the floor plan these bars run in equal numbers from each column to the eight surrounding columns, thus forming a complete net work of

reinforcement carrying the loads direct to the columns. The side columns and heads are simple modifications of the scheme for interior columns.

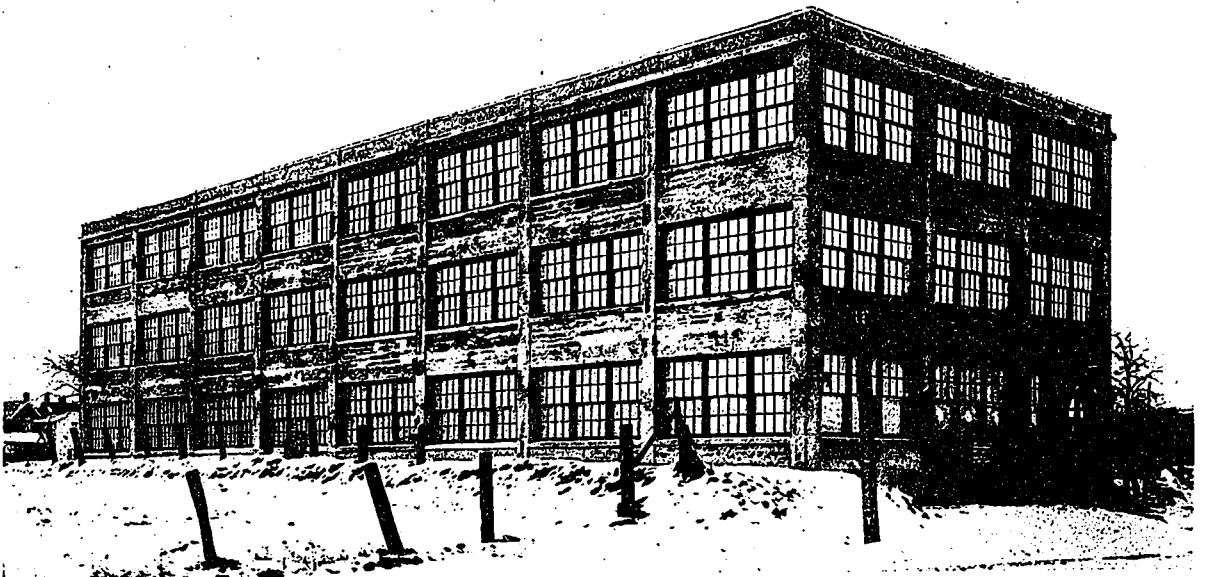
In plan the main building is 45 by 128 feet inside measurement, divided into panels 15 ft. 5 1-4 in. wide by 16 ft. 1 1-4 in. long. The floors are designed for live loads of 150 pounds per square foot, and a roof load of 40 pounds per square foot. The footings are designed for an earth pressure of three tons per square foot, those for the interior columns being 5 ft. 7 in. square and reinforced in bottom course in 2 directions with 1-2 in. rods, spaced about 3 1-2 in. centres, while the outside footings are 4 ft. 7 in. square and reinforced with 1-2 in. rods, spaced 4 1-2 in. centres each way.

COLUMNS.

The interior columns are octagonal in shape and are of 18 in. diameter on the first and second floors, and 14 in. on third floor. The reinforcement in first storey consists of eight 1 1-8 in. diameter rods, while on the other two floors the steel is reduced to four 1 in. diameter rods. The exterior columns are of rectangular cross-section 16 x 20 in., and reinforced with four 1 in. diameter rods throughout their length. At the two extreme points and in the centre, all the columns on each floor have flat rivetted hoops of 3-16 x 1 1-2 in. material surrounding the vertical reinforcement, in addition to the ties of No. 10 wire spaced 15 in. apart. The load from both centre and side columns is transferred to the footings by steel plates 23 x 23 x 5-8 in., and 17 x 21 x 1-2 in. respectively, as required by the city by-laws.

MUSHROOM HEADS.

As previously stated, the column head is formed by bending about 4 feet of each rod of the column steel through a little more than a right angle so that the outer



THREE-STOREY FACTORY BUILDING RECENTLY BUILT ON CARLAW AVENUE, TORONTO, FOR A. A. BARTHELMES, IN ACCORDANCE TO THE MUSHROOM SYSTEM OF REINFORCED CONCRETE. CLARKE & MONDS, DESIGNING AND ERECTING ENGINEERS.

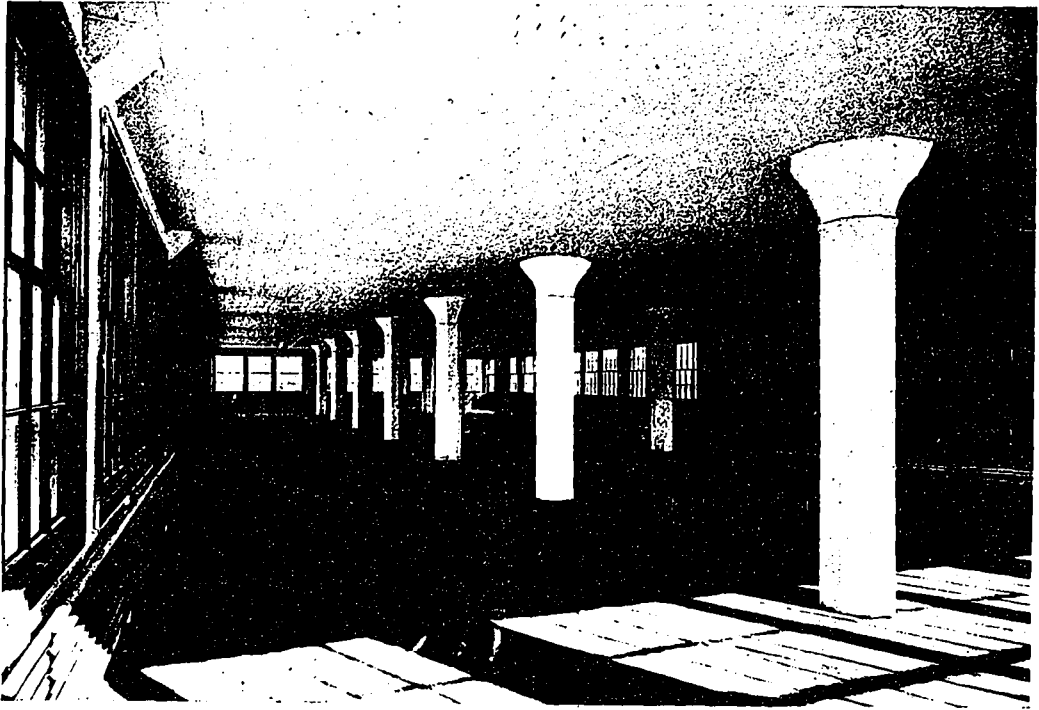
end of the rod is farther from the top of the floor than the portion close to the column, and on top of these bent rods are placed two hoops of round steel rods, the inner being 5-8 in. and the outer one 3-4 in. diameter rods. In case where there are only four rods in the columns the extra four points for the support of the rings are supplied by laying across the column head two continuous rods of the same diameter as those in the column. But in the case of the side columns these extra supports are secured by knee rods which extend down into the column about 2 ft. 6 in.

BEAMS.

The only beams employed in the structure are those on the sides required to carry the weight of windows, curtain walls, etc., and these were also designed to carry the load from one-quarter of a complete floor panel. The beams are 14 x 26 in. and reinforced with 2 in. diameter rods which run along the bottom and one rod of 7-8 in. diameter, which is bent up to provide for shearing stresses in the beam.

for two different sizes of columns filler pieces of the correct size were lightly tacked to the edges of the forms used on the lower floors and removed for use in the upper floor. To provide against the pressure of the wet concrete the column forms were hooped with round iron bands similar to those used for tank work, a special slotted lug being used where the two ends of the band met. So that these bands should not bear at the corners of the forms only, circular blocks of wood were provided and nailed to the forms beneath the bands to give an even bearing all around the column. This system gave good satisfaction throughout, and was even applied to the rectangular side columns.

Owing to the difficulty of constructing wooden forms for the flared column heads cast iron forms were substituted, eight sections being required for each head and held together with 5-8 in. bolts. These castings are made adjustable for different sized heads by the use of wooden filler pieces of the proper thickness, the one pattern being used, if necessary for a considerable range in the size of columns.



INTERIOR VIEW OF A. A. BARTHELMES' NEW FACTORY, TORONTO, SHOWING THE OCTAGONAL COLUMNS WITH SLIGHTLY FLARED HEAD, TOGETHER WITH WINDOW ARRANGEMENT. NOTE THE ABSENCE OF BEAMS BETWEEN INTERIOR COLUMNS AND THE UNBROKEN SURFACE OF THE CEILING.

FLOOR REINFORCEMENT.

The floor reinforcement consisted of 3-8 in. diameter rods laid about 7 in. apart, the ends in all cases resting on a column head, and extending about two feet beyond its centre. In the middle of the span these rods are kept about 1 in. clear of the under side of the floor, while toward the supports they rise up to a point near the top of the floor slab. During construction this steel is kept in place by being lightly tied to the column heads.

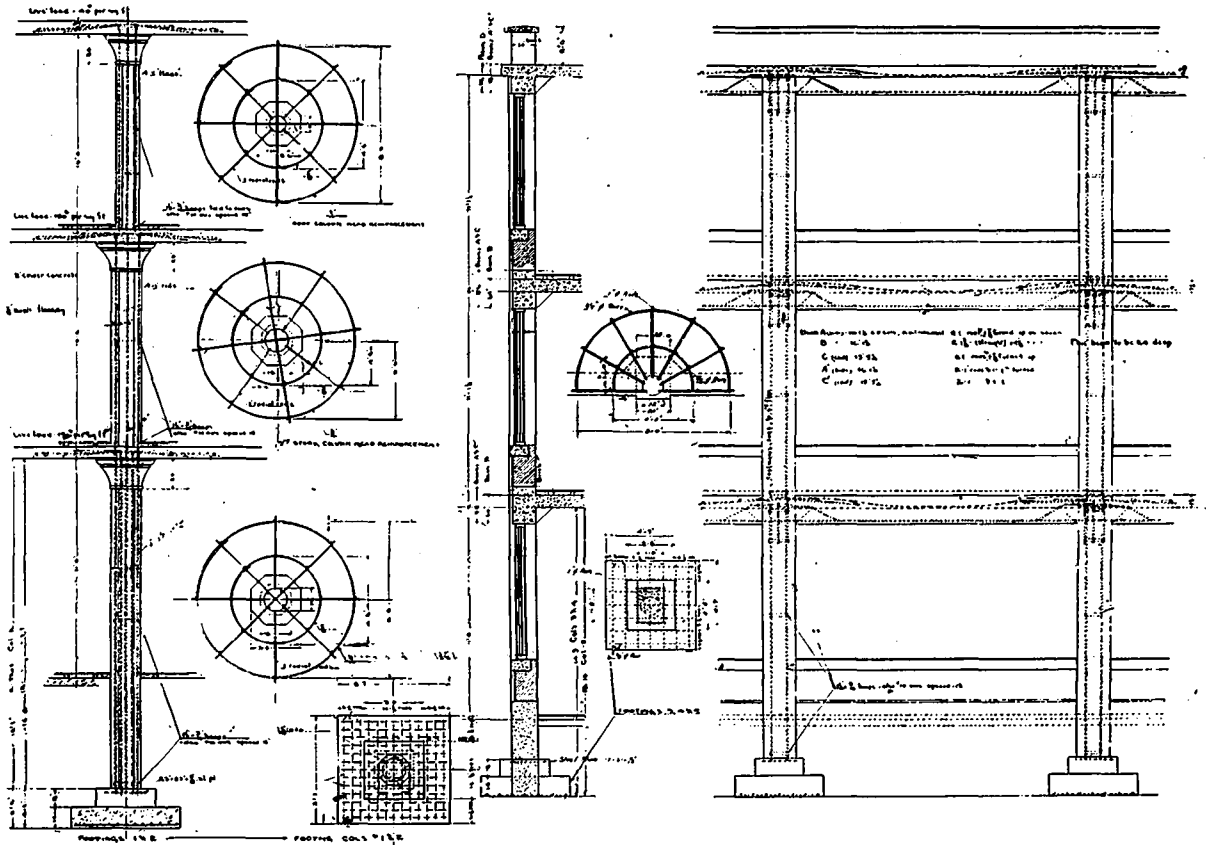
Throughout the system very little bending or fabricating is required and the placing of the steel is very simple and of such a character that there is practically no liability of important members being left out.

FORMS.

The material used in the column forms was 1 3-4 in. dressed spruce, bevelled for the octagonal shape of central columns. To provide for using the same material

The forms for the floors were very simple as there were no beams to limit the lay-out and the most economical design for the centring was adopted. One inch spruce lumber dressed on one side and both edges was used throughout, it being laid on 2 ft. 6 in. joists, spaced 2 1/2 in. centres. The joists in turn were supported on 4 x 8 in. timbers spaced about 7 ft. 6 in. centres and resting on 4 x 8 in. posts about 5 1-2 ft. centres. The lower end of the posts rested on small mud sills. To provide for adjustment of the post or slight settlement of the mud sill hardwood wedges were inserted between post and sill so that it was possible at all times to keep the forms under control.

Sufficient material was provided to make the forms for one-half the total floor space, and the supports were not removed under any panel for at least twelve days after pouring. This does not apply to the cast iron col-



DETAILS OF CONSTRUCTION, CONCRETE FACTORY BUILDING OF A. A. BARTHELMES, TORONTO.

umn-head forms, which were taken down and moved forward on the third or fourth day.

REINFORCEMENT.

Plain round rods of medium steel were used throughout the work. This steel was rolled by the Hamilton Steel and Iron Company and was shipped to specified lengths.

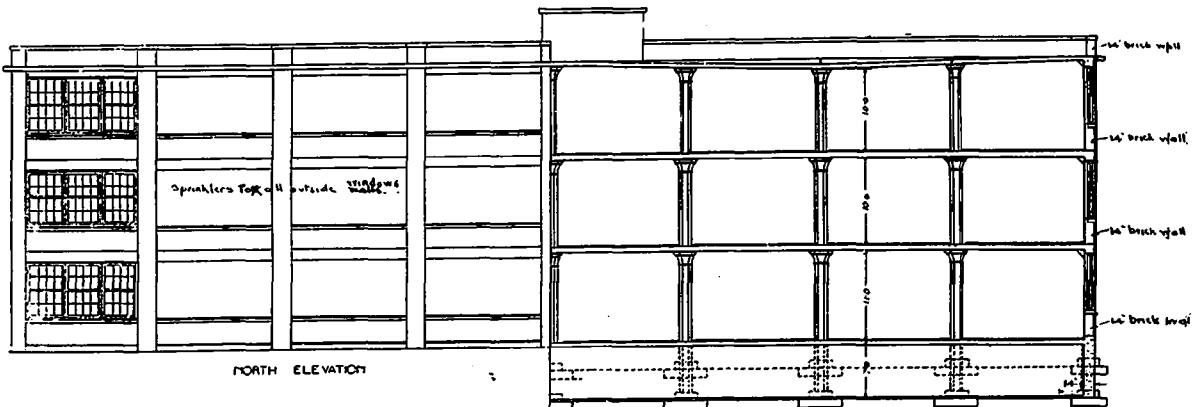
The column rods and rods for the exterior beams were bent by a very simple bending machine of the lever type, while the mushroom heads were bent by hand to templates formed by driving wooden posts into the ground along the lines of the required circle. The hooping and tying of column rods was all done after being placed in position in the work. The floor reinforcement required no further attention than a light tie with annealed wire at two points on the head, and little trouble was experienced in keeping all the reinforcement in its proper position.

CONCRETE.

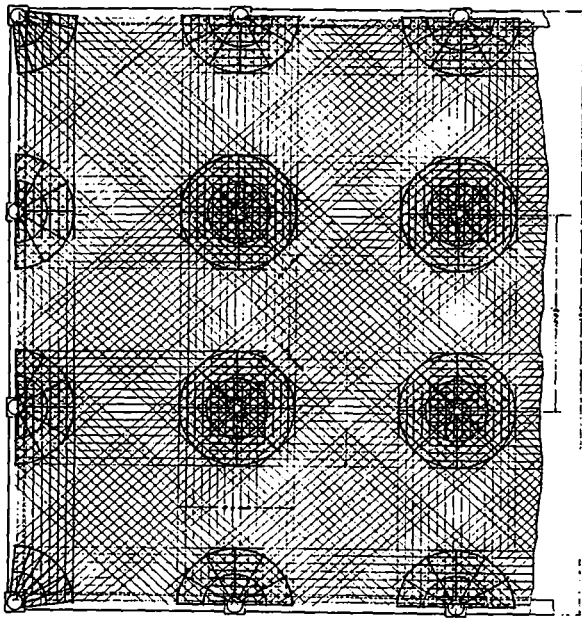
For all slabs, beams, columns and footings a 1:2:4 mixture was used, and for foundation and curtain walls, the mix was 1:3:5.

The sand was supplied by the York Sand & Gravel Co. The crushed limestone by the Rogers Supply Co., and the cement by the Hanover Portland Cement Co.

Two mixers were used on the work, one of the Ramsey type, steam driven, and a tilting mixer driven by gasoline engine. For hoisting the materials a single cage, two barrow elevator was used. This latter proved rather unsatisfactory, as the speed was too low to take the concrete away from the mixer. However, the whole frame work of the building, including columns and slabs was poured in a little less than six weeks. The curtain walls, which were originally intended to be of brick were later changed to concrete, and the wooden window frames and sash were set and fitted after the completion of the



SECTIONAL ELEVATION, CONCRETE FACTORY BUILDING OF A. A. BARTHELMES, TORONTO.



DETAIL OF FLOOR REINFORCEMENT, CONCRETE FACTORY BUILDING OF A. A. BARTHELMES, TORONTO.

masonry, provision having been made for same by means of spiking strips left in the columns and beams. The hardwood super-floor on each flat is railed to 2 x 3 in. spruce sleepers embedded in a three-inch cinder concrete laid on top of slab concrete.

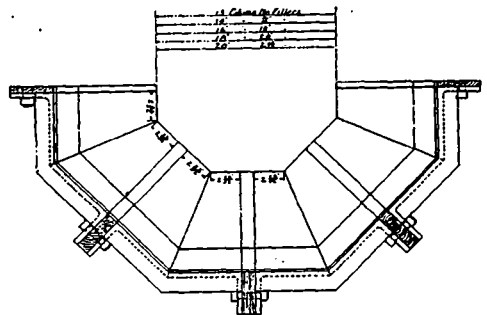
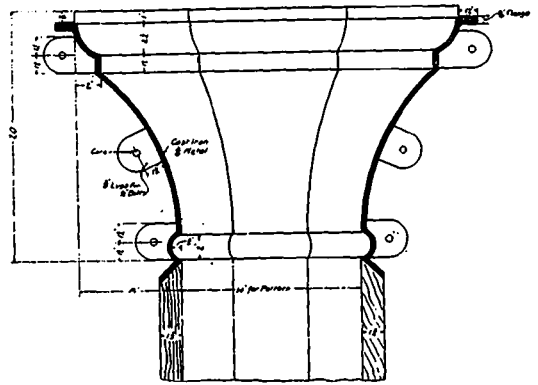
The brick pent house contains the elevator, reinforced concrete stairways, and two lavatories on each floor. Automatic closing fire doors guard the entrances to the elevator and stairways. Provision is made in the design for the support of an 8,000 gallon tank on top of the elevator tower, this tank to supply the sprinkler system, when installed.

The boiler and engine house is constructed with brick walls and a reinforced concrete roof of the ordinary slab and beam construction with one supporting column in the centre. Round rods of medium steel are used for both slab and beam construction. An underground tunnel between engine house and main building provides a passage for the main drive belt connecting with the main shaft which runs in a pit seven feet deep and twelve feet wide below the ground floor of the main building. The walls of this pit are 13 1-2 inch concrete, and the covering of 3 x 6 in. Georgia pine, laid on 8 x 10 in. beams.

TESTS.

As the mushroom system is an entirely new construc-

tion in Toronto it was agreed that the contractors were to test same for the satisfaction of the City Architect and the owner. The slab to be tested was selected by one of the city officials and measurements before loading were

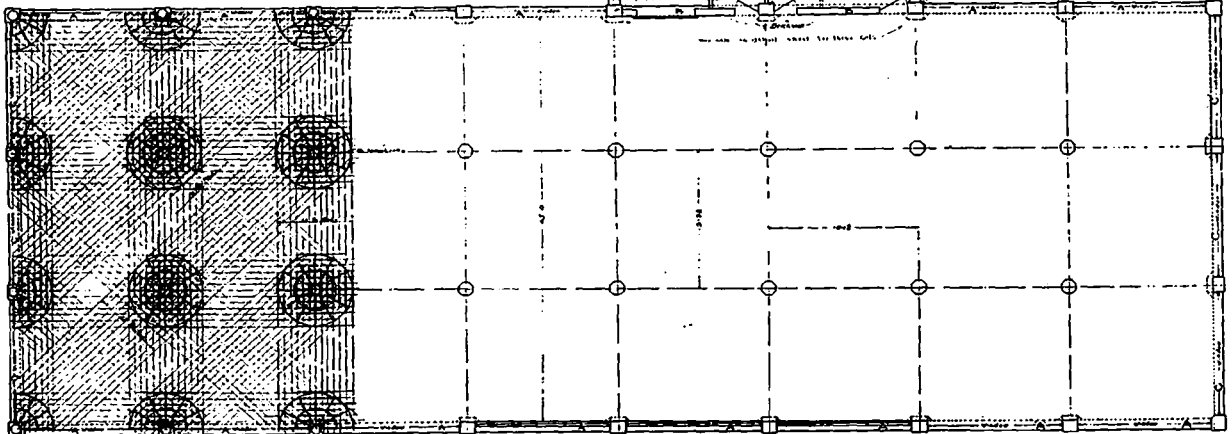
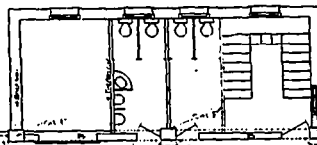


DETAIL OF COLUMN HEADS, CONCRETE FACTORY BUILDING OF A. A. BARTHELMES, TORONTO.

taken at the centre of the panel. The space between the four columns was then walled up with bags of cement and filled in with wet sand and gravel to a depth of four feet, thus obtaining a distributed load of at least 450 pounds per square foot over the entire surface of the panel or a total load of 110,000 pounds deflection under this loading was slightly less than 5-16 in. This load remained on the slab for about a day and one-half after which it was gradually removed. While there was still a load of 20,000 pounds on the slab the floor had regained its original position.

While these slabs were designed for a live load of 150 pounds per square foot, they sustained a

(Continued on page 69.)



TYPICAL FLOOR PLAN, CONCRETE FACTORY BUILDING OF A. A. BARTHELMES, TORONTO, SHOWING LOCATION OF COLUMNS AND METHOD OF FLOOR REINFORCING.



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

Vol. 2 Toronto, April, 1909 No. 6

Current Topics

THERE ARE AT PRESENT 530,764 square yards of bitulithic pavement in Ontario as compared with 1903, when the first bitulithic pavement was constructed in Toronto. Efforts are now being made in several places in the province where street improvements are in contemplation, to have this style of roadway adopted.

* * *

THE LARGEST ROOM IN THE WORLD under one roof, and unbroken by pillars, is at St. Petersburg. It is 620 feet long and 150 feet in breadth. By daylight it is used for military displays, and a battalion can completely manoeuvre in it. Twenty thousand wax tapers are required to light it. The roof of this structure is a single arch of iron, and it exhibits remarkable engineering skill in architecture.

* * *

A REPORT OF THE PRELIMINARY SURVEY of the projected route to Hudson Bay, as recently submitted to the Dominion Government, states that the railway could easily be built either to Fort Churchill or Port Nelson at a cost, including the construction of terminals and harbor work, of about \$17,000,000. The report also adds that a canal could be built along the Nelson River, which would enable ocean going vessels to enter Lake Winnipeg from Hudson Bay.

* * *

IT IS REPORTED that the transference of the interests of one of the largest lumber companies in Nova Scotia to an English Syndicate, (which deal it is said is about to be consummated) will insure the building of the long projected Nova Scotia Eastern Railway which will open up all the properties of the company. These various tracts are located at eight different points, seven east of Halifax Harbor and one west, near Yarmouth. It is also understood that the new company proposes to erect a large pulp mill, probably on Halifax Harbor.

LABOR TROUBLES in Winnipeg this year will in all probability be averted. The differences between the Builders' Exchange and the various building trades have been adjusted and all friction removed. While no agreements have been signed it is understood that an arrangement satisfactory to all has been reached. The scale of wages that will prevail this season, on the hour basis, is: Bricklayers and masons, 60c.; stone cutters, 60c.; plasterers, 50c.; plumbers, 35 to 50c.; carpenters, 35 to 40c.; electricians, 30 to 40c.; painters, 30 to 35c.; building laborers, 20 to 25c.; laborers, 17c.

* * *

A COMPARTMENT MAUSOLEUM to contain 500 crypts is something which a newly formed company in Hamilton has in project at the present time. The company proposes to put up a structure, having a frontage of 150 feet and a depth of 75 feet, at a cost of \$40,000. The exterior will be of reinforced concrete and the interior lined with marble or granite. Family compartments with as high as twelve crypts will be provided and there will also be a chapel in the place. If the matter of a site can be arranged for with the cemetery board, Hamilton, will have the first mausoleum of its kind ever erected in Canada.

* * *

A SYSTEM OF MOVING SIDEWALKS to be placed beneath the most crowded parts of the city, is one of the proposed improvements included in a big scheme which the public service commission of New York City has under contemplation, in an effort to cope with the transportation problem resulting from the fast increasing population. The various projects, some of which are already under way, will, it is estimated, necessitate an expenditure of \$500,000,000. Of this, \$400,000,000 will be used for tunnels and subways, and a fourth of the entire work will be in process of construction at the end of the year. The amount which will be required for the moving sidewalks is placed at \$80,000,000.

* * *

HARBOR FACILITIES AT KINGSTON, ONT., are to be greatly increased, according to plans which are at the present time in contemplation. In order to bring this about, it is proposed to remove the wooden bridge now crossing the Rideau River opposite Tete de Pont Barracks, and to erect a modern steel structure about one-third of a mile in length across the river at Belle Island, lying a half mile farther up the stream. This improvement will allow for additional dockage capable of accommodating some 200 more vessels. As it is estimated that each vessel harboring at this port means an average of \$1,000 for the city, Kingston will be directly benefited to the extent of perhaps a quarter of a million dollars per year.

* * *

AN UNUSUALLY ACTIVE BUILDING YEAR will be witnessed in Kingston, Jamaica, as the result of a settlement arrived at by representatives of British insurance companies and the agent of the Jamaica Policy Holders' Association, regarding the losses sustained in the fire which accompanied the earthquake of January 14, 1907. By terms of the adjustment, the companies will pay each member of the association 85 per cent. of the face value of his policy, and defray the cost of litigation. The claims of the policy holders outside of the association will also be settled on this basis, but without the payment of costs. The number of claimants is about 800, and the total amount to be paid by the companies is upward of \$3,000,000, exclusive of costs. While some creditable appearing business houses have been put up in the past year or two, the general rebuilding of the city has been delayed, awaiting the result of the litigation, the issue of which has been so satisfactory to the policy holders.

HYGIENIC HOUSE ACCOMMODATIONS for the poorer classes is a problem with which the municipal government of Buenos Ayres, the capital of Argentine, is grappling in a most effectual manner. Thirty houses have just been completed, and one hundred and seventy more are now in process of construction. These are designed and built as model dwellings for the more respectable and industrious of the working element, and each structure is equipped with the best sanitary appliances known to modern building science.

* * *

IN ALL PROBABILITY the city of Messina, recently devastated by earth-quake, will be reconstructed, the sentiment of the people being entirely in favor of such a course. Large sums have been spent on the harbor, which is excellent and too valuable in its situation to abandon. No definite plans have been made by the Government as yet, but it is generally understood that rebuilding will begin as soon as the bodies which are still among the fallen masonry have disintegrated sufficiently to allow of removing the rubbish. Work will not begin for several months. This will offer an excellent opportunity for fireproof and earthquake method of construction, and from present indication, the popular demand will be for steel frame and reinforced concrete types of buildings.

* * *

AN INGENIOUS DEVICE, by means of which switches on electric street car lines can be shifted without stopping the car, has lately been invented by Dante Bechi and Galileo Seranfi, two mechanics of Florence, Italy. This electric mechanical switch consists of a box containing an electrical apparatus hermetically closed, from which two wires project and connected with an upper contact. Inside the trolley there are two invisible contacts, which, through two wires, lead to two communicators placed on the platform. The switch needle under the manipulation of the motorman is brought in contact with the trolley wire some 10 or 15 yards before reaching the switch, and the course of the car is turned to the right or the left, as desired, without stopping the car. The apparatus is said to greatly improve the service by doing away with the time and trouble necessarily required at switching points. It is simple and practical, easily constructed, and can be readily attached without making any changes to the car. The first experiment recently made at Florence gave very satisfactory results.

* * *

THE OUTLOOK FOR THE CEMENT INDUSTRY in Japan at the present time is anything but encouraging according to one of the leading dailies of the country, published in Osaka, which, in reviewing the conditions under which the Japanese have tried to build up its cement business, observes that their greatest obstacles have not yet been overcome, and that the leading cement-manufacturing companies are going through fire and water in consequence of the depression of trade, and are doing everything possible to keep up the market. The demand for cement has become very inactive since May or June last, when the railway works were completed, and the market, which ruled at one time at \$2.50 to \$3 per barrel, has gone down to \$2, or even \$1.75, at which price contracts are accepted for shipment at Moji f.o.b. The circumstances of the companies, however, do not allow them to reduce the output precipitately, and they are continuing full operations. The stock in the go-downs of the companies is increasing day by day, with little demand, and the market is going down rapidly. The depression in business is expected to be worse in April or May. The South Manchurian Railway Company is known to hold a stock of 100,000 barrels.

THE ITALIAN GOVERNMENT, says a late report, has ordered 300,000 reinforced railway sleepers of a new design, in which the feature is an increase in the number of reinforcing bars and a reduced diameter of the sleepers. The cost is estimated at 5s. (\$1.20) each. The materials are Portland cement, sand in grains of two sizes, round iron bars, and braces of wood, the latter soaked with tar oil. The durability of these ties is of course still a matter of conjecture, but it is estimated that they should last from three to four times as long as those made of wood.

* * *

IN DISCUSSING the recently proposed plan to license architects and builders in the District of Columbia, Frank P. Milburn, a local architect, is reported by the Washington Post to have expressed the following views on the subject:

Architects should be practical builders and should have an exact and thorough knowledge of building. If a man who undertakes to erect a building, big or little, has not practical knowledge of building, there is a large chance that another such catastrophe as that which recently appalled Washington will occur. How is an architect to supervise the construction of a building he has designed with any justice to himself or to the owner if he is not thoroughly informed in regard to building?

There are too many so-called architects who are merely draftsmen, who can make a pretty picture, but who have not the practical knowledge of the building trade which makes them sure of themselves when it comes to erecting the building they have designed on paper. In my opinion, all architects should have practical training as builders, either before they take the course in the architectural schools or after they have finished that course. If the law required an architect to be a practical builder as well as a draftsman, there would be no falling down of buildings.

* * *

CEMENT MANUFACTURED IN CANADA in 1908 amounted to 3,495,961 barrels, or over 40 per cent. more than was produced in 1907, when the total quantity represented an output of 2,491,573 barrels. The total number of sales for the year also show an increase of over 7 per cent., the number of barrels marketed being 2,665,289, as compared with 2,436,093 barrels in 1907. At the present time there are twenty-three operating plants in the Dominion, fifteen of which are located in Ontario, three in Quebec, two in Alberta, and one each in Nova Scotia, British Columbia, and Manitoba. Twelve of these plants use marl and clay, ten use limestone and clay, and one blast furnace slag. Their total daily capacity in 1908 was 27,500 barrels, as compared with 14,300 barrels in the previous year, while the number of hands employed was 3,029, which exceeded the number engaged in 1907 (that of 1,786) by 1,243. Statistics of the amount of Portland cement consumed in Canada during the past five years are as follows:

Year.	Can. Barrels.	Imp. Barrels.	Total. Barrels.
1904.....	910,358	784,630	1,694,988
1905.....	1,346,548	917,558	2,264,106
1906.....	2,119,764	694,503	2,814,267
1907.....	2,436,093	672,630	3,108,720
1908.....	2,665,289	457,408	3,122,697

This table is of more than ordinary interest, as it not only reflects the steady growth of the cement making industry in Canada and the increasing use of this material in construction work, but of still more importance, it shows how the broadening popularity of the home product is gradually crowding out the foreign brands. In 1904 there was very little difference between the amounts of domestic and foreign cement used in Canada, while in the past year the figures show a vast disparity.

THE OLD ARCHITECT AND THE NEW.---With Few Exceptions Practitioners of To-Day Essentially of a Business Turn of Mind.---Age of Centralization and What It Portends.---Skilled Designer Becoming "Hireling" of Commercially Imbued Individuals.---Result of Wide Open Profession.---A Prophecy.

By F. W. FITZPATRICK

THE CONCEPTION of the average layman regarding the profession of architecture, its high standing in the community, the great erudition of its practitioners, and the remuneration received in the way of fees, is at the best a vaguely formed and misshapen one. Nothing is more corroborative of this than the number of recent magazine and newspaper articles, written by well-meaning but wrongly-informed lay individuals, which aided and abetted by lectures and technical school prospectuses, tend to create an entirely erroneous idea of the profession, its emoluments, its duties and its status.

Now, dear reader, do you wish to come behind the scenes and peek at architecture as she really is, without the glare of calciums and blare of the bass-drum? A glimpse behind the scenes, you know, often disillusionizes the glimser, but it makes him more critical, he expects more thereafter, and, perhaps, that in turn may lead up to better acting on the part of the actors, who, after all, gauge their work up or down to the standard established by that criticism.

In the first place, who are the architects, anyway? Who or what gives us that title, and when and where did we get it?

What follows will indirectly but fully answer the query. It makes a good opening or text to begin with, so we will let it stand.

THE ARCHITECT OF THE PAST.

When I was a boy, an architect was a somebody—a superior person. There was much mystery about his work; his word was law; the client was a small part of the performance. The architect designed his building and made a set of plans; his students, or "clarks," made a couple of copies, wonderfully and painfully rendered. He wrote a treatise called a specification, and other "clarks" wrote off a couple of copies therefrom. Then he visited the building in solemn state once a week or so and collected his five per cent. fee. He bothered not his head about the plumbing, the heating or any of the other few and primitive accessories that were then. Those things were attended to by specialists with whom he had nothing to do. He ranked with the judge, the leading lawyer, the eminent physician—several pegs higher in the social rack than the merely successful merchant or broker, and there was a bottomless chasm between him and the lowly builder or contractor.

He had studied and worked in the successive stages of apprentice, student, "clark" and assistant in some office for a dozen or more years, and had probably travelled some, perhaps even to the Far East. There were no more preliminary fastings and prayers for him to go through in those times than there are now before his "admission" to the full honors of the craft. Ours has ever been an open profession—wide open. When he got ready he went in, and that is all there was about it. And so it is to-day, only more so, for then few men entered the ranks or received many commissions who were not pretty well trained. It was not so popular a profession as it has grown to be of late. Yes, sometimes he competed for his work—it has always been the fashion—but he did so in a dignified way. But of competitions more anon.

Later his duties became more complex. He took in

the plumbing and other frills, his plans comprehended all there was about a building. Competition among builders grew more keen. He had to have more plans and specifications. Inventions of copying processes and the typewriter came to his aid, and he turned out copies of his work by the dozen—yes, by the hundred. He became more of an executive and less of an artist. The era of steel construction came in. At first he worked with an engineer; then he absorbed the latter and employed him. So many things were involved in architecture that he had to be satisfied with looking after the merest generalities, leaving all the details to his "subs." Later he actually forgot all about detail. Many even of our leading architects to-day could not design a cow-barn half decently, and as for the art of drawing, many could not earn a dollar a day at it.

THE ARCHITECT OF THE PRESENT.

Your architect has become a business man, pure and simple. Competition in his line has become, as in all else not yet in the trust, so very keen that there is no fun in it. He has to belong to boards of trade, coax the ward and other bosses, run with the machine, promote enterprises that need the construction of big buildings, be diplomatic and politic, work his friends and his wife's relatives and pull the social strings for all they are worth, and get his commissions by any means that a rather elastic, really business conscience may deem legitimate other than upon his merit as a designer, a skilled worker in the mistress, the grandest of all the fine arts.

He is and perforce, essentially a business man. I repeat, architecture is not any longer an art or even a profession; it is a business and is handled upon strictly commercial lines.

Of course, there are still master minds, comparatively great artists in our ranks, and some of them are leading architects. A very few are the "whole thing" in their offices and practice under their own names and alone, but they are so few as not to affect the proposition in the least that the really successful architect is a business man. There are many happy combinations of an artist and a commercial-social-expert, strong firms and able, but you will find, in nine cases out of ten, that the business end is the strong one, the senior partner the leading man—the "whole thing," indeed; the other is little better than a chief technical assistant or office man.

But by far the greater number of successful architects employ all their talent. These architects are attracted to the profession from other lines; they were contractors, material men, etc. Some were draftsmen, true, but unfit for the work, incapable of earning a decent living by it, so they "opened an office" of their own.

This, perhaps, seemingly acrid—whatever you may call it—was inspired by an article which, in naming two prominent societies of architects, says "that they have done much to make the position of an architect to-day higher than it ever was." It goes on to state that we are actuated by loftier motives and a nobler spirit to place our calling in an unassailable position. As a matter of fact, the societies referred to have done much to bring the architects a bit nearer each other, to impart to them so *esprit de corps* and to make the practice of the profession somewhat more uniform in appearance, at least; but I fear it is too late in the game. Perhaps am I a false

prophet, and perhaps am I only a kawing, croaking bird, "shrilly squeaking false alarms"; still, methinks there is the handwriting upon the wall! It seems very plain to me. Heaven grant I may not be a Daniel. I am well content to be only one of Belshazzar's Chaldean interpreters reading it not aright. But to me it spells in big letters that architecture as an independent profession is doomed!

COMMERCIALISM AND ITS INFLUENCE.

That spirit of commercialism that we have done so little to check, that we are powerless to check, and that so many of us have actually fostered, will be our undoing. Centralization is the order of the day. The carpenter and the stone mason of old have made way for the "general contractor," and the latter, passing through his chrysalid state, has been merged into the colossal "building company," with millions of capital, splendid executive talent and unequalled influence. When a big building is contemplated it is getting to be fashionable, policy and economy to give it to such a company to execute. The architect is a very secondary consideration, and though he gets a fat fee he is a very small fry about that building. The company uses his design—that is a matter of form—and builds it well, but to suit itself, for it deals directly with the owner. The architect is no longer the arbiter and supreme judge of all about that building. There have been cases where such a company actually named the architect, who was then appointed by the client. It is only a step more to his being employed directly by such a company. That has not been done outright simply because it would antagonize all the other architects, and they still have some strength.

But, mark my word, some day, and perhaps one not so very far off, the next step will be boldly taken. The architect will be relegated to the past. Those companies will be relegated to the past. Those companies will employ their own designers, the architect will be lost in the shuffle. You will state how much money you wish to invest, and those different companies—if they are still uncombined—will tell you how much building they will give you. They will submit designs made by their own employees, and the resulting structures will be just as artistic and well built as those of to-day. There will be as high a premium upon talent and skill as now, perhaps higher, but the possessors thereof will have changed hands; they will bow unto the company as their chief where they salaamed before to the architects. The latter, as middlemen, will pass away, or, at best, will be but memories—battered specimens of a once proud race.

Could anything have been done, or can anything be done now to prevent this impending dissolution? Is it not simply the steady march of evolution, progress? Have not other professions and trades passed away to make place for newer, better means of accomplishing certain ends? In how much or what is the profession to blame, if blame there be, for bringing about this condition? Go ask the American Institute, wiser men, social doctors; they may answer these and all other queries you may propound. I am but the young assistant come before you to diagnose the case, not to cure the disease nor to prepare the death certificate. I have told you what stage the malady had reached, describing it clearly, without the embroidery of technical terms or seeking to minimize its seriousness.

Go, get it cured, or let it run its course. *Vale!*

ARTISTIC TALENT AND BUSINESS ACUMEN.

You see, the two qualifications—that of being artistic and that of being a shrewd business man—are seldom if ever found in the same man. If they are at all, one or the other is bound to be the more developed and finally extinguish the other. In an office, among a lot of draftsmen, you will find one who is enthusiastic over art; he studies a lot, applies himself, is pushed ahead, for he is valuable and gets as high as \$10 a day. Another realizes

he has not the talents of the first but is shrewd enough to keep his eye on the main chance. He wastes no time studying, not he; he gets out among the people, hob-nobs with the contractors, is particularly attentive to the clients of his employer and impresses upon them how very important his services are upon their work. He figures out that with his meagre talents he can not become more than a "tracer" or "detail man" or a superintendent in that office, but he realizes that if he gets a good "job" to start in on he can become his own master and hire just as good talent as that of his confrere or that very same artistic man. So he wiggles around some clients of the office where he is at work, or, if over-conscientious, gets his prey on the outside, makes a lot of plans with the assistance of his talented office-mates during their spare time, pays the latter or not, as the case may be, and launches out into practice, the embryo of a successful architect!

Some States have some form or other of license for architects. With us it is not as in law or medicine, or even with dentists, drug clerks or parsons. All these go through some form of examination or receive some sort of permission from some one in authority to ply their "calling." With us, as soon as a man can afford \$3 or more for a sign with the magic word "Architect" upon it, he is thenceforth and forever an architect in fact; he has "called" himself, as it were, and is as much entitled to that honored title as was a Richardson, a Hunt, or an Atwood—in the eyes of the law and of the dear, discriminating public. Any one of you, my readers, male or female, regardless of color or previous conditions of servitude, may put up such a sign, and no one, in most places may say him "nay."

FATE OF SKILLED DESIGNER.

You may ask "What becomes of the skilled designer, the artistic one? Is he not bound to come out on top finally?" No, gentle reader, he will not come out on top. He early realizes the futility of bucking against his shrewd brother, so he works for him. He becomes a sort of machine. Disgusted with what he thinks the injustice of the world and, blessed with a highly strung, nervous temperament, some drink themselves into early graves cr—smoke cigarettes. Others drift into other and perhaps better-paid lines of design—decorators, furniture, etc., and still others drift into heaven only knows what. I have met good, high-class draftsmen herding cattle, stoking engines and collecting bills. Every twenty years or so, when our periodical hard times come upon us, they scatter, do these clever fellows, to the four corners of the globe, and you can never gather them all back into the fold after the storm.

So, then, the average successful practitioner is, let us call him, an employer of skilled labor, a sort of middleman. Now, for a professional man, is that not a strangely anomalous condition? What would you think of the eminent physician and of the learned legal luminary if they were introduced to you and stayed with you and "jollied" you to the point of your employing them as your professional advisers, only to find, when you were sick, that the former sent around an assistant to diagnose your case, another perhaps verdant youth to practice upon you, and a third adolescent to get the data necessary for the death certificate; or of the legal luminary, should you get into trouble, if he sent you a young assistant to put the facts in the case together ready for a second to prepare a brief for a third youth to plead before the jury in the name of and for the great man who was, meanwhile, chasing other prospective clients and growling at the aforementioned assistants for putting so very much time on your case?

Is it an overdrawn picture? Well, there is your average architect. It may indeed fit some of the pre-eminently successful ones. I grant you it is not flattering or attractive.

A RELIABLE CONTRACT.---The True Basis Upon Which Every Building Contract Should be Framed.---Uniform Method of Extracting and Calculating Quantities Essential.---By W. M. Brown, C.E.

TO THE MINDS of many contractors the question often arises, "Why are so many tenders rejected?" To answer this query by indicating some points that may discover the cause, and suggesting others that may be helpful to contractors in making out their tenders, so as to minimize the chances of rejection, is the aim of this article.

The general ground for the rejection of tenders is because that they are all too high. Yet the judgment given is sometimes very erroneous, because of no proper basis to arrive at this conclusion. Owners expect to have a certain amount of work done for a limited amount of expenditure, and if the tenders returned exceed the limit (notwithstanding that the tenders, according to plans and specifications, have been carefully and reasonably prepared), they are nevertheless rejected upon the ground of being too high. The fault in such cases does not rest upon the contractors when they have returned carefully calculated and prepared tenders. But discrepancies may arise on the part of the contractor being incapable of forming a proper estimate.

This leads us to formulate what may be termed "a reliable contract." The first element to be considered is a uniform method of extracting the quantities from the plans and calculating the same, also pricing each item at current rates. When this procedure is adopted a reliable tender may be formed. But when each contractor adopts a method of his own, different from the others competing, it is natural to expect that there will be a disparity in the amounts (often very great in extensive contracts) that is very conflicting to the owner.

The great necessity, in the first place, is to have an uniform and well-wrought-out system of measurement, with well-defined rules for each class of work, and having thoroughly trained professional men to measure the plans and prepare accurate schedules of quantities, which are supplied to each contractor tendering. When each item in the schedules is priced at current rates, and correctly calculated, then there should be very little difference between the amounts given in the tenders sent in. At any rate, there will be the least chance of all the tenders being rejected, which sometimes occurs. When such an accurate and reliable method is not at hand, then the contractor has to do his best in extracting the quantities from the plans in order to arrive at the amount.

The methods of "cubing" and "squaring" are not reliable in every case, so that a better plan is to take off as much detail as possible, which shall give him a basis upon which to price the time and materials, labor to be expended, and percentage of profit required for each item. When this is intelligently and correctly done, then he may come very close to his competitors. But whenever "guess-work" is resorted to, then financial disaster may follow in its train. The cost of materials, the time and labor expended on same, and the percentage of profit required, are the most important factors which compose the true basis of every well-constructed contract. But in cases where it is impossible to execute the work at any prescribed amount, then no true basis can be established for the carrying out of the contract, except at a loss to the contractor. Many contractors, however, compete under such circumstances, which is not only prejudicial to their own interests and that of the owner, but also to the others competing, and to the trade in general.

A contract may be drawn up that seemingly has all the elements of a true basis, and yet either of the parties to the contract may agree to certain alterations which may not produce what may be termed "a first-class" job. Thus an architect may allow a certain material to be used that

is inferior in quality to that specified for the purpose required, and yet no apparent breach is made, so long as the substitution is sanctioned by the owner. But whenever this is done unknown to the owner, and against his wishes, it constitutes a breach in the carrying out of the terms of contract, which might lead to litigation.

A contract founded on a true basis is one in which there exists between the contractor and owner no ambiguity as to the meaning of the written terms of the specification and general contract, and to the details contained therein regarding the materials, their quality and durability, and to the time and labor expended in the execution and finish of the completed work. This means that the element of conformity to terms must have an important place in the basis of every thoroughly constructed schedule of contract. Without this the whole fabric of contract building would fall and leave nothing but disastrous results to many victims.

The contract terms must be so stated and minutely described that only one meaning can be placed upon them. The question of expenditure does not necessarily enter into the "true basis" of a contract. Thus the error occurs frequently of rejecting all offers, because they are seemingly too high. This in many cases is the result of the standard put upon the amount of work expected by the owner, because of the limited capital at his disposal. But if the owner is content to accept inferior material and workmanship in the construction of his building, and specifies this accurately in his specification and contract, then he may legitimately carry out his ideas upon a true basis of contract. Another reason why so many tenders are rejected, is because no details of prices are given for the different items required in the building, but only a lump sum offer, however large the amount. This is a greatly mistaken method to adopt, especially in extensive contracts.

The chief characteristic feature, therefore, of a "reliable contract," consists more of a "moral" nature than of a "materialistic" one, and if this were attended to and thoroughly performed, then there would be fewer disputes and less cause for litigation.

AN AUTOMATIC TRAIN STOP, designed to shut off steam and apply the vacuum brake without the assistance of the engineer or driver, has been adopted, it is said, by the Lancashire and Yorkshire Railway, England. The stop is worked by the signalman, or by means of an inclined plane between the rails. So long as the signal remains at "danger" the inclined plane is raised so as to come in contact with a device beneath the engine, connecting with the steam regulator, which it closes, and applies the brakes throughout the train.

NEW ZEALAND SHOULD BE A NATURAL MARKET for the surplus production of British Columbia cement mills, according to a communication recently received by the Department of Trade and Commerce from Trade Commissioner Larke, in which he comments upon a Canadian newspaper statement that the output of the cement plants in that province would exceed the demand if operated throughout the entire year. There is a preferential duty of 2s. per barrel in favor of cement made in Canada, as well as in Great Britain. At the present time, nearly the whole of New Zealand's importation come from the United Kingdom, the importation in 1907 amounting to 223,037 barrels. The difficulty confronting the trade from Canada is the higher cost of production and the higher freight charged. It is possible, adds Mr. Larke, that the facilities of the British Columbia mills may offset the cheaper labor conditions of other countries. The geographical location, too, ought to facilitate a low rate of freight, and it may be possible that, under the new arrangement of the steamship lines, freight sufficiently low can be had, to advantageously ship to the New Zealand market and keep the mills operating all the year round.



ATTRACTIVE TWO FAMILY DWELLING, BALMY BEACH, TORONTO. OWNED BY DR. J. W. ROWAN. MR. CHAS. F. WAGNER, ARCHITECT.



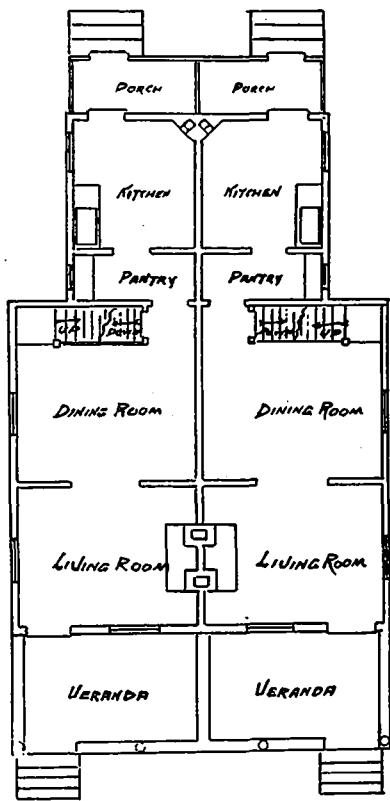
VIEW SHOWING SIMPLE AND EFFECTIVE TREATMENT OF END WALLS. TWO FAMILY DWELLING, BALMY BEACH, TORONTO. MR. CHAS. F. WAGNER, ARCHITECT.

A MODERN TWO-FAMILY DWELLING.---Exterior Treatment Simple but Effective.---Interior Direct in Arrangement.---Planned for Families of Three or Four Persons.---Design Could be Reproduced in Brick or Cement Stucco as a Residence of the Detached Type. . .

THESE IS AN ELEMENT of the nondescript in the domestic architecture of to-day, and there is also an element which consists of the combining of styles which has resulted in some radical departures in the matter of house design. Here and there one sees a home so decidedly modern as to not admit of any association with the more accepted styles, and again a combination of the English domestic and gambrel roof or some similar adaptation, that is as unique in treatment and it is satisfactory in general appearance.

The former has perhaps been too recently evolved to be known as a particular type, while the latter, owing to its mixed character, has not as yet been given a place in architectural nomenclature. In one is an evidence of a desire to originate or create, in the other an effort to attain a greater degree of individuality by giving a new expression to borrowed ideas.

While both perhaps leave room in certain respects, for criticism, they have nevertheless made progress in the architectural development of residential work, and in the homes built within the past few years there is a welcome



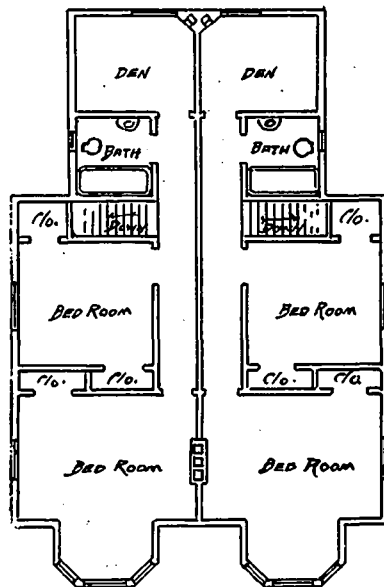
GROUND FLOOR PLAN, TWO FAMILY DWELLING, BALMY BEACH, TORONTO. MR. CHAS. F. WAGNER, ARCHITECT.

change from the row upon row of narrow, grille bedecked, poorly arranged gabled houses (productions of the builder more than the architect) which so characterized certain sections of our residential districts a decade or so back.

As to cost, despite the advance in the price of building materials, the expense of the erection of a house at

the present time, cannot be said to be proportionately greater than it was some twelve or fifteen years ago.

Nowadays, the basement is excavated the full length of the house, instead of only the portion under the kitchen, and the cellar floor is laid in cement. Then there is the plumbing, which is more extensive and better in character, and the heating apparatus, which has come to be regarded as an essential part of the necessary equipment. Again, we find the brick of a better quality, finer texture, and in a greater variety, the lumber more select, the mill work of a higher grade, the interior finish with more tone, the fireplace and mantelpiece a customary thing, the windows moving by weight and better fitted



UPPER FLOOR PLAN, TWO FAMILY DWELLING, BALMY BEACH, TORONTO. MR. CHAS. F. WAGNER, ARCHITECT.

to their frames, and numberless other considerations, all of which contribute to make a home what it should be, attractive, comfortable, and liveable.

In fact, considering the general treatment, the quality of materials, the better character of workmanship, the general arrangement and improved sanitation, perhaps a better equivalent for the investment in house building is now shown than at any time ever before.

Illustrated herewith is something in the way of a dwelling structure that is particularly interesting in that, while it is of frame construction and planned for two families, the exterior design would readily permit of its being reproduced in brick and stone or cement stucco, as a residence of the detached type.

Its characteristic exterior features are a low projecting roof with corbelled eaves, effectively designed dormers, and an inviting veranda of spacious dimensions. The treatment in general shows a strong modern influence and a pleasing deviation from the ordinary run of semi-detached or two family dwellings.

The clapboards are of rough sawed pine, laid on matched hemlock, and stained brown, a color which, with the white painted doors and windows and the mottled

(Continued on page 69.)

THE EARL GREY SCHOOL, MONTREAL.---One of the Two New Structures Erected for the Protestant School Board.---Exterior Lines Simple and Dignified.---Contains Nine Class Rooms, with Wide Corridors and Five Entrances.---Fire-proof in Construction. . . .

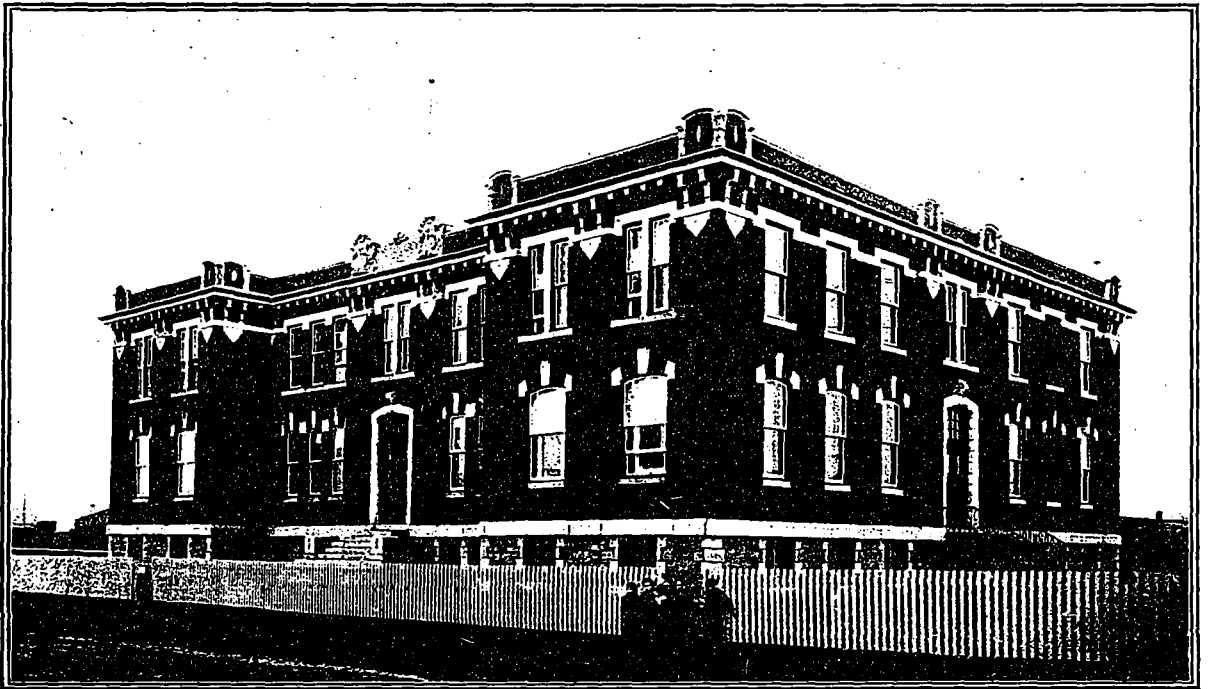
THE DEMAND for greater class-room facilities and more modernly constructed school buildings in Montreal, has recently resulted in the erection of two handsome substantial structures for the Protestant Board of School Commissioners of that city. One of these is the Earl Grey School, Amherst street, St. Denis Ward, and the other is the Sarah Maxwell School, Prefontaine street, Hochelaga Ward. Both buildings are identical in plan and design, and both are representative of Canadian architectural ability. These buildings have a frontage of 100 feet, by a depth of 70 feet, and are two storeys and basement in height, each containing nine class rooms, with play rooms and assembly halls in the basement.

In construction, they are fireproof throughout, being built of stone, brick and steel, with terra cotta and cement partitions and floors.

As regards plumbing, the lavatories are fitted with the latest improved porcelain urinals and "Naturol" self-flushing closet.

From the exterior view and floor plans of the Earl Grey School shown in the accompanying illustration, a comprehensive idea as to the general character and layout of both buildings is obtained.

The architectural treatment, worked out in an agreeable color scheme of red brick and light grey stone, has produced a building which fittingly bespeaks its purpose in simple lines and dignified proportions. Its breadth of character is accentuated by a simple dentiled cornice at the base of the low running parapet, and the whole tone is strengthened by the judiciously detailed stone work at the top of the pilasters. The centre of the building is recessed at both the front and the rear, while in the parapet over the main entrance is a vigorously sculptured



THE EARL GREY SCHOOL, MONTREAL, SHOWING THE DETAIL OF CORNICE AND STONE WORK. DESIGNED BY ARCHITECT A. F. DUNLOP, R.C.A., I.A.C.

Every care has been taken to have the interior arranged along the most hygienic and safe lines. The corridors are wide and well lighted and ventilated, the stairways are fireproof and have been advantageously placed, only one turn is necessary in either going to or coming from the second floor, and there are five well located entrances or exits on the ground floor, with all doors opening outward.

The heating and ventilation is along the most modern and approved lines. Twin hot water boilers furnish direct heat to all parts of the building, while a steam boiler entirely separate from the heating apparatus, is used for ventilating purposes. The fresh air is tempered by a steam coil and distributed throughout the building by fans driven by electric motors, the foul air being expelled at regular intervals by the same means.

piece of stone work having a plain centre on which is carved the name of the school.

The interior lay-out has been particularly well worked out, especially so in the corridor and stair hall arrangement. The stairways have been advantageously placed on either side of the class rooms at the centre in the rear, in juxtaposition with the two side and rear entrances which permits of the emptying of the class rooms in case of emergency, in an expeditious and satisfactory manner.

Three class rooms are located on the ground floor, while the balance of the space is taken up with the principal's office, teachers' accommodations, sick-room and storage facilities. The principal's office is in the left-hand wing, to the front of the building, and the teachers' waiting room and division room, are on either side of the main entrance.

The rear portion of the building at the outer extremes of the stair halls on both floors is utilized advantageously for store-rooms, sick-rooms and lavatory purposes, while the intervening space between the main rooms is well employed for use as wardrobes.

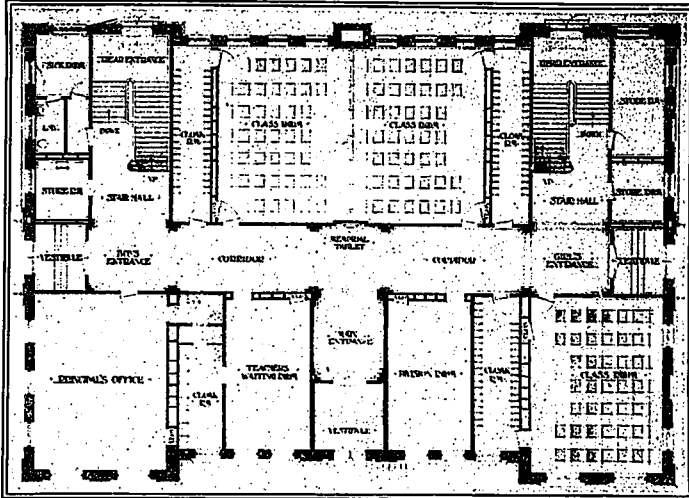
The second floor is similar in layout to that of the first, with the exception of three additional class rooms which occupy the front portion, and a map room which

At the back of the dining room is the stairway leading to the second floor, and immediately underneath are the steps by which the basement is reached. A short passage connects the dining room with the pantry, directly off which is the kitchen with a back porch opening onto the garden at the rear.

Upstairs the arrangement of the rooms is also economically worked out. There are two good sized bedrooms with built-in closets (the room to the front having an alcove formed by the dormer projection), a bathroom, and a den. The two last rooms are situated at the rear of the stairway, immediately over the kitchen.

This house, which is the property of Dr. J. W. Rowan, Toronto, cost complete, with the exception of the furnaces, which were \$148 extra, \$2,650. It was designed by Architect Chas. F. Wagner, Toronto, and is located at Balmy Beach, near the foot of Balsam Ave. The cost as apportioned according to each branch of the work, was as follows:

Brick work	\$ 350.
Carpenter work	1,458
Galvanized iron and plumbing	432
Plastering	310
Painting	100



GROUND FLOOR PLAN, EARL GREY SCHOOL, MONTREAL, SHOWING THE LOCATION OF THE FIVE ENTRANCES, PRINCIPAL ROOM, AND TEACHERS' QUARTERS. A. F. DUNLOP, R.C.A., I.A.C., ARCHITECT.

takes up the narrow space between the centre class room at the front and the cloak room to its right.

All seats in the different class rooms are arranged so that light is diffused from windows placed on left-hand side of the scholars. At the rear, in the centre of the building, and opening off both class rooms is an iron balcony and stairway for use in event of an emergency.

Both the Earl Grey School and the Sarah Maxwell School were erected after plans by, and under the supervision of Architect A. F. Dunlop, R.C.A., I.A.C. They stand on spacious grounds, and have been so planned as to permit of future extension without detracting from their design or arrangement.

A MODERN TWO-FAMILY DWELLING ---Continued from Page 67.

green stain of the shingle roof, combines to make the exterior exceedingly striking and pleasing in appearance.

At each end of the house, above the clapboards which extend up to a line on a level with the roof of the porch, the wall is finished with stucco panels of a buff tone and timber work stained a dark green, in harmony with the shingle ends of the gables. This treatment is further enhanced by small but effective windows which have been well placed.

The interior of the house is laid out in a simple and direct manner, both parts of the house being identical in plan. On the first floor the living room, dining room, pantry and kitchen, take up in the most available manner, the limited floor space. All walls and ceilings are of two coat plaster smoothly surfaced, and the woodwork is painted white with an enameled finish. In the living room is a large red brick fireplace, which affords a nook for a cosy corner on either side, while connecting this room with the dining room is a large square arch opening.

NEW BARTHELMES BUILDING.---

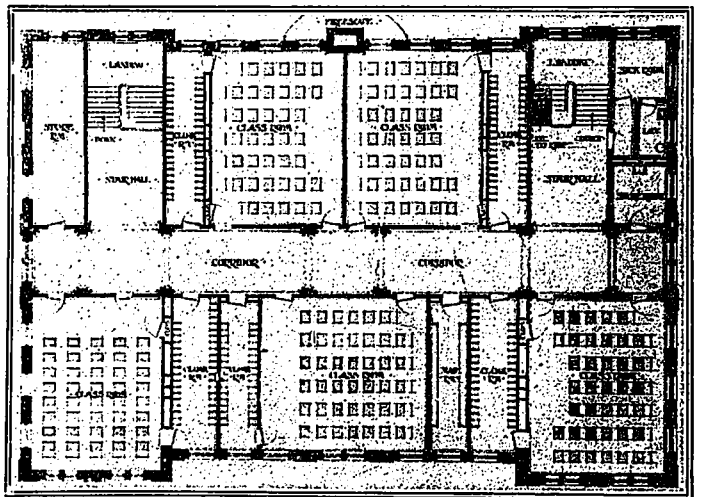
Continued from Page 60.

load equivalent to three times the maximum live load, which they will at any time be called upon to carry without the slightest signs of injury in any shape.

It is claimed that the advantages of this type of construction are increased head room, a maximum degree of interior lighting and economy in construction.

The Barthelmes building was designed by and erected under the supervision of Clarke & Monds, engineers and contractors, 36 Toronto Street, Toronto.

ARCHITECT JOSEPH VENNE, Montreal, will remove May 1st from his present address, 402 Plessis, to



SECOND FLOOR PLAN, EARL GREY SCHOOL, MONTREAL, SHOWING THE LOCATION OF THE UPPER CLASS ROOMS, CLOAK ROOMS AND STORE ROOMS. A. F. DUNLOP, R.C.A., I.A.C., ARCHITECT.

No. 5 Beaver Hall Square, where he has engaged a suite of offices. Mr. Venne will be pleased to receive manufacturer's catalogues and samples at his new address.

DESIGN AND TESTING OF REINFORCED CONCRETE BEAMS.---Relation of Theory and Practice in Reinforced Concrete Construction.---Simple Method of Calculation Most Practicable.---Interesting Paper Delivered Before C.C.C.A. Convention by Mr. E. Brown, Associate Professor of Applied Mechanics, McGill University.

THE REMARKABLE and rapid development in the applications of reinforced concrete construction in recent years has, I venture to say, been the most striking feature of the ever widening field of operations of the engineer. There is scarcely any branch of construction work in which the use of concrete in one form or another does not play an important part: and to realize the enormous developments which have taken place we have only to look around as we pass through the business streets of our cities, visit our factory districts, our harbours and the places where the commerce of the country is carried on. Buildings and bridges of all sizes, and concrete arches of considerable span have been erected, and much attention has been devoted to the question of producing an attractive form and finish to the exterior of building surfaces. Our water power resources are developed by the use of reinforced concrete dams, our water supplies are brought to our cities in concrete conduits, and possibly the only field of engineering activity into which this form of construction has not yet entered is that of the navigation of the air.

This convention of cement and concrete users, and the excellent exhibition of appliances and materials used in concrete construction, form in themselves a remarkable testimony to the rapidity with which work of this class has established itself as a marked feature in the development of the trade and commerce of this Dominion; and it would be a very difficult task, and one quite beyond my powers, to attempt to estimate the extent of the financial interests which in one form or another are bound up with the trades represented in your exhibition. So rapid has been the development both in the magnitude of actual undertakings and in the variety in their utility, that at the present time reinforced concrete constructors can point to an amazingly large accumulation of evidence of progress of a character which cannot be gainsaid; and the former attitude of criticism, or perhaps I should say of very qualified approbation of many engineers, eminently successful in older forms of construction, has given place to one of admiration and congratulation on what has been done. Personally I am a staunch believer in the adaptability of reinforced concrete construction to the engineering problems of the day; but I hold just as strongly the belief that having passed through an era of unparalleled development in the use of this form of construction, it is desirable to take stock of our position, and to try to realize what is the situation in which we find ourselves as the outcome of our varied construction experiences in actual work, and our experimental tests of a more or less refined character. Hence it is that I am speaking to-day on the design and testing of reinforced concrete beams.

A correct understanding of the theory of the strength of beams should form the most important part of any course of study which is intended to place a student in possession of sound fundamental ideas with which he may attack problems on the strength of materials arising in the every day experience of the engineer. It was not very surprising, therefore, that as reinforced concrete construction came to be an increasingly important factor in engineering work, our knowledge of its properties should have been developed from the results of tests on reinforced beams. The enthusiasm of the actual constructor was only equalled by the zeal of the experimentalist, and the output of formulæ dealing with the question was of dimensions quite in keeping with that

of actual construction work achieved. The formulæ so supplied were promptly incorporated in the handbooks issued by the numerous business firms engaged in construction work, and I feel confident that in speaking before a convention of business men I shall have support in the assertion that these formulæ were of a length and complexity which had a dampening effect upon the zeal of many a man engaged in design, who, possessing only a knowledge of the elements of the strength of materials, essayed to fathom their meaning.

In the paper which I submitted to the Canadian Society of Civil Engineers in October last I expressed the strong conviction that such elaboration was both unnecessary and unjustifiable, and calculated to convey the impression that the science of reinforced concrete construction is an extremely exact one. It is certainly not more exact if as exact as, let us say, the science of bridge building, and in the latter a little reflection will show that in many instances we deliberately adopt simple methods of calculation which, while they depart a little from the more complex methods indicated by pure theoretical reasoning, represent so closely the results of practical tests *wherewith the precise conditions of theory do not exist*, that their existence is doubly justified (1) on account of agreement with experimental fact, (2) on account of simplicity. For example, we are all familiar with the fact that the safe unit stresses in steel columns in general riveted work can be represented very closely by a straight line law, and that we may be able to take the safe load per square inch as say

$$\left(16000 - 70 \frac{l}{r}\right) \text{ where } \frac{l}{r} = \frac{\text{length}}{\text{radius of gyration}}$$

of column. This is a great convenience in design, and the results of actual tests agree as closely with this simple formula as with the more elaborate formulæ representing more exactly the ideal theoretical conditions.

Again, in bridge design, the substitution of an equivalent uniform load for the regularly spaced wheel loads due to a line of freight or passenger cars, simplifies calculation enormously and gives a satisfactory design, although it does not represent actual loads. Bridge engineers are conscious of these and of other differences between the assumed and the actual conditions, but the simple and direct method of calculation is not discarded. It is in proper realization of these differences, and in the capacity of the designer to appreciate the extent of their influence, that reliance must be placed. A survey of the development of our professional work generally will show that whenever, and in so far as, it has been possible to exalt any branch of that work to the rank of a science, the progress has been due to the gradual but certain development of a few simple fundamental ideas. No better instance of this can be found than that the growth of the science of electrical engineering has been sure and steady from the day when Faraday discovered that a closed coil of wire passed across a magnetic field so as to cut the lines of force, generated an electric current which deflected a magnetic needle.

When a theory for the strength of reinforced beams was required, there was ready to hand an established theory for beams of homogeneous materials, such as steel, and this was taken as the natural starting point for the theory of reinforced beams, such modifications being made as the physical properties of the materials demanded. It was assumed that in the reinforced beam

the elongation or compression of the various layers is proportional to their distance from a neutral plane, where there is no change of length. Modification is necessary to allow for the fact that the modulus of elasticity for steel is much higher than for concrete, the values being 30×10.6 lbs. p. sq. in. for steel and say 3×10.6 lbs. p. sq. in. for good rock concrete—a ratio of 10 to 1. This means that at a layer of concrete in compression at the same distance from the neutral plane as the steel on the tension side, the compression stress intensity in the concrete would only be one-tenth of that of the tension in the steel. Actually the steel is further from neutral plane than the furthest concrete layer, but the linear proportion holds. From this fact, along with the equality of total tension and compression, the neutral plane can be located theoretically. Sufficient steel may be put into the beam to carry all the tension, and the bending moment is then easily computed. This is the simplest and most direct analysis of the problem. It assumes a constant modulus of elasticity for concrete; it is a method which agrees closely with experimental results, and had it been pursued with undivided attention from the outset, supported as it can be by careful experiments of a suitable character, the criticisms I am about to make on the development of the elaborate formulæ with which all concrete users are familiar would have been unnecessary. It was, however, known that the modulus of elasticity of concrete in compression is a variable quantity—that the modulus for a rock concrete, for example, might be 3×10.6 lbs. p. sq. in. initially, diminishing to 1.5 or 2×10.6 lbs. p. sq. in., as the concrete reached its ultimate compressive strength. The law of variation of modulus was approximately parabolic. The engineer dearly loves a parabola. It is the one curve a college graduate remembers throughout his life. Here, then, was a factor which is absent from calculations on homogeneous beams, in which the modulus is constant through the whole range of elastic stress. Such modulus variations, amounting to perhaps 100 per cent. in a test carried to destruction were held by many (not by all) to necessitate a modification of the simple beam theory. Hence it came about that the results of many laboratory experiments were worked out by a method which, while praiseworthy in the sense that it took account of certain variations in the properties of concrete in compression, was in my judgment unwarrantable, except as a theoretical exercise in the beam theory, and unnecessary when viewed as an essential part of the computation of the safe moment of resistance of a reinforced beam.

I feel confident that many users of reinforced concrete must have turned gladly from the pages of elaborate formulæ which are incorporated both in text-books, and in the handbooks issued by the makers of patent steel bars, to the tabulated data which was added to show at a glance reasonable proportions for design. Frequently, indeed, were these tables the results, not of exact and refined calculations based on the formulæ preceding them, but rather the results of a common-sense appreciation of the utter inability of such formulæ, or indeed of any other formulæ, to express with any assigned and precise degree of accuracy the actual conditions, in a form of construction liable to variation from many sources, and into which the uncertain, but positive, effects of continuity enter to so great a degree. To illustrate this I quote from such a handbook from the paragraph preceding tables for the design of floor panels, which follows several pages of elaborate formulæ:—

FLOOR PANELS.

"The foregoing discussion applies to beams on knife edge supports. Rectangular beams when incorporated in floor panels will have just about twice the capacity given by the formula, and the following tables, I, to VI, are made on this basis.

"To give a scientific discussion of this is almost impossible. It is a matter of actual practical experience.

We can, however, see that it is reasonable to expect about such an increase. The haunches built down upon the lower flange of the supporting beams give a continuous girder action such as reduces the external bending moment one-third. Also the floor in adjacent panels produces an interior arching action, increasing the area of this compressive stress diagram about one-third, the effect of the two being to double the moment of resistance."

Similar remarks are applicable in some degree to reinforced work generally. Speaking broadly, this is an attitude towards the question to be commended, although I do not for a moment suggest that in this, or indeed in any other branch of engineering science, we ought to allow ourselves to remain in ignorance of effects which can be investigated. Such effects as were in the mind of the writer of the paragraph quoted are always present, and their influence can only be estimated in a general way, sufficiently closely, perhaps, but in no case exactly. Hence, on such grounds alone, I would discard any elaboration of theory or design, which results in very slight changes in essential matters, from proportions given by the simpler methods. We may theorise as much as we like, make allowance for this little variation and for that, but in the end we are face to face with a problem which admits of no such refinement either in design or in construction, and that being so, much so-called theory is paper theory. Its character is out of agreement with the realities of the problem, the extent to which the conditions assumed in the design are realised in the actual structure is uncertain, and in many ways, analysis, whether complex, or of the simplest character, is incapable of paying due regard to many of the conditions of practice or of work prepared for laboratory test.

Considering briefly the extent of the differences, without going into details of calculation here, I may say that assuming a beam 10 in. deep and with 1 per cent. reinforcement, the modulus of elasticity of concrete being taken as 3×10.6 lb. sq. in., the neutral surface would be 3 ft. 6 in. from the outermost compression layer if the constant modulus theory is used. If the usual allowance is made for variations in the value of the modulus of elasticity for concrete, the neutral surface would be about 3 ft. 9 in. from the outermost compression layer under normal working conditions assumed in design. The point of action of the resultant compressive force would be

$$\frac{3.6 = 1.2''}{3}$$

from the outermost compression layer in the former case, and $0.34 \times 3.9 = 1.32''$ from that layer in the latter case. The resultant compression force is therefore $(10-1.2) = 8.8''$ above the centre line of the steel if a constant modulus be assumed, and $(10-1.32) = 8.68''$ above the centre line when the modulus is taken to be variable. The product of the force in the steel and $8.8''$ or $8.68''$ as the case may be gives the bending moment which the beam can resist. The two theories therefore show results in the ratio of $\frac{8.68}{8.8}$, i.e. they differ

$$\frac{8.8}{8.68}$$

in the really essential feature of a design by about 1.4 per cent. The difference is variable for varying conditions, but in no case is it of a different order of magnitude from that given above. I have two main criticisms to offer on the refinement of calculation to which I have alluded:—

(1) That while it is an undoubted fact that the modulus of elasticity for concrete in compression does diminish as the intensity of compression is increased, neither the initial or final value of the modulus, nor the law of its variation, are definite for a given mixture of concrete, and that in any case the effects of its variations are small.

(2) That the conditions under which a beam is made and tested, whether in a laboratory or in the field, are

such that it is useless to attempt to prove the existence of such a small divergence between theories as is indicated (a) on the constant modulus theory. (b) on the variable modulus theory.

In support of these criticisms, I do not believe that careful experiment will establish any great uniformity of results either in the value of the modulus or in its variations, and that even if such values could be established for concrete made under ideally uniform conditions, it is doubtful whether they could be applied with confidence to concrete made in the field. Fig. 1 shows the variations in the amounts of compression recorded by extensometers on the faces of rock concrete cubes, 1-2-4 mix. All these cubes showed uniform failures, and if judged by compressive strength alone would be classed as sound and consistent. The ultimate strengths ranged from 2080 to 2486 lbs. p. sq. in. (ages 28 to 56 days). The values of E range from 6×10.6 downwards, according to which cube is taken, and which face of that cube, for the yielding shown in opposite faces of the same cube is very different. Comparison of cubes 2 and 3 is interesting. The compressive strength was the same in each—2250 lbs. per sq. inch. The modulus for cube 2 ranged from 0.632×10.6 lbs. per sq. inch down and modulus for cube 3 ranged from 4.33 to 10.6 lbs. per sq. inch down. Similar differences of yielding on the compression side of similar beams attaining nearly the same ultimate strengths have been noted, and later experiments made in the McGill laboratories upon cylindrical specimens very carefully prepared, have amply confirmed such variations—four extensometers placed in different positions round the cylinder giving markedly different yielding. I believe firmly that a good rock concrete will certainly attain a compressive strength of 2000 to 2500 lbs. per sq. inch at 30 days, and that it may be used confidently at a working stress of 600 to 700 lbs. per sq. inch. But I do not believe that it is in the power of anyone to mix a concrete, and be able to say beforehand that its initial modulus will be 3×10.6 lbs. per

does not express fully all the variable conditions of the problem, but if it is found sufficient, in expressing the results of careful experiment, and as a means of practical design, its use is in my opinion amply justified in view of all the conditions of the problem.

But granting that the concrete modulus may be variable as assumed, most experimenters have used only two extensometer measurements, one on the extreme compression side, and one on the steel centre line, and have arbitrarily drawn a straight line between the recorded strains, thus assuming the truth of the linear law of straining.

In my own experiments five extensometers were used, and the deformation curve was sometimes linear and

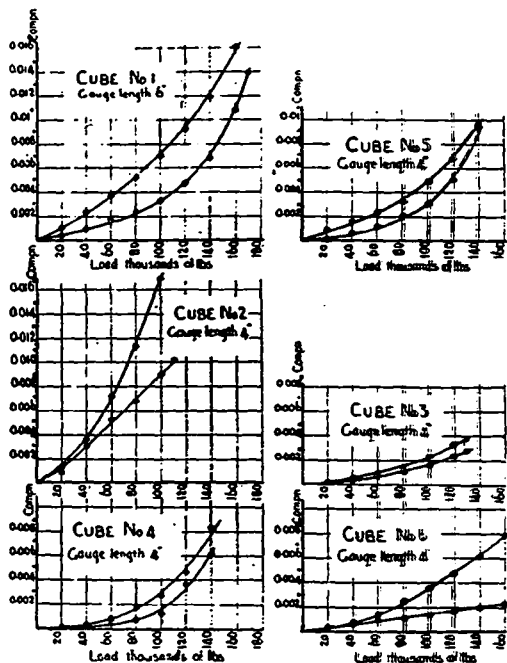
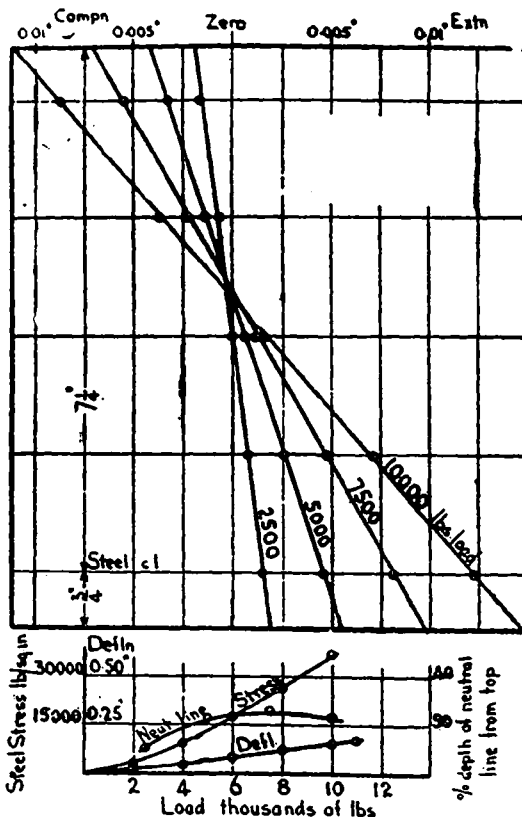


FIGURE 1.

sq. inch or any other figure, the law of variation parabolic, and the modulus at failure a predetermined value. That is to say, I do not believe that the theoretical values assigned in a variable modulus formula can even be known to exist in a beam which is being tested to prove the truth of deductions based on minute calculations, using those assigned values. The constant modulus formula likewise,



JOHNSON BEAM 6" wide, 8" deep, 6'0" c to c
 Reinforcement 3-1/2" rods = 0.54 sq. in = 125%
 Load at third points
 Total weight 314 lbs Steel 11.5 lbs.
 Max load 11000 lbs Age 49 days.

FIGURE 2.

sometimes slightly curved. Figures 2 and 3 show typical results of tests using five extensometers. In one case the strain curves are straight lines, in the other they are curved. These results show clearly that the fundamental assumption of either the constant or variable modulus theory, is not rigidly true. A straight line arbitrarily drawn between extreme points would frequently give a false location of the neutral plane differing considerably from the true one, the difference being far greater than that between the two theories we are considering. Hence the deductions from the variable modulus theory have generally been tested in an unsatisfactory manner. Quite apart from these criticisms on the minuteness of the points really involved in the elaborate formulae which have come into use, I do not think anyone familiar with reinforced concrete work would contend that it is possible to place rods in a beam to a degree of accuracy at all comparable with the small percentage

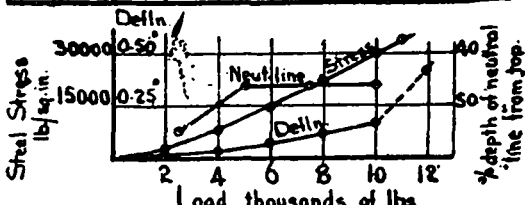
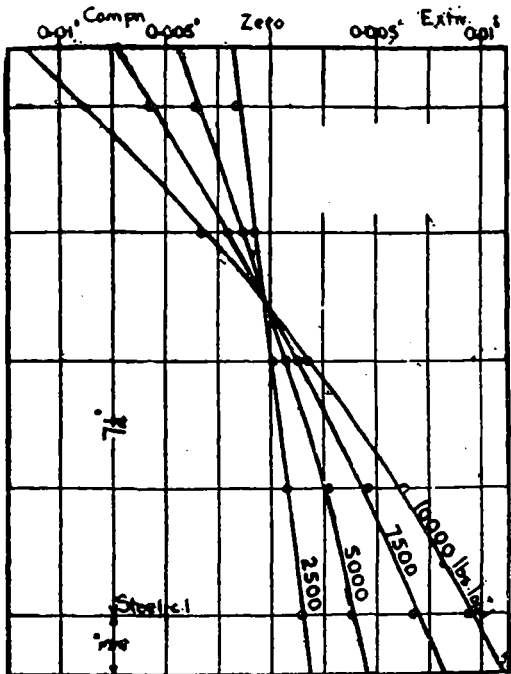
changes in design which we have considered. There are always present other conditions, whose influence on the ultimate strength is far more potent than that of variations in modulus. In fact any actual reinforced structure contains a number of elements liable to variation to a greater or lesser extent, some due to labor employed, others inherent in the materials used. The finished product, the result of the blending of these elements, is the only thing which can be tested finally. The exact posi-

typical of the results obtained in many other cases. Its important features may be summarized briefly:—

(1) *Percentage of load moment carried on concrete.*—Owing to the existence of tension on the concrete at the earlier stages of loading, a considerable proportion of the total load moment is carried by the concrete. At small loads this amounts to 75 per cent. of the total, while at loads of 4,000 to 8,000 lbs. i.e., over the range of possible working loads, the percentage varies from 60 to 40. As the concrete is destroyed in tension its load moment is transferred to the steel, but unless the concrete is cracked it carries a very considerable moment, and one of the main assumptions in design (a very necessary one, since concrete cannot be relied upon in tension) may be far from being actually realized.

(2) *Stress in the steel.*—If the steel is designed to carry all the tension at a stress of say 16,000 lbs. sq. in., it follows that if the concrete relieves it to the extent shown above, the steel stress will be far removed from 16,000 lbs. sq. in. For the range of load from 4,000 to 8,000 lbs. the actual steel stress varied from 4,000 to 12,000 lbs. sq. in., its value increasing rapidly as the concrete began to crack.

(3) *Position of Neutral Plane.*—If in calculating the position of the neutral plane by any theory, the existence of tension is ignored, the position obtained should correspond to that of a test at a stage of loading at which the concrete is cracked on the tension side i.e., to the upper part of the curve in the figure. These conditions, however, do not exist at working loads. The curve shows that the neutral plane is very much lower at small loads than at loads which crack the beam; and over the range of working loads, the initial and final positions of the neutral plane are connected by a sloping curve. The load moment on the concrete for very small loads has



KAHN BEAM 6" wide, 8" deep, 6'0" c to c
 Reinforcement 2- $\frac{1}{2}$ " rods = 0.50 sq. in. net = 1.15%
 Load at third points.
 Total weight 314 lbs. Steel 17.8 lbs.
 Max. load. 12000 lbs. Age 28 days.

FIGURE 3.

tion of the rods, so vital to the design, cannot be known unless the beam is broken up for examination after test. Happily, concrete construction failures are few and far between in practice, and there is absolutely no means of knowing to what precise degree of accuracy the conditions of the finished work approach those of design. We can, however, feel confident that with good supervision, and by the use of sound materials, the work will be capable of performing satisfactorily the duties for which it is designed; but, in the design, simplicity of method should be the guiding principle. All attempts to introduce trivial modifications of the essential features of design as determined by simple theories which have proved satisfactory in the case of homogeneous materials, and are also capable of expressing very closely the results of actual experiments on reinforced beams, should be discouraged.

Figure 4 shows the behavior of a beam through all the stages of loading up to its ultimate capacity, and is

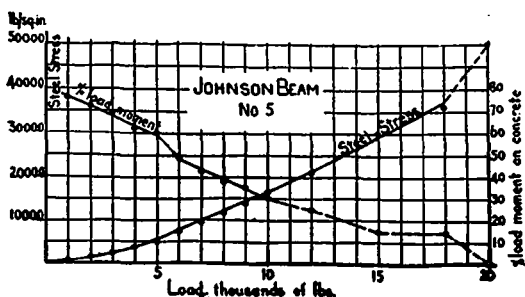
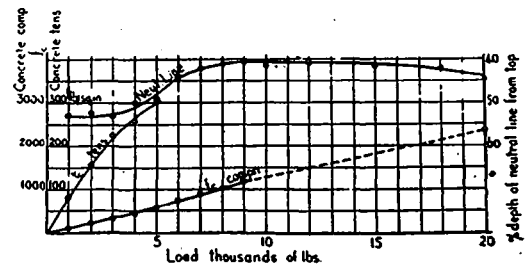


FIGURE 4.

been shown to be a large percentage of the total moment, but when the concrete is cracked the percentage is small. For the small loads the position of the neutral plane is determined largely by the tension on the concrete, while for large loads it is determined by the tension on the steel. Under working loads it would be impossible to say precisely what is the exact influence of each of these tensions. All we can know is that the neutral plane will probably be somewhere between the extreme positions as indicated above. These extreme values agree well with calculations which allow for or neglect concrete tension. In view of the uncertainty as to the precise proportion of load moment carried by the

concrete under actual conditions, which proportion would determine the location of the neutral plane, I do not see any justification for elaboration of circulation which results in changing the theoretical position of the neutral plane by perhaps 2 per cent. from its location as determined by simple theory.

It is interesting to note a gradually increasing tensile stress in the concrete up to 300 lbs. sq. in. at 5,000 lb. load. The first observed crack was at 6,000 lbs. and it will be seen that between these loads there is a decided break in the curve showing the percentage of load moment actually carried by the concrete, this break indicating a transference of tension from concrete to steel.

I may add that the results check in a remarkable way. The conditions at 5,000 lbs. load, for example, can be taken, when concrete tension exists to a great extent, and this tension can be regarded as being transferred entirely to the steel by the time the load reaches 20,000 lbs. The neutral line has moved meanwhile, but allowance is easily made for that, and for the increased steel stress due to the increased load. Adding these steel forces to that present at 5,000 lb. load, there results a steel stress of 47,400 lbs. per sq. inch. Extensometer readings on the steel line gave 50,000 lbs. per sq. in., a value rather higher than the yield point of the bars, which was about 45,500 lbs. per sq. inch. (Average of several tests.)

I will only say in conclusion, that in every calculation into which the modulus of elasticity of the concrete enters, very little change will be introduced into a design whether its value be taken to be 4×10.6 lbs. per sq. inch or 2×10.6 lbs. per sq. inch. There are always present other conditions such as I have shown in the last figure, none of which impair the safety of design, but which waste completely the small effects of modulus change. We may design for 16,000 lbs. per sq. inch on the steel, neglect concrete tension, and figure that the neutral line is 40 per cent. of the depth of the beam from the top. In reality the steel stress may be 8,000 or 10,000 lbs. per sq. inch, the concrete tension sufficient to carry 40 per cent. of the load, and the neutral line anywhere at all between 40 per cent. and 50 per cent. of the depth of the beam from the top. Let us recognize these hard facts, rid our text books and our design tables of formulae which in their apparent minute accuracy bear every mark of being applicable to predictions of the motion of a solar system or to some other branch of exact physics, rather than to such a problem as the design of reinforced concrete.

IDEAL SCHOOL CONSTRUCTION.---Provides for Future Additions.---Methods Followed in Chicago.

DWIGHT PERKINS, a prominent Chicago architect, recently addressed the Woman's Club of Minneapolis, on the all-important topic of school building construction, outlining the methods followed in Chicago. In all of the new buildings in Chicago the original plans contemplate the addition of more rooms, and the preservation of symmetry even though the building becomes eventually twice its original size, is thus attained.

No new buildings are going up that do not contain provision for an assembly room, gymnasium, domestic science and manual training rooms. Mr. Perkins stated that the Chicago board is no longer building basement rooms. A four-story building is regarded as preferable.

The assembly rooms of the newest buildings are on the ground floor and have an entrance through which the public can gain admission without any interference with school routine, and this feature makes them valuable for neighborhood meetings. Manual training rooms and domestic science rooms are provided for on the top floor in each of the newer buildings and toilet rooms are located on every floor instead of in the basement. Public library reading stations are the latest feature in the schools of

Chicago, and they have come to represent a most important adjunct to scholastic work.

The ideal classroom as described by Mr. Perkins, according to the *IMPROVEMENT BULLETIN*, measures $26\frac{1}{2}$ feet by 33 feet, and there should not be more than 40 pupils in it. There should be one-fourth as many square feet of glass for lighting the room as there are square feet in the floor, and there should be never less than 1,500 cubic feet of fresh air per pupil. The ideal school room floor had not yet been discovered in experiments made in Chicago, but it should be such that a hose could be turned on it to clean it and should be otherwise utilitarian.

The unilateral system of lighting is in use in all the new schools. It provides for the source of light coming either from the west or the east except in rooms specially equipped for drawing purposes, where the light is brought into the room from the north side. As the buildings are now being constructed, they stand the city of Chicago a cost of \$11,000 per room on the contract for 20-room schools, and about \$4,000 per room for equipment and completion. The cloak rooms in the new buildings are all located in the rear of the school rooms and are separated from the classroom by partitions, sliding vertically and provided with blackboards on the inner side. The cloaks of the children are not hung against the wall, but about 12 inches from the wall and from one another. Ventilation is maintained in the cloak rooms, the air being completely changed every ten minutes by the system in use, thereby lessening the chance of contagion by the circulation of the air and facilitating the drying of wet garments.

AN "ABSOLUTELY" FIRE-PROOF BUILDING.

NEW YORK CITY is now attempting the construction of an absolutely fireproof building, the work being in charge of the George A. Fuller Company, the structure having been designed by Architects Goldwin, Starrett & Van Vleck. One of the features of the new building, which will be a 17-story mercantile and office structure, now in course of construction at the corner of Fourth avenue and Seventeenth street, is the fire-resisting qualities of the particular type of construction employed. The idea is to reduce the fire risk to a minimum and meet to the fullest extent the requirements of the New York Board of Fire Underwriters and the New York Fire Insurance Exchange. This has been secured through the adoption of the skeleton steel frame type; that is, making use of steel columns, beams and girders, protected for all basement and outside columns in Portland cement mortar and for all interior columns by at least three inches of hollow terra cotta blocks laid in Portland cement mortar. The floor arches throughout are of hollow terra cotta blocks in Portland cement mortar, extending 10 inches below the soffit of the beams and all floors cement finished on a concrete filling.

The window sashes in the court walls and party walls will be of standard hollow metal type, glazed with wire plate glass, and the windows on the street fronts will be of Kalameined metal covered frames and sash. The stairways are to be constructed with extra heavy cast iron stringers and risers with sheet iron treads. All doors leading into stairways will be of the standard type with hinges, locks, etc., approved by the New York Fire Insurance Exchange.

The elevator shafts will be of standard construction inclosed in 6-inch terra cotta block partitions. A complete 50 per cent. sprinkler equipment with all necessary apparatus will be installed, the sprinkler pipes throughout the building being concealed. An automatic fire alarm service, a special building signal service and the watchman's clock system in each stair landing on every floor of the building are other features to be incorporated, looking to the protection of the structure against destruction by fire.

PROSPECTIVE CONSTRUCTION

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

Mills and Factories

Toronto.—The T. Eaton Company, Limited, will build a twelve-storey factory on Trinity Square, near Louisa street, at a cost of a quarter of a million dollars. Application has been made for a building permit.

Toronto.—Architect F. H. Herbert, 65 Adelaide street east, has prepared plans for a three-storey 32 by 120 foot factory to be erected on Clifford street for the Kindel Bed Co., Church street. It will be of mill construction, with brick walls and concrete foundation. An electric freight elevator and a sprinkler system will be installed.

Toronto.—Architect P. H. Finney, 43 Victoria street, has prepared plans for a two-storey planing mill to be erected on Osler avenue, near Royce avenue, for the Watt Milling Company. The building will be of brick construction, with concrete foundation, felt and gravel roof, pine floors, open plumbing, steam heating, combination lighting, skylights, electric bells, power and equipment. The structure will cost \$20,000.

Toronto.—The building and contents of William Keating, at the rear of 237 Lansdowne avenue, have been damaged by fire to the extent of approximately \$17,000. The machinery, which was valued at about \$8,000, has been practically destroyed. Insurance carried, \$11,000. The damages will be repaired at once.

Berlin, Ont.—Plans have been prepared for the new Ahrens Shoe Factory to be erected on Michael street within a short time. The building will be 114 feet in depth, exclusive of boiler room, which will be about 30 by 20 feet. Additional machinery will be installed.

Berlin, Ont.—Witte Bros & Co., 50-53 Columbia street, Newark, N.J., will erect a 30 by 70 foot concrete factory here at the corner of Shoemaker avenue and Mill street. The work of construction will not be commenced until March, 1910.

Hamilton, Ont.—Architect Herbert H. New, 600 Spectator Building, has prepared plans for a canning factory and office building to be erected in East Hamilton for Messrs. Wagstaffe, Limited. The building will be of mill construction, 137 by 97 feet, with tar and gravel roof, pine interior finish. A freight elevator will be installed. Estimated cost of structure, \$15,000.

Welland, Ont.—Mr. A. E. Fultz, of Lancaster, Ohio, is contemplating the erection of a window glass plant at this place. The factory would employ one hundred men.

Welland, Ont.—A Company to be known as the Welland Stove Works has been incorporated, with authorized capital of \$40,000, for the purpose of locating a plant on the G.T.R. and Wabash tracks, south of the Billings-Spencer tool works. The Company has been organized by Mr. Telford; the provisional directors are: E. A. Playfair, Buffalo; W. S. Davis, Ann Arbor,

Mich.; B. J. McCormick, H. A. Rose, Sr., and Hugh Rose.

Welland, Ont.—The Page-Hershey Company, Limited, has awarded to the Berlin Construction Company, of Berlin, Conn., the contract for the erection of large mills to be used in the manufacture of water and gas pipe.

Sarnia, Ont.—The Williams Organ Company, Chicago, proposes to establish a plant at this place.

Campbellford, Ont.—The Trent Valley Woolen Mills, of which Mr. S. J. Moore is manager, have asked the town council for a fixed assessment of \$50,000 for twenty years on their mill and property. The company proposes to erect a 73 by 173 foot addition to their plant, to employ 70 additional men.

London, Ont.—The Dennis Wire and Iron Works, London, have taken out a permit for the erection of a two-storey brick building on Dundas street.

Orillia, Ont.—The E. Long Manufacturing Company have made application to the Town Council for a free site and other concessions, in return for which they agree to build a new foundry, increase their present capacity fifty per cent., and make provision for boiler shop, steel foundry, etc., at a cost of \$30,000.

Shedden, Ont.—Mr. J. G. Stormes has purchased a site on the Union Road, on which he will erect a carriage factory. The work of construction will be commenced at once.

Montreal.—The plants of the Consolidated Lithographing and Manufacturing Company and the Union Card and Paper Company have been badly damaged by fire. Loss to building, machinery and stock about \$30,000.

Montreal.—Mr. J. H. Hutchison, contractor, Bourget and Ambroise streets, has been awarded the contract for the additions to the Molson's Brewery, Notre Dame street east.

Montreal.—Architect W. E. Doran, 180 St. James street, has awarded to Shearer, Brown & Wills, 225 St. Patrick street, the contract for the additions to the Montreal Stock Yards.

Winnipeg, Man.—The premises of the Stuart Machinery Company have been damaged to the extent of \$25,000. President of the Company, R. MacGregor, Galt. Loss fully covered by insurance.

Winnipeg, Man.—Mr. W. R. Milton will erect a large addition to his bakery on Nena street.

Winnipeg, Man.—The Manitoba Iron Works will erect an addition to their plant to cost approximately \$50,000.

Winnipeg, Man.—The Dominion Bridge Company, with headquarters at Montreal, will erect a large addition to their plant on Notre Dame west, Winnipeg, and install a plant to treble the present output. Estimated expenditure in increased equipment to plant and stock, approximately \$100,000. Mr. E. E. Sheppard is local manager for the company.

Minnedosa, Man.—The flour and grist mill, owned by Mr. P. J. McDermott, and leased by Mr. J. A. McIntyre, has been practically destroyed by fire. Loss \$10,000, partly covered by insurance.

Vancouver, B.C.—It is understood that Mr. Jas. A. Moore, of the Moore Iron Works, near Port Townsend, Wash., is negotiating for a site in Vancouver, on which to locate iron works and possibly a steel plant. The investment planned calls for an initial expenditure of at least half a million dollars.

Vancouver, B.C.—The Vancouver Engineering Works will erect a \$7,000 steel frame foundry on the C.P.R. reserve at the foot of Ash street.

Vancouver, B.C.—The Saskatchewan

Flour Mills Co., Ltd., plan the erection of a large mill in Vancouver. The company has a mill at Moose Jaw, and will establish mills at various points in Alberta and Saskatchewan. Mr. F. A. Bean, of New Prague, Minn., is President of the Company.

Vancouver, B.C.—A Company of local capitalists has secured a site near Hoggan's wharf, Nanaimo, on which they will construct a plant for the manufacture of briquette. Mr. A. C. Flumerfelt, Vancouver, is one of the parties interested.

New Westminster, B.C.—Mr. C. W. Beach and associates have purchased a tract of land on Lulu Island for the purpose of erecting a shingle mill.

Saskatoon, Sask.—Messrs. Currie Bros. will erect a two-storey addition to their plant at this place.

Gas Plants, Elevators and Warehouses

Hamilton, Ont.—The Crescent Oil Company will erect a 100 by 60 foot storehouse in the north-west section of the city.

Ottawa, Ont.—The property at 300-306 Sparks street has been purchased by Graham Bros., florists, who will erect on this property a large seed storehouse.

Montreal.—Architect Joseph Perreault, 17 Place d'Armes Hill, has awarded the following contracts for the Campbell Manufacturing Company's new warehouse in Ville St. Louis: Carpentry, cast iron, wrought iron and hardware, Carriere & Frere Co., Ltd., 479 Laurier avenue; painting and glazing, Lynch & Sharpe, Ville St. Louis.

Halifax, N.S.—The Acadia Cold Storage Company has been organized for the purpose of building a \$500,000 cold storage plant at Halifax. The Company will install its own electrical equipment, and the best modern appliances will be provided for every part of the plant.

Winnipeg, Man.—The Williams Machinery Company, Notre Dame east, have had plans prepared for a four-storey warehouse to be erected on Princess street, near Logan avenue, at a cost of \$40,000. It will be of brick and reinforced construction, and the foundations will be built to sustain six stories. John D. Atchison is the architect.

Winnipeg, Man.—The T. Eaton Company have taken out a permit for a new warehouse to be erected at the corner of Hargrav and Graham. It will be four storeys in height, of brick construction, and will cost \$60,000. Mr. Geo. Thompson, of Toronto, is the contractor.

Winnipeg, Man.—The Atlas Elevator Company will erect ten large elevators along the line of the Grand Trunk Pacific this summer.

Willow Range, Man.—The Ogilvie grain elevator at this place has been totally destroyed by fire. Loss estimated at approximately \$20,000.

Vancouver, B.C.—It is stated that Sir Thomas Sloughness, of the C.P.R., is negotiating with Mr. Thomas Henshaw, Vancouver, for a site on which to erect a large grain elevator.

Eburne, B.C.—Mr. J. C. White, of Duluth, has purchased a site of 400 feet on the water frontage here, on which he purposes erecting a large elevator in the near future.

Saskatoon, Sask.—The City Council has granted the request of the International Harvester Company for spur tracks to their proposed new warehouse. Manager Potter states that contract will be let at once for the building, which will be 90 by 135 feet, four storeys and basement in height, of either brick or concrete construction.

Moose Jaw, Sask.—Messrs. Mittrill, Hembroff and Maybee will erect a warehouse in the immediate future.

Toronto.—Architects Gordon & Hellwell, Confederation Life Building, have prepared plans for a warehouse to be built at 55 Bay street for A. A. Allen & Co. at a cost of \$40,000. The building will be of brick and concrete construction, with open plumbing, electric lighting, steam heating, fire escapes, passenger and freight elevators, skylights, fireproof doors and windows and metal cornices.

Toronto.—Henry Needham, 335 Crawford street, has the contract for a \$40,000 three-storey brick warehouse to be built at 94-100 Richmond street west. Owner, C. S. Boane, 57 Floor street east. Chadwick & Beckett, 20 Toronto street, are the architects.

Toronto.—The Crown Coal Company's elevator at the foot of West Market street, has been damaged by fire to the extent of approximately \$20,000.

Bridges, Wharves and Subways

Toronto.—Messrs. Farrell & McCarthy, 25 Olive avenue, have been awarded the general contract for a \$5,000 trestle bridge to be erected on Yonge street, Glen Grove, near Toronto, for the Dovercourt Land Company, 24 Adelaide street east. The bridge will be of wood, on concrete. Engineer, W. S. Brooks, 24 Adelaide street east.

Toronto.—On May 8th a by-law will be submitted to the ratepayers for the purpose of authorizing the expenditure of \$700,000 for the proposed sea wall.

McGillivray, Ont.—Tenders, addressed to the undersigned, will be received up to noon, May 15th, for: (1) Construction of two concrete abutments on site of the Beaudette bridge, and two reinforced concrete abutments on the site of the Island bridge, including also the complete removal of the old bridges and foundations, all necessary excavations, piling and cofferdaming, if any requisite and supply of all material; (2) All work and material necessary for erection and completion upon above mentioned abutments, of steel rivets, Warren Truss bridge spans, having clear roadway of 14 feet, concrete flooring and pine railing, etc. Geo. H. MacGillivray, MacGillivray's Bridge, Ont., Township Clerk.

St. Andrew's, Ont.—The Canadian Pacific Railway will build a new wharf at this place, construction to be commenced at once. The wharf will be 200 feet in length, and will cost \$20,000. William Downie, General Superintendent.

Peterboro, Ont.—A by-law has been passed by the ratepayers providing for the expenditure of \$120,000 for the construction of a waterworks concrete dam.

Montreal.—Plans have been completed for the new wharf to be built by the Harbor Commissioners at Longue Pointe, and have been forwarded to Ottawa for the consideration of the Department of Marine and Fisheries, and approval of the Governor-in-Council. The wharf will be built of concrete and will be 450 feet in length.

Vancouver, B.C.—A by-law will be submitted to the ratepayers for the purpose of deciding on a high level or a high and low level bridge, to replace the Cambie street bridge.

Vancouver, B.C.—The C. P. R. officials have under consideration plans for the construction of another jetty wharf, to be built out into the inlet from the eastern end of No. 2 shed.

Prince Rupert, B.C.—Tenders, addressed to the Minister of Public Works, Victoria, B.C., will be received up to noon, April 27th, for the erection and completion of a reinforced concrete wharf, with timber superstructure, at Prince Rupert, B.C. (1) For wharf complete inclusive of slips; (2) For wharf complete exclusive of slips. Plans and specifications may be seen at the offices of the Government Agent, Prince Rupert; the Government Agent, New Westminster; the Provincial Timber Inspector, Vancouver, and at the Public Works Department, Victoria. Edward Mohun, Assistant Engineer, Public Works Department, Victoria, B.C.

Prince Rupert, B.C.—The Provincial Government will, in all probability construct a public wharf here, to be located on Section F of the waterfront, held by the Government. It is proposed to build

a wharf on cement piles, at an estimated expenditure of \$60,000.

Strathcona, Alta.—Plans have been prepared by City Architect McLean for the proposed bridge over Mill Creek, at the end of Whyte avenue. Estimated cost of structure, \$5,000.

Edmonton, Alta.—The city of Edmonton has been negotiating with the C.P.R. in regard to the construction of a traffic deck in connection with their proposed high level bridge, but as nothing has been done with reference to this, the cities of Strathcona and Edmonton propose to erect a bridge costing from \$258,000 to \$500,000, according to whether the structure is of steel or wood.

Waterworks, Sewers and Canals

Toronto.—The Board of Control has awarded to the Godson Contracting Co., Manning Chambers, the contract for the construction of the first section of the trunk sewer at a contract price of \$138,528, this sum including \$10,000 for the cost of the vitrified brick invert.

Ottawa.—The Dominion Government has awarded to the Wm. Hamilton Co., Peterboro, the contract for supplying the operation machinery, pivots and anchorages for twenty-four locks on the Trent Canal. Contract price, \$80,000.

Ottawa.—Messrs. Kirby and Stewart, of Ottawa, have been awarded contract by the Public Works Department for the construction of the dam at the foot of Lake Temiskaming. Contract price approximately \$108,000.

Stratford, Ont.—Engineer Ferguson will submit to the City Council a detailed plan of the proposed sewage disposal works, with estimate of cost of same.

Winnipeg, Man.—The City of Winnipeg and the Grand Trunk Pacific will construct a joint sewer along Cairn avenue to the Red River at a cost of \$20,000.

Vancouver, B.C.—The Board of Works has passed the report of the engineer, recommending the construction of a 24-inch storm sewer on Burrard street, from Georgia to the lane south of Alberni and a 20-inch sewer from the lane south of Alberni to the south side of Robson. Established cost \$4,800. Also an extension of the sewer on Napier street to Lakewood drive, at cost of \$2,150.

Estevan, Sask.—The following by-laws have been passed by the local ratepayers: \$30,000 for new waterworks system; \$10,000 for the building of a town hall; and \$10,000 for a trunk sewer.

Medicine Hat, Alta.—The town council will expend the sum of \$55,000 on the construction of sewers, and a similar amount on gas and water mains.

Edmonton, Alta.—The City Council has awarded to the Edmonton Heating and Plumbing Company the contract for the supply of 77,000 feet of sewer pipe. Contract price, \$32,161.

Edmonton, Alta.—The Council proposes constructing sewers on sections of the following streets, viz.: Lane between 6th and 7th streets; lane between 7th and 8th streets; lane between 8th and 9th streets; lane between 15th and 16th streets; Mackenzie avenue; Stoney Plain road; lane between St. James and Edward streets; lane between York and Sinclair streets; lane between Sinclair and Kirkness streets; lane between Kirkness and Carey streets; lane between Carey and Kennedy streets; Pine avenue; Kirkness street; lane between Notre Dame and St. James street.

Railway Construction

Toronto, Ont.—The Temiskaming and Northern Ontario Railway Commission has awarded the following contracts, viz.: Roundhouse, machine shop, locomotive foreman's office, coal chute and trestle and reinforced concrete arch culverts, at mile-posts 218, 221 and 222 to the Forest City Paving and Construction Company, London. Installation of heating system in roundhouse and machine shop to Sheldons, Limited, of Galt.

Ottawa, Ont.—The Government has accepted the tender of Haney, Quinlan & Robertson, 10 King street west, Toronto, for the construction of the National Transcontinental terminal shops at St. Boniface, Man. Contract price, \$869,000.

Guelph, Ont.—The Railway Commission has issued an order that the G. T. R. erect a new station at this place.

St. Thomas, Ont.—The Michigan Central Railway Company has had plans prepared for improvements and extensions to its local yards, depot, shop and other facilities.

Quebec, Que.—A commission composed of Hon. S. H. Parent, president; Messrs. McIsaac, Young and Reid, members of the Transcontinental Railway Commission, and Mr. Lumsden, chief engineer, is negotiating with the city for the purchase of the Champlain Market property, on which to erect the Union Station, to accommodate all railways coming to Quebec, after the completion of the Quebec bridge. Providing the site is secured the work of construction may be commenced immediately.

Winnipeg, Man.—The Aikenhead Hardware, Limited, have been awarded the contract for hardware for the new Union Depot of the Canadian Northern Railway Company, at this place.

Westminster Junction, B.C.—It is reported that the Canadian Pacific Railway will in the immediate future erect large and modernly equipped car-building shops at Westminster Junction, about twenty miles from Vancouver.

Port Haney, B.C.—The C. P. R. has made an appropriation for a new station building to be erected at this place.

Frank, Alta.—It is announced by the C. P. R. that it will build a large freight house here in the near future. Plans for the building have been prepared.

Indian Head, Sask.—The Canadian Pacific Railway will erect a new \$10,000 station on the site opposite the Bishop's Court. The building will be of stone and brick construction.

Saskatoon, Sask.—Mr. M. H. McLeod, general manager of the Canadian Northern Railway, states that the company will erect a station here at once.

Public Buildings

Toronto.—The plans and specifications of the Transportation Building, to be erected at the Exhibition grounds, have been submitted to the City Architect by Mr. Geo. Gouinlock, the architect. Estimated cost of building, \$89,000.

Toronto.—The City Council has decided on a site at the corner of Broadview avenue and Gerrard street, for the erection of the new branch library building.

Windsor, Ont.—The Property Committee has awarded the following contracts for the addition to the market building. Carpentry, John Thornton & Son; plumbing, Henry Meadows; painting, W. Laosser; iron and roofing, and concrete piers and walks, John Thornton & Son.

Hamilton, Ont.—Plans for a County Registry Office, to be used jointly by the County of Wentworth and City of Hamilton, and also plans for remodelling the present building, have been prepared. J. W. Jardine, County Clerk, Hamilton.

Hamilton, Ont.—Mr. Andrew Carnegie has offered to make a grant of \$75,000 for the erection of a new library at this place.

Ridgetown, Ont.—Mr. W. E. Best, of Thamesville, Ont., has been awarded the contract for the erection of the new township hall at this place. The building will be two stories in height and of cement block construction, and cost \$3,467.

Collingwood, Ont.—Architect P. C. Palin, has prepared plans for the proposed new Agricultural Buildings, to be erected in the town park, at a cost of \$10,000. The buildings will be of steel, brick and cement construction.

Montreal.—The Dominion Government has taken out a permit for a new post office to be erected in Point St. Charles, at a cost of \$32,000.

Montreal.—New public bath houses will be erected in St. Denis and Papineau wards this year.

Montreal.—It is stated that the Government will expropriate the entire block adjoining the Court House for the purpose of enlarging the latter.

Woodstock, N.E.—Architect F. Neil Brodie, St. John, N.B., will receive tenders after April 15th, for a \$30,000 Court House to be erected at Woodstock, N.E. The building will be two stories in height, with brick and stone construction, with concrete foundation, hot water heating, electric lighting, slate roof, plaster interior finish, open plumbing.

New Westminster, B.C.—Tenders will be received by the Minister of Public Works, at Victoria, up to and including April 26th, for the erection and completion of a Land Registry Office at New Westminster, B. C. Specifications and forms of contract may be seen at the office of the Public Works Engineer, Victoria, B.C.; at the office of the Government Agent, New Westminster; and at the office of the Provincial Timber Inspector, Vancouver. F. C. Gamble, Public Works Engineer, Department of Public Works, Victoria, B.C.

Vermilion, Alta.—The Provincial estimates provide for the purchase of a site at this place, for the erection of a new court house. The building will in all probability be erected in the year 1910.

Asquith, Sask.—Architect W. W. LaChance, Saskatoon, has prepared plans for a two-storey Town Hall to be erected here at a cost of \$6,000. The building will be of frame construction, with stone foundation, hot air heating.

Business Buildings

Toronto.—The Mason and Risch Piano Company has purchased from Mr. Albert Britnell, the property at 241 Yonge street, on which they will erect a new building.

Toronto.—The Bell Telephone Company has taken out a permit for a five-storey, brick, steel and concrete office and exchange building, to be erected on Adelaide street near Bay street. It will cost \$320,000. W. J. Carmichael, Montreal, is the architect.

Toronto.—Architect F. J. Bird has prepared plans for a pair of two-storey stores and dwellings to be erected at 935-7 Queen street east, for Mr. H. McCarty, at a cost of \$5,000. The buildings will be of brick construction, with brick foundation, felt and gravel roof, maple and pine floors, pine interior finish, open plumbing, hot air heating, combination lighting, metal ceilings.

Toronto.—Architect P. H. Finney, 43 Victoria street, has prepared plans for a pair of two-storey stores and dwellings on Bathurst street, near Dupont street, for Mr. T. Harman, Euclid avenue. The building will be of brick construction, with hot air heating, combination lighting, two mantels and electric bells. Cost of building, \$6,000.

Toronto.—Architect P. H. Finney has prepared plans for a pair of stores and dwellings to be erected at the corner of Danforth and Logan avenues, for Mr. T. McNea. The buildings will be of brick construction, modernly equipped, and will cost \$4,000.

Toronto.—Architect P. H. Finney, 43 Victoria street, has prepared plans for a store and dwelling to be erected on Roncesvalles avenue, near Geoffrey street, for Mr. J. S. Sharp, 534 College street. The structure will be of brick and will cost \$2,500.

Toronto.—Architect J. Hunt Stanford, 34 Yonge street arcade, has prepared plans for a two-storey store and dwelling to be erected on College street, near Bathurst street, for Mr. J. Jamieson, McCaul street. The building will be of brick construction, with hot water heating and combination lighting. Cost \$3,500.

Toronto.—Architect J. H. Galloway, 77 Victoria street, has prepared plans for a three-storey store and apartment building to be erected on Bloor street, near Bathurst street, for Mr. E. J. Jackson, 117 Bedford road. The building will be of brick construction, with Georgia pine interior finish, open plumbing, steam heating, combination lighting, fireproof doors and windows and four mantels.

Toronto.—Architect Wm. Thompson has prepared plans for a pair of stores and dwellings to be erected at the corner of Penderith and Christie streets, for Mr. Henry Carter, 716 Bloor street west. The building will be of brick construction and cost \$3,000.

Toronto.—Architect Wm. Thompson has prepared plans for a pair of stores and dwellings to be erected at the corner of Ossington and Hallam avenues, for Messrs. Tait Angus Co., 164 MacPherson avenue. The building will be of brick construction and will cost \$5,500.

Toronto.—Architect W. H. Martin, 126 Riverdale avenue, has prepared plans for three three-storey brick stores and dwellings, to be erected at 955-7 Pape avenue,

near Gerrard street, for Mr. J. B. Vick, 98 Riverdale avenue, at a cost of \$6,000.

Hamilton, Ont.—The Mills Hardware Company will erect five stores, a central heating plant, and a stable a block in length, at a cost of \$100,000. Contractors for the main portions of the work are; Howard & Webber, masonry; McKellar & Poag, carpentering; Hamilton Steel and Iron Company, structural steel. Mr. Chas. Mills is the architect.

Hamilton, Ont.—Messrs. Hawkins & Holt will build a pair of brick stores at the corner of Emerald and Barton streets.

Collingwood, Ont.—Architect Phillip C. Palin has prepared plans for a two-storey brick store, with stone foundation, to be erected for Mr. McKay, at a cost of \$4,000.

St. Thomas, Ont.—Tenders have been taken by the Bell Telephone Company, St. Thomas, for their proposed new exchange building on Talbot street. The plans call for a building two stories in height, 70 by 30 feet. The work of construction will be commenced before May 1st.

Chesterville, Ont.—The departmental store of Saunders, Soule and Casselman, Chesterville, which was recently destroyed by fire, will be rebuilt. Proprietors of the business; Mr. O. D. Casselman and F. M. Saunders.

Toronto.—The Cawthra Estate will erect a large building at the corner of Yonge and Richmond streets, on the expiration of the leases on the property, which are held by the Whaley Royce Company and Ambrose Kent, Jeweler.

Peterborough, Ont.—Mr. J. J. Lundy will erect a three-storey building on his property on George street. It will be of brick construction, 90 by 60 ft., the first floor to be used for store purposes, the second floor for living apartment, and the third for public hall.

Toronto.—Messrs. Phippen Bros., 944 Pape avenue, Toronto, will erect a pair of two-storey brick stores and dwellings at the corner of Pape and Withrow avenue, at a cost of \$5,000.

Montreal.—Mr. C. E. Deakin, 11 St. Sacrament street, has taken out a permit for offices for the U. S. Emigration Agency, at a cost of \$25,000.

Montreal, P.Q.—Architects Mitchell and Creighton, Inglis Building, have prepared plans for a five-storey building to be erected at the corner of St. Catherine and Alexander streets, for Mr. J. A. Jacobs, 171 St. James street. It will be of steel or concrete construction, with concrete foundation, terra cotta partitions, gravel roof, concrete floors, fireproof interior finish, steam heating, passenger elevators and freight elevator (hydraulic), sidewalk lifts and sprinkler system.

Montreal, P.Q.—Architects Mitchell & Crighton have awarded to Messrs. D. G. Loomis & Sons the contract for the masonry and concrete for a new block of stores to be erected at the corner of St. Catherine and Alexander streets.

Montreal, P.Q.—A syndicate is said to have obtained an option on the Carsley property, St. James and Notre Dame streets, on which they may erect a ten-storey building. Architect F. H. Kimbol of New York is reported to have prepared plans for the building. The syndicate has taken offices in the Inglis Building, St. Catherine street west, Montreal.

Montreal, P.Q.—Southam, Limited, will erect a large office and store building at the corner of Guy and St. Catherine streets. The building will be of brick construction, and will be equipped with steam heating and electric lighting. The lower portion of the building will be used for store purposes, while the upper floors will be divided into offices.

Winnipeg.—It is reported that Mr. H. M. Millman is making arrangements for the erection of a large block on the corner of River avenue and Osborne street, the ground floor to be used for banking and store purposes.

Winnipeg, Man.—Architect Fingland has prepared plans for a local syndicate, for the erection of a large steel block at the corner of Portage avenue and Hargrave street. Mr. John Girvin, the general contractor, will commence at once the work of razing the building at present on this site. It is expected that the new building will be ready for occupation early next fall. Messrs. C. H. Enderton & Co. are agents for the syndicate.

Winnipeg.—Architect John D. Atchison

has prepared plans for a four-storey building to be erected at the corner of Lombard and Rorie streets, for the Great West Life Assurance Co. The building will be 97 by 106 feet, will be fireproof, of steel frame and reinforced concrete construction, and will cost approximately \$200,000.

Winnipeg.—The contract for the structural steel and cast iron columns for the new storey to be built on the J. Robinson & Co.'s departmental store has been awarded to the Vulcan Iron Works.

Winnipeg.—Mr. J. A. Girvin has been awarded the contract for a new fireproof block to be erected at Portage and Hargrave streets for Mr. C. H. Enderton.

Brandon, Man.—Messrs. Geo. White & Sons, London, Ont., will erect a large office and storage building here.

Victoria, B.C.—The block of property on the N.W. corner of Broga and Johnson streets has been purchased by a syndicate of local Chinese merchants, the principal shareholders in which are Lee Woy, Lee Chung and Lee Yan Yew, all of whom are identified with the firm of Tai Yuen & Co. Plans have been prepared for a three storey brick store and office building, costing approximately \$20,000, to be erected on this site.

Victoria, B.C.—Messrs. Lim Bang & Company will erect a three-storey concrete and brick building on the east side of Government street, covering the entire length of the block from the corner of Herald to Chatham. Estimated cost, \$50,000. The structure will include twelve stores; the two upper floors will be used as offices, and rooming apartments. Hooper & Watkins are the architects.

Victoria, B.C.—Messrs. W. S. Fraser & Co., hardware merchants, corner Wharf and Bastion Square, will erect a three-storey addition to their premises at a cost of \$9,000.

Victoria, B.C.—Architect D. C. Frame, Five Sisters' block, has awarded to the Westholme Lumber Company the contract for the erection of a brick store and creamery, on concrete foundation, on Broad street, for the Creamery Company. Cost of building, \$13,000.

Victoria, B.C.—Messrs. Pemberton & Sons, whose building was recently destroyed by fire, will rebuild at once. Plans have been prepared for a four-storey building, with a depth of 87 feet on Fort street, 160 feet on Broad street, and 80 feet on Broughton street; it will be of brick (Clayburn), concrete and steel construction, as nearly fireproof as possible. Two electric elevators, electric lighting, steam heating, telephone system, will be installed. Estimated cost \$150,000. G. Meske & Company are the contractors.

Vancouver, B.C.—Architect A. C. Hope, 336 Hastings street west, has awarded to Messrs. Baynes & Horle, Davis Chambers, Hastings street, the contract for the erection of a three-storey brick store and apartment house for Mr. Joseph Reade. Cost approximately \$27,000.

Vancouver, B.C.—General Manager Spering, of the British Columbia Electric Railway, has invited plans for the erection of a new four-storey office building at the corner of Carrall and Hastings streets, the plans to be in the hands of the Company's management by April 26th.

Vancouver, B.C.—Messrs. C. S. Douglas and A. E. Thorley will erect a three-storey block on Granville street, next to the Tourist Hotel. The contractors are Messrs. Purdy & Lonergan. The building will be of brick, with a glazed brick facade, and will cost \$50,000. Parr & Fee are the architects.

Vancouver, B.C.—Plans have been filed with the Building Inspectors, Vancouver, by John J. Holyor, architect, Vancouver, for a \$75,000 office building to be erected on Hastings street, opposite the Astor Hotel, for a syndicate. The building will be eight storeys in height, of fireproof construction, with concrete floors, fireproof stairways, iron window frames and wire window glass. An elevator will be installed.

Vancouver, B.C.—Plans have been prepared by Architect Wilkie Allen, 614 Hastings street west, for a two-storey brick building to be erected at the corner of Park Drive and William street, Grandview, for Mr. Harry Evans. Estimated cost, \$10,000. The building will be of brick and concrete construction, and will have a frontage of 66 feet on Park

Drive, by about 70 feet on William street. The ground floor will be fitted up for three large stores, while the upper floor will be used for public hall.

Vancouver, B.C.—Messrs. Crowe & Wilson have had plans prepared for a four-storey business block to be built on Hastings street.

Vancouver, B.C.—Architects Parr & Fee have prepared plans for a four-storey office building to be erected on Granville street, at the corner of Robson, for Mr. J. M. Cameron. It will be of brick construction, with foundation and basement walls of concrete, basement floor of cement, galvanized iron cornices, tar and gravel roof, wrought iron fire escapes, galvanized iron skylights, electric lighting.

Vancouver, B.C.—Mr. William Frederick Gardiner will erect a six-storey brick block on Pender street, near Richards, for Mr. H. D. Hutchinson.

Kamloops, B.C.—The city will in all probability erect a new city hall, at estimated cost of \$40,000. It is proposed to erect the building just west of the site of the old Court House.

Moose Jaw, Sask.—Mr. T. H. Brayson will erect a two-storey building next to the Post Office. A business building will also be erected in this vicinity by Matthews-Ferguson Company.

Regina, Sask.—It is stated that the Robert Simpson Company, of Toronto, will this summer erect a large departmental store at this place.

Prince Albert, Sask.—The Agnew Hardware Company will erect a new building to contain three stores.

Calgary, Alta.—Architects Dowler & Michie have prepared plans for a \$65,000 business building to be erected for Mr. A. J. Sames. It will be of concrete reinforced, with concrete foundation, tar and gravel roof, steam heating, electric lighting, enamel plumbing. Specifications include electric elevators and vaults.

Calgary, Alta.—Architects Dowler & Michie have prepared plans for a two-storey business block to be erected for Messrs. Mackay & Dipple, at a cost of \$9,000. It will be of brick construction, with stone foundation, paroid roofing, electric lighting, enamel plumbing.

Calgary, Alta.—Architects Dowler & Michie announce that tenders will be received after May 1st for a two-storey business building to be erected here for Mr. G. S. Mackie, of Banff. It will be of brick construction, with paroid roofing, steam heating, electric lighting, and will be so constructed as to admit of two additional storeys being added.

Edmonton, Alta.—Architects Barnes & Gibbs have awarded the following contracts for a store building to be erected for Mr. I. R. V. Carpenter; General contract, McSpolran & Co.; plumbing, Standard Plumbing Co. The building will be two storeys in height, 40 by 30 feet, of frame construction, and will cost \$5,000.

Edmonton, Alta.—Messrs. Hallier and Aldridge have taken out a permit for the erection of a \$35,000 business structure on Rice street.

Strathcona, Alta.—Messrs. A. H. Richards & Company will erect a large store building in the near future.

Banks

Hamilton, Ont.—It is stated that the Bank of Montreal will erect a new building at the corner of Victoria avenue and Barton street for its local branch.

Fredericton, N.B.—Architect F. Neil Brodt, St. John, N.B., is receiving tenders for a bank building to be erected here for the Bank of New Brunswick. It will be two storeys in height, of stone and concrete construction, with concrete foundation, pith and gravel roof, hot water heating, electric lighting, oak interior finish.

Renfrew, Ont.—The Quebec Bank have purchased a site on which they will erect a bank building to cost \$25,000.

Montreal.—Architects Ross & Macfarlane, 1 Belmont street, have awarded the following contracts for the erection of a bank building at the corner of Prince Arthur street and St. Lawrence Boulevard, for the Dominion Bank; Masonry and brickwork, Jas. Morrison; carpentry, D. M. Long, rear 89 Windsor street.

Montreal.—Architect Kenneth G. Rea, 9 Beaver Hall Square, has prepared plans for the erection of a bank building at the

corner of Park avenue and St. Louis street for the Royal Bank.

Montreal.—Architects Marchand & Haskell, 164 St. James street, have prepared plans for alterations and extensions to the Bank National Building, St. James street.

Clubs and Societies

Toronto.—Plans have been prepared by Architect E. J. Lennox, 164 Bay street, for the extension and improvement of Victoria Hall, Queen street east. The present building will be renovated, and fitted up with steam heating, and ventilating system and elevators. An addition will also be built. Cost of work, \$40,000.

Toronto.—Plans are under way for the establishment of a Young Women's Catholic Association and Guild. It is estimated that a suitable building could be erected for \$25,000. The project has received the endorsement of all the Catholic clergy.

West Toronto.—A new Masonic Temple will be erected shortly at this place. The proposed building will be located next to the Carnegie Library, and designed on similar lines. President, Henry C. Fowler, Toronto; Secretary, A. B. Rice, West Toronto.

Hamilton, Ont.—The Building Committee of the Y.M.C.A. have approved of the plans prepared for their building. Tenders will be called for in the near future.

Kenora, Ont.—The Oddfellows of this place will erect a block to cost approximately \$15,000.

Ottawa, Ont.—The Rideau Club has purchased the property adjoining, on which they will erect an addition to their building. The structure will have a stone front, and will be four storeys in height. H. C. Stone, Montreal, is the architect.

Winnipeg.—An organization is being formed under the name of "The River Heights Club, Limited," for the purpose of erecting a club-house on the athletic grounds on Godfrey street. The capital stock of the club is fixed at \$80,000. Architect's plans will at once be prepared, and construction commenced, so that the building may be available this season. Hon. T. Mayne Daly, K.C., is president of the club.

Victoria, B.C.—The Pacific Club and adjoining buildings owned by F. B. Pemberton, which were recently destroyed by fire, entailing a loss of between \$150,000 and \$200,000, will be replaced by a four-storey brick and stone building of larger dimensions, plans for which have been prepared.

Nelson, B.C.—The Y.M.C.A. will erect a three-storey and basement brick building at this place, to cost approximately \$30,000.

Victoria, B.C.—The Y.M.C.A. propose to erect a building to cost \$100,000 at this place.

Prince Albert, Sask.—The Masons of Prince Albert propose erecting a three-storey block to cost approximately \$50,000, towards which the sum of \$20,000 has already been subscribed.

Saskatoon, Sask.—The Y.M.C.A. has purchased the property on the corner of Twenty-second street and Third avenue for the purpose of erecting a large association building.

Asylums and Hospitals

Toronto.—The following contracts have been awarded for the erection of the new wing for the Home for Incurables, Dunn avenue; Masonry, John Aldridge & Son; carpentry, A. B. Coleman, 191 Dowling avenue; tiling, J. L. Vokes; steel, McGregor & McIntyre, 73 Pearl street; painting, F. E. Phillips, 49 Richmond street east; deck roofing, Carey Roofing Company, 112 Bay street; slate and copper, A. B. Ormsby & Co., Queen and George streets; plumbing, Purdy, Mansell, Limited, 63 Albert street; plastering, R. C. Dancy, 171 Spadina Road. Estimated cost of addition, \$30,000.

Toronto.—The following contracts have been awarded for the new Nurses' Home, in connection with the Home for Incurables, Dunn avenue; Masonry, R. Hewitt & Son, 60 Roncevalles avenue; carpentry, John McKerracher; tiling, J. L. Vokes & Sons; steel, Toronto Iron Works, Lawlor Building; painting, H. W. Johnston, 209 Church street; plastering, R. C. Dancy, 171 Spadina Road; slate and copper, J. Matthews; plumbing, Purdy, Man-

sell, Limited, 63 Albert street. Estimated cost of building, \$22,000. Denison & Stevenson, 20 King street west, are the architects.

Ottawa, Ont.—Tenders will be called in the near future for the new consumptive hospital to be erected on a site on Carling avenue, near Holland avenue.

Galt, Ont.—A by-law will be submitted to the ratepayers for the purpose of authorizing the expenditure of \$20,000 for an addition and improvements to the hospital.

Hamilton, Ont.—At a meeting of the City Council it was decided to grant \$10,000 for enlarging the Isolation hospital.

Brantford, Ont.—Mr. E. L. Cocksbutt has donated to the city a site on which to erect the proposed tuberculosis hospital, which will cost \$14,000.

Peterboro, Ont.—The management of the House of Providence will in all probability erect a new building to cost between \$30,000 and \$35,000. Application has been made to the City Council for assistance in maintaining the institution, and the matter will be taken up at a special meeting of the Committee, at which Father McColl, the promoter of the project, will be present.

St. Catharines, Ont.—The Woman's Auxiliary, acting in conjunction with the provisional directors appointed by the City Council, have purchased the Collier homestead as a site for a tuberculosis sanitarium. The building at present on the property will be remodelled, and infirmaries built. The institution will be managed by the city.

Montreal.—Extensive alterations will be made to the Hotel Dieu hospital, and an additional storey erected.

Sherbrooke, P.Q.—Plans have been submitted to the Sherbrooke Protestant Hospital Board for the remodelling and enlargement of the hospital, to double its present capacity. Estimated cost of improvements, \$15,000.

Ninette, Man.—Final plans for the Provincial Sanatorium at Ninette will be prepared by Architect Wm. Bruce, Winnipeg, and laid before the Trustees. The first unit of the institution will probably have a capacity of sixty patients, and will consist of three buildings, an administrative building and two large pavilions. Initial cost estimated at \$39,600. Dr. D. A. Stewart, Superintendent of the Sanatorium.

Middlechurch, Man.—Plans are being prepared for the erection of an addition to the Home for the Aged, at a cost of \$27,000.

Coquitlan, B.C.—Tenders for the construction of the proposed hospital at the asylum farm will be called for by the Provincial Government at an early date. Dr. Doherty is the Asylum Superintendent.

Nelson, B.C.—At a meeting of the Kootenay Lake General Hospital it was decided to take steps towards the erection of a new hospital building. The Provincial Government has offered to give 50 per cent of any amount raised locally for the erection of the building. President Hamilton Byers may be addressed.

Chilliwack, B.C.—At a meeting of the citizens the following were appointed to constitute a Provisional Board of Managers regarding the erection of the proposed hospital at this place: Rev. Canon Hinchliffe, J. H. Ashwell, M. Murphy, and T. E. Caskey, representing the city; and Reeve Klobbush, Councillor P. H. Wilson, and A. B. McKenzie, from the country.

Kamloops, B.C.—At a meeting of the shareholders of the Royal Inland Hospital it was decided to make application to the Provincial Government for a site of seven acres of land, back of the Provincial Home, on which to erect the isolation hospital; it may also serve as a site for a new general hospital.

Regina, Sask.—The Health and Relief Committee have secured the adoption of their report providing for the erection of a permanent building on the hospital property, for tuberculosis patients. A small office building will also be erected. The plans as prepared by Meyer J. Sturn, will be revised by Story & VonEgmond, who will also superintend the erection of the building.

Churches

Toronto.—Palmer and Gortiga have the contract for a one-storey brick church to

be built at the corner of Yonge and Lawton avenue for the congregation of Christ Church, Deer Park. Symons & Rae, 15 Toronto street, are the architects. The building will cost \$20,000.

Toronto.—Elgie and Page have the contract for a \$40,000 brick and stone church to be erected at Roncesvalles and Wright avenues for the Fern avenue Presbyterian congregation. Smith and Gemmill are the architects.

Toronto.—Architect E. J. Lennox, 164 Bay street, has prepared plans for the new St. Paul's Anglican church. The building will have a floor space of 14,000 square feet, seating capacity of 2,500, and will cost approximately \$150,000.

Toronto.—Mr. J. C. Eaton has donated to the Methodists in the vicinity of Avenue Road and St. Clair avenue a site at the corner of Forest Hill Road and St. Clair avenue, on which to erect a new church. A provisional board of trustees, composed of the following, has been appointed, viz.: R. W. Eaton, Edward Clark, George Dean, Thomas Miller, G. A. Walton and J. H. Stephens.

Ottawa, Ont.—Plans have been prepared for the new Methodist Church to be erected in Ottawa East.

Hamilton, Ont.—Architect Herbert H. New, 608 Spector Building, has prepared plans for a \$22,000 church building to be erected in Hamilton for the Herkimer Baptist congregation. It will be of brick and cut stone construction, with slate roof, steam heating, electric lighting, whitewood interior finish.

Hamilton, Ont.—The Gospel Tabernacle will in all probability be enlarged to accommodate 2,200, its present seating capacity being 1,500. Also an addition will be built to the rear of the church providing this property can be secured.

Peterboro, Ont.—Murray street Baptist congregation will in all probability erect a new church.

Peterboro, Ont.—Architects Simpson and Young, 17 Toronto street, Toronto, are preparing plans for the new church to be erected for the Knox Presbyterian congregation. It will be of brick construction, with stone front, and will cost approximately \$24,000.

Sudbury, Ont.—The congregation of the Presbyterian Church, Sudbury, will in all probability erect a new edifice this summer.

Brantford, Ont.—The congregation of the Park Baptist Church will engage the basement under the church, and put in new class rooms, etc., at a cost of several thousands of dollars.

Brantford, Ont.—The Colborne street Methodist church will be enlarged at a cost of approximately \$14,000.

Port Colborne, Ont.—Architects Gordon & Hellwell, Confederation Life Building, Toronto, have prepared plans for alterations to the Presbyterian Church, Port Colborne, at a cost of \$3,000.

Galt, Ont.—The congregation of the Methodist church will either build a new church, or enlarge the present structure.

Woodstock, Ont.—The local branch Salvation Army is contemplating the erection of a new building at a cost of approximately \$5,000.

Montreal.—Architect Jas. B. Adamson, Coristine Building, has prepared plans for the erection of a new structure to replace the old Congregational church.

Cote du Lac, P.Q.—Architect Joseph Venne, 402 Piessis street, Montreal, has prepared plans for the erection of a church at Coteau du Lac, P.Q. Rev. Faubert, Coteau du Lac, will receive tenders for the building.

Winnipeg, Man.—The Building Committee of the Presbyterian congregation has ordered plans for a new church to be erected at the corner of Herbey and School streets.

Winnipeg, Man.—The Central Congregational Church is contemplating making an enlargement to their present structure this summer.

Winnipeg, Man.—Plans have been prepared for a new Sunday School to be built for Augustine Presbyterian Church. The building, which will be of stone, will cost from \$20,000 to \$25,000. J. H. G. Russell is the architect.

Vancouver, B.C.—Architects Parr & Fee have completed plans for the new Presbyterian Church to be erected at the corner of Tenth and Quebec streets. The building will be \$6 by 74 feet, with basement walls of concrete with artificial

stone facings and superstructure of brick faced with pressed brick, and artificial stone trimmings.

Vancouver, B.C.—The Fairview Baptist Church will be removed to the corner of Fifth avenue and Arbutus street, and enlargement made to the building.

Kamloops, B.C.—The Methodist Church Board is discussing the question of the erecting a new church, the present building to be used as a school-room.

Rocanville, Sask.—The Methodist congregation will erect a new church in the near future.

Muenster, Sask.—Tenders will be received by the undersigned up to 2 p.m., April 20th, for the erection of a frame church, 56 by 128 feet, for the Catholic congregation. Plans and specifications on file at the office of Rev. Bruno Doerfler, Pastor.

Prince Albert, Sask.—The Methodist congregation proposes to erect a new \$40,000 church this summer.

Edmonton, Alta.—A new church building will this year be erected on First street, at the corner of College avenue, by the Methodist congregation.

Residences and Flats

Toronto.—Architect Chas. J. Gibson, 75 Yonge street, has awarded the following contracts for a two and a half storey brick residence to be erected on Dunvegan Road, near St. Clair avenue, for Mr. W. McLaughlin, 476 Huron street, at a cost of \$10,000: Masonry, Elgie & Page, 21 Havelock street; carpentry, F. E. Manuel, Bloor street west; plumbing and heating, Bennett & Wright, 72 Queen street east; painting and glazing, F. C. Davies, 213 Montrose avenue; electric wiring, R. A. L. Gray, 87 York street.

Toronto.—Architects Gordon & Hellwell, Confederation Life Building, have awarded the following contracts for a two and a half storey \$8,000 brick residence to be erected at 419 Bloor street east, for Robt. Mabee, 136 Albany avenue: Masonry, Balderston Bros. & Hutchison; carpentry work, David McMurr, 64 Haydon St.; sheet metal work, G. M. Bryan, 524 Yonge street; plastering, Hanna & Helson, 271 Rusholme road; electric wiring and plumbing, Keith & Fitzsimmons, 111 King street west; painting and glazing, Gould & Malcolm, 385 Givens street.

Toronto.—Architect F. H. Herbert, 65 Adelaide street east, has prepared plans for a two and a half storey residence and garage to be erected in Parkdale for Mr. Geo. Rathbone, Heathcote avenue. The building will be of stone construction, with the roof, hardwood interior finish, open plumbing, and hot water heating. It will cost \$15,000.

Toronto.—Architect F. H. Herbert, 65 Adelaide street east, will erect a three-storey store and apartment building on Queen street, near Church street, at a cost of \$50,000. The building will be of pressed brick and cut stone construction, with steel and concrete partitions, open plumbing, steam heating, electric lighting, iron store fronts, passenger elevator and telephone system.

Toronto.—Architects Langley and Howland, Bay and Richmond streets, have prepared plans for a three-storey brick apartment building, at 291 St. George street, for Mrs. E. D. Y. Cohen, 147 Farnham avenue.

Toronto.—Architect Leonard Foulds, 45 Victoria street, has prepared plans for a two and a half storey residence to be erected on Brunswick avenue, near Dupont street, for Dr. Slade, corner Queen and Bathurst streets. It will be of brick construction, modernly equipped, and cost \$5,000.

Toronto.—Architects Eden Smith & Son, 199 Yonge street, have awarded the following contracts for a \$9,000 brick residence to be erected on Clarendon Crescent, near Poplar Plains road, for Mr. E. B. Walker, 199 Yonge street: Masonry, T. Fussells; plumbing, J. T. Aggett, 180 Yonge street.

Toronto.—Architects Simpson & Young, 17 Toronto street, have awarded the following contracts for a two and a half storey residence to be erected on Broadview avenue, for Mr. W. T. Harris, Harris Abattoir Company: Masonry, Elgie & Page, 21 Havelock St.; carpentry, Jas. MacKenzie; painting and glazing, Jas. Casey, 33 Richmond street east; tile work, Canada Plate Glass Co.; electric wiring,

G. G. Tughon & Co., 30 Oxford street; structural steel work, McGregor & MacIntyre, 73 Park street; sheet metal work and roofing, Wm. Saulter, 115 Bay street. Estimated cost, \$10,000.

Toronto.—Architects Symons & Rae, 15 Toronto street, have prepared plans for a four-storey apartment house to be built on Madison avenue, for Mr. Henry Symons, K.C., 15 Toronto street. It will be of brick construction and cost \$45,000.

Toronto.—Architect Jas. Thompson, 43 Victoria street, has prepared plans for a \$6,000 brick residence to be erected on Indian road, near Howard Park, for Mr. Smith. Mr. Thompson has also completed plans for a brick residence to cost the same amount for Mr. C. Oliver, 43 Victoria street, who will build on Lynwood avenue, near St. Clair avenue.

Toronto.—Architect Jas. Thompson has prepared plans for a \$4,000 brick residence, to be built on Sidney street near Cottingham street, for Mr. Geo. Bryan, 43 Victoria street.

Toronto.—Architect J. Hunt Stanford, 34 Yonge street arcade, has prepared plans for a pair of semi-detached two and a half storey dwellings to be erected on Havelock street, near Hepburne street, for Mr. Bishop, 523 Palmerston Boulevard. The building will be of brick construction, equipped with hot air heating, combination lighting, mantels, etc., and will cost \$5,500.

Toronto.—Architect J. Hunt Stanford has prepared plans for three pairs of two-storey dwellings to be built on the west side of Concord avenue, near Hallam street, for Mr. R. McCauley, Burton avenue. The buildings will be of brick construction and will cost \$9,000.

Toronto.—Architect J. Hunt Stanford has prepared plans for a residence to be erected on Warren road, near Balmoral avenue, for Mr. Geo. A. Powell, 69 Howland avenue. It will be of brick construction and cost \$7,000.

Toronto.—Architect J. Hunt Stanford has prepared plans for three pairs of two-storey, semi-detached dwellings to be erected at the corner of Gladstone and Hallam street, for Messrs. Scott & McKee, Delaware avenue. The buildings will be of brick construction and cost \$11,000.

Toronto.—Architect J. Hunt Stanford has prepared plans for a two and a half storey brick dwelling to be erected on Lonsdale avenue, near Avenue road, for Mr. Botlaw, Markham street. Estimated cost, \$4,000. Mr. Stanford has also designed a \$2,800 brick dwelling for Mr. J. Forsyth, 16 Jersey avenue.

Toronto.—Architect J. Hunt Stanford has prepared plans for a pair of two and a half storey brick dwellings to be erected on Farnham avenue, for Messrs. J. T. & H. Hutson, 43 Victoria street, at a cost of \$5,000. Also a pair of two and a half storey brick dwellings to be erected on the corner of Farnham avenue and Ewan street; a pair of brick dwellings to be erected at the corner of Woodlawn extension and Farnham avenue; a pair of two and a half storey brick dwellings to be erected on Farnham avenue, for the same party, to be built at a cost of \$5,000, \$4,000 and \$5,000 respectively. All buildings will be equipped with mantels, combination lighting, open plumbing, hot water heating, etc.

Toronto.—Architect J. Hunt Stanford has prepared plans for a pair of two and a half storey dwellings to be erected on Shaw street, near College street, for Mrs. Scott, 655 Shaw street. Cost \$4,800. It will be of brick construction, with open plumbing, hot air heating, combination lighting, staved columns, mantels and electric bells.

Toronto.—Architect J. Hunt Stanford has prepared plans for three pairs of two and a half storey semi-detached dwellings to be erected on Hepburne street, near Rusholme road, for Mr. J. G. Kent, 34 Yonge street arcade. Estimated cost \$12,000. The buildings will be of brick construction, with slate and shingle roof, open plumbing, hot air heating, combination lighting, leaded glass.

Toronto.—Architect J. H. Galloway, 77 Victoria street, has prepared plans for a two and a half storey dwelling to be erected on High Park avenue, West Toronto, for Mr. R. J. Bruce of that place. The buildings will be of brick construction, modernly equipped and cost \$5,000. Mr. Galloway has also prepared plans

for seven detached two-storey brick dwellings to be erected on St. Clair avenue, near Yonge street, for Mr. T. P. Stewart, Richmond street east, at a cost of \$20,000.

Toronto.—Architect J. H. Galloway has completed plans for a two and a half storey dwelling to be erected on Lynnwood avenue, for Mr. T. P. Stewart, Richmond street, at a cost of \$10,000. The building will be of brick construction, with oak floors and interior finish, open plumbing, hot water heating, electric lighting, mantels, electric bells and clothes chute.

Toronto.—Architect J. G. Wilson, 77 Victoria street, will erect a two and a half storey residence to be erected in Avenue road district, at a cost of \$5,000. It will be of brick construction with slate roof, oak and pine interior finish, open plumbing, hot water heating, combination lighting, staved columns and electric bells.

Toronto.—Architect Ewart G. Wilson has drawn plans for a bungalow to be erected on Wheeler avenue, for Miss Logan, at a cost of \$2,500. It will be of brick construction, with open plumbing, hot air heating, combination lighting mantel and electric bells.

Toronto.—Architect E. G. Wilson has prepared plans for a parsonage to be erected on Simpson avenue, near Howland road, for Rev. W. E. Baker, 128 Victor avenue. It will be of brick construction, with slate roof, open plumbing, hot water heating, combination lighting, mantel and electric bells.

Toronto.—Architects K. J. Edwards and Saunders (in trust), 16 Toronto street, have awarded the following contracts for a two and a half storey residence to be erected on Wilson avenue, near King street: Masonry, Moore and Stewart, 63 Augusta avenue; carpentry, Geo. H. Walters, Ossington avenue; sheet metal work, Lanckin & Son, 58 Lippincott street; painting and glazing, Robt. Morse, 61 Marlborough avenue; heating, John Ritchie Plumbing and Heating Co., 56 Adelaide street east; plumbing, A. F. Passmore, 423 Yonge street; electric wiring, L. B. Jackson. Cost of building, \$5,200.

Toronto.—Architect Lewis Reid has prepared plans for a pair of two-storey dwellings on Follis avenue, near Euclid avenue, for Mr. Henry Carter, 716 Bloor street west. The buildings will be of brick construction, with slate roof, open plumbing, hot air heating, combination lighting and electric bells. Cost of building, \$4,000.

Toronto.—The following contracts have been awarded for a three-storey apartment building to be erected on St. George street, Toronto, for Mrs. E. D. Y. Cohen, 147 Farnham avenue: Masonry, Smallwood Bros, 97 Clinton street; carpentry, Sim & Smart, 372 Markham street; roofing, Douglas Bros., 124 Adelaide street west; painting and glazing, Taylor & Co., 9 Bloor street east; plastering, Hanna & Nelson, 271 Rusholme road; plumbing and heating, Purdy, Munsel & Co., 63 Albert street; electric wiring, Rice, Graham & Co., Stair Bldg. Cost of building, \$17,000. Architects, Langley & Howland, Bay & Richmond streets.

Toronto.—Architect P. H. Finney, 43 Victoria street, has prepared plans for two detached two and a half storey dwellings on Major street, near Bloor street, for Mr. Geo. Phillips, 558 Huron street. The building will be of brick construction, modernly equipped, and cost \$6,000. Mr. Finney has also drawn plans for a \$3,000 brick residence to be erected on Hampton avenue, near Wolfrey street, for Mr. A. Tambling.

Toronto.—Architect P. H. Finney has prepared plans for a two and a half storey dwelling to be erected on Broadview avenue, near Danforth road, for W. W. Hillz, 758 Broadview avenue, at a cost of \$3,000. It will be of brick construction, with slate roof, open plumbing, hot air heating, combination lighting, mantels and electric bells.

Toronto.—Architect P. H. Finney has prepared plans for three attached two-storey dwellings to be erected on Hampton avenue, near Wolfrey street, for Mr. G. Tambling, 9 Simpson avenue. The buildings will be of roughcast construction, modernly equipped, and cost \$4,000. Mr. Finney has also prepared plans for three attached two-storey dwellings on Sorrauren avenue, near College street, for Mr. F. W. J. Hill, 71 Adelaide street east.

The building will be of brick construction, with open plumbing, hot air heating, combination lighting, mantels and electric bells. Cost \$3,000.

Toronto.—Architect J. M. Cowan, 65 Adelaide street east, has prepared plans for a pair of two-storey dwellings to be erected on Brock avenue, near Bloor street, for Mr. John Boland, 470 Brock avenue. Estimated cost, \$5,000. The buildings will be of brick construction, with stone foundation, felt and gravel and slate roof, pine floors and interior finish, open plumbing, hot air heating, mantels and electric bells.

Toronto.—Architect E. A. Stockdale has prepared plans for a two and a half storey brick dwelling to be erected on the east side of Dufferin street, south of Bloor street, for Mr. T. A. Hussey, 929 Dufferin street. Estimated cost \$3,200.

Toronto.—Architect Thomas Harris has prepared plans for a two and a half storey brick dwelling to be erected on Boustead avenue, near Indian road, for Mr. Robt. Ewing, 76 Boustead avenue. The building will cost \$3,000.

Toronto.—The Architectural Draughting Co., 65 Yonge street arcade, have prepared plans for a two and a half storey residence to be erected on Grace street, near College street, for Dr. L. Clutterbuck, 596 College street. It will be of brick construction and cost \$3,500. This firm has also prepared plans for a two and a half storey brick dwelling to be erected on Vanhorne street, near Westmoreland avenue, for Mr. C. Cooper, Vanhorne street, at a cost of \$2,800.

Toronto.—Mr. R. Burkell, 318 Crawford street, Toronto, has awarded the following contracts for a \$5,000 brick building to be erected at 94-6 Dovercourt road, near Queen street: Masonry, Jas. Hicks, 144 Montrose avenue; carpentry, Mr. Mason, Montrose avenue; plumbing and heating, W. G. Mimms, 562 College street.

Toronto.—The following contracts have been let for a \$3,500 two and a half storey brick residence to be erected on Rusholme road, near Bloor street, for Mr. A. Brock, Markham street: Masonry work, R. S. Scrinogour, 124 Concord avenue; carpentry, J. Pearson, 650 Brock avenue; plastering, L. Sparks, 148 Sackville street; plumbing, C. Hicks, 741 Lansdowne avenue; painting, J. S. Bunker, 106 Wallace avenue; heating, J. M. Holt, 721 Markham street; electric wiring, C. S. Anderson, 105 Borden street.

Toronto.—The following contracts have been awarded for a two-storey pair of dwellings to be erected on Fairview avenue, near Bartlett avenue, for Mr. H. E. Bell, 56 St. George street: Masonry, Balderson & Hutchinson, 24 Emerson avenue; carpentry, M. Yetman, 545 Concord avenue. Geo. Harper, 61 Yonge street arcade, architect.

Toronto.—Mr. R. A. Shields, 247 Avenue road, will erect a pair of two-storey brick dwellings on the west side of Sidney street, near Cottingham street, at a cost of \$4,000.

Toronto.—Mr. J. J. Downey, 65 Geoffrey street, will erect three pairs of two-storey brick dwellings on Lucas street, near Howard Park avenue. The buildings will be erected by day work, the owner supplying all materials.

Toronto.—Mr. J. S. Case, Parkview Mansions, will erect two detached brick dwellings on Westminster avenue, near Roncesvalles avenue, at a cost of \$8,000. The buildings will be erected by day work, the owner supplying all materials.

Toronto.—Mr. T. W. Murray, 41 Candler street, will erect a two and a half storey residence on the east side of Indian road, near Howard Park avenue. It will be of brick construction and cost \$4,500.

Toronto.—Mr. Henry Martin, 283 Palmerston avenue, will erect two pairs and one detached brick dwellings on Edean avenue, near Jones avenue, at a cost of \$6,800. The owner will supply all materials and erect building by day work.

Toronto.—Mr. Chas. Jolliffe, 419 Gladstone avenue, will erect a pair of two and a half storey dwellings on the east side of Kendall avenue, near Wells street. The buildings will be of brick construction and cost \$6,500.

Toronto.—Mr. J. E. Peterkin, 43 Sinclair street, will erect two pairs of semi-detached two and a half storey brick dwellings on the west side of Brock av-

enue, near Bloor street, at a cost of \$8,000.

Toronto.—Mr. H. A. Marshall, 5 Carlton street, will erect a two and a half storey brick dwelling at the corner of Poplar Plains road and Macpherson avenue, at a cost of \$2,500. The building will be erected by day work, the owner supplying all materials.

Toronto.—Mr. F. J. Cornell, Heyworth avenue, has been awarded the general contract for a pair of two-storey dwellings to be erected on the west side of Curzon street, near Doel avenue, for Mr. Jas. Crothers, 144 Curzon street. The building will be of brick construction and will cost \$3,500.

Wychwood Park, Ont.—Architects Eden Smith & Son, 199 Yonge street, Toronto, have awarded the following contracts for a two-storey residence to be erected in Wychwood Park, for Mr. E. E. A. DuVernet, 199 Yonge street: Masonry, N. E. McGregor, 243 Arthur street; carpentry, Robinson & Wilson, 1123 Dufferin street; plastering, Hanna & Nelson, 271 Rusholme road; painting and glazing, Hughes & Co., 384 Yonge street; wiring, Jones & Moore, 296 Adelaide street west; galvanized iron, Douglas Brothers, 124 Adelaide street west; plumbing, J. T. Aggett, 880 Yonge street.

Hamilton, Ont.—Alderman Cooper is negotiating for a site in the east end, on which he intends erecting six brick houses.

St. Catharines, Ont.—Architect Thomas H. Wiley has prepared plans for a dwelling to be erected on the "Martindale" Fruit Farm, for McSloy Bros. It will be of brick and frame construction, with Georgia pine interior finish, electric lighting, open plumbing, mantels, etc.

Ottawa, Ont.—It is stated that the Hon. William Pugsley will erect a large apartment house on Vittoria street, near Bank street. The city has granted Mr. Pugsley permission to construct a tunnel under Vittoria street.

Bowmanville, Ont.—Architects Eden Smith & Son, 199 Yonge street, Toronto, have awarded the following contracts for a two-storey brick residence to be erected at Bowmanville, Ont., for Mr. J. W. Alexander, 199 Yonge street, Toronto: Masonry, William Brock, Bowmanville; carpentry, Chas. Leal, Bowmanville; plumbing, J. T. Aggett, 880 Yonge street; wiring, Jones & Moore, 296 Adelaide St. W., Toronto.

Creemore, Ont.—Architect Philip C. Pallin, Collingwood, has prepared plans for a pressed brick dwelling to be erected in Creemore, for Mr. D. McArthur, at a cost of \$3,000.

London, Ont.—Architect Wm. G. Murray has prepared plans for a \$5,000 addition to residence of Mr. E. I. Smallman, Colborne street. It will be of brick, with tile roof, mantels, electrical work, plate glass, etc.

Montreal.—Architect R. Montgomery Redden, 8 Beaver Hall Square, has awarded to Messrs. Laird Paton & Sons, Ltd., 485 St. James street, the general contract for the erection of a summer residence at Val Morin, P.Q., for Mr. Richard Griffin.

Montreal.—Architect Joseph Perrault, 17 Place d'Armes Hill, has prepared plans for a block of apartment houses to be known as "Viewmount Court."

Montreal.—Messrs. Gray & Wighton, 7 Park avenue, have been awarded the general contract for the erection of an apartment house on St. Joseph boulevard for Mr. Louis Richer.

Montreal.—Architect Robt. Findlay, 10 Phillips Place, has prepared plans for a residence to be erected on Westmount boulevard, for Mr. F. T. Watson. It will be of brick construction, with slate roof, hardwood floors and interior finish, open plumbing, hot water heating, electric lighting, electric bells and two mantels.

Montreal.—Architect A. F. Dunlop, Lindsay Building, has awarded to Messrs. Gray & Wighton, 7 Park avenue, the contract for the masonry and brickwork for the erection of the Tatley Apartments on Lorne Crescent.

Montreal.—Architects E. & W. S. Maxwell, 6 Beaver Hall Square, have prepared plans for a brick apartment house to be erected on St. Charles Borromeo street, for Mr. Joseph Binnett.

Montreal.—Architect J. Seath Smith, 207 St. James street, Montreal, has prepared plans for an apartment house to be

erected on Mackay street, for Mr. R. C. Murphy.

Montreal.—Architects John James Brown & Son, 207 St. James street, have awarded to Mr. Jas. Young, Outremont, the contract for the masonry and brick-work, for the erection of the Melkle apartment house on Major street.

Montreal.—Mr. Joseph Boulack, 750A Boulevard St. Joseph, will erect an apartment building on St. Louis street, to cost \$10,000.

Montreal.—Mr. T. Dwyer, 13 Manufacturers street, will erect a residence on Durocher street, Outremont, at a cost of \$5,000.

Outremont, P.Q.—Mr. Joseph Attier, 62 Villeneuve street, will erect an \$8,000 brick apartment building.

Moncton, N.B.—Mr. P. M. LePlant has been awarded the contract for a house, to contain four dwellings, to be erected for Mr. A. S. Wartman, at a cost of \$5,200. The building will be of frame construction, with stone foundation, shingle roof, warm air heating, electric lighting, plumbing and mantels.

Winnipeg, Man.—Architect V. W. Horwood has prepared plans for a ten room brick residence to be erected at Amherst and Harvard streets, for Mr. A. B. Stovel.

Winnipeg, Man.—Mr. A. Kristmann will erect five houses on Victor street, to cost \$15,000, and four on Alken street, near Macray, to cost 10,000. Mr. Arni Eggertson will erect fifteen houses on Victor street, this summer.

Winnipeg.—Architect Herbert B. Rugh has completed plans for a residence to be erected on Harvard avenue, for Mr. G. S. Robertson. It will be of brick veneer, with stone trimmings, and will cost \$10,000.

Winnipeg, Man.—Messrs. E. M. Counsell and W. V. Cross will erect a three-storey brick apartment block at the corner of Wardlaw avenue and Stafford street, at a cost of \$45,000. The first storey of the building will consist of stores. John D. Atchison is the architect.

Winnipeg, Man.—Architect J. H. G. Russell has completed plans for a four-storey apartment block to be erected on Edmonton street, near Portage avenue, for Messrs. J. Crichton & Company. The building will be of brick construction and will cost approximately \$40,000.

Winnipeg, Man.—Architects Northwood & Noffke, 26 Central Chambers, have finished plans for a \$30,000 apartment block to be erected for a syndicate on Spadina avenue, at the end of Rose street.

Vancouver, B.C.—Architect W. F. Jones has prepared plans for a three-storey apartment house, to contain eighteen suites. Owners name withheld.

Vancouver, B.C.—Architect Wilkie Allan, 614 Hastings street west, has prepared plans for a sixty-four suite apartment house, to be built on Albion street for an American company.

Vancouver, B.C.—Mr. Edward Hobson has prepared plans for a three-storey store and apartment building, to be erected at the corner of Smithe and Homer streets.

Vancouver, B.C.—Architect William Frederick Gardiner has prepared plans for a residence to be erected for Mr. W. D. Morrison.

Vancouver, B.C.—Architects Grant & Henderson, Granville street, will erect a large house and garage at Klitsilano, for Mr. R. P. McLennan.

Saskatoon, Sask.—Architect W. W. LaChance, Saskatoon, has prepared plans for a \$35,000 brick apartment house to be erected for Mr. Newton Baldwin.

Indian Head, Sask.—A. M. Fraser, architect, has completed plans for a residence to be erected for W. J. Stevenson and C. J. Lennox; also a large addition to the residence of H. C. W. Wilson.

Edmonton, Alta.—Architects Barnes & Gibbs have awarded to Messrs. McSpoiran & Co. the general contract for a \$3,900 residence to be erected on 13th street for Mr. H. B. Spratt.

Hotels

Toronto.—A number of American capitalists have practically secured a site on Yonge street, on which they propose to erect an eleven-storey hotel building to cost \$1,500,000. The following are prominent in the undertaking: Mr. E. Clark King, manager of the Brighton Beach Hotel; Col. E. W. Pratt, of Boston; Mr.

H. H. Deyo and Mr. J. M. Smart, financiers of New York city. Plans for the building have been prepared.

Keewatin, Ont. Architect V. W. Horwood, Winnipeg, Man., has prepared plans for a large hotel to be erected at Keewatin, Ont. Estimated cost, \$40,000. The hotel will be under the direction and ownership of the Winnipeg and Lake of the Woods Development Company, Ltd.

Montreal.—Mr. A. J. Higgins, of Higgins & Cooper, lessees of the St. Lawrence Hall, is endeavoring to promote a company to erect a ten-storey hotel building on Phillips Square, at cost of one million dollars.

Sherbrooke, P.Q.—Architects White & Foulds have prepared plans for a large four-storey brick hotel to be erected at the corner of Belvidere and Victoria streets for Messrs. F. J. and W. H. Southwood.

Vancouver, B.C.—Plans have been prepared by Architect E. Stanley Milton for a four-storey hotel to be erected on Westminster avenue, between Harris and Barnard street, for the proprietors of the Sherman Hotel.

Opera Houses and Rinks

Winnipeg, Man.—The Granite Curling Club will erect a new three-storey building according to plans prepared by Architect Herbert R. Rugh. The building will be of solid brick, and will cost \$40,000.

Winnipeg, Man.—Plans have been prepared by Architects Smith & Bruce for the construction of a theatre, with a seating capacity of 1,000 to 1,300. The structure will cost \$50,000.

Fire Stations and Jails

Toronto.—The supplementary estimates provide for the sum of \$150,000 for the purchase of lands and the erection of buildings, for the Provincial prison.

Calgary, Alta.—The following estimates will be placed before the City Council by the Board of Commissioners for new fire stations and equipment, viz.: Fire headquarters, with steel concrete floor, \$38,750; sub-station, Bankview, \$6,049; sub-station, Roverside, \$6,049; sub-station, Hillhurst, \$6,049.

Schools and Colleges

Berlin, Ont.—The School Board has decided to purchase the property at the corner of David and John streets, as a site for a central school for the advanced grades.

Chatham, Ont.—The Board of Education has authorized the Building Committee to engage an architect to prepare plans for the proposed addition to the Collegiate Institute at this place. Estimated cost, \$15,000.

Windsor, Ont.—The Board of Education has decided to erect a four-room addition to the Collegiate Institute, at a cost of \$15,000.

Singhampton, Ont.—The town of Singhampton will erect a two-room brick school building. Estimated cost, \$3,500. Philip C. Pain, Collingwood, Ont., is the architect.

Stratford, Ont.—The City Council has approved the Public School Board's projected plan of erecting a four-room addition to the Shakespeare School.

Dorchester, Ont.—Architect Wm. G. Murray, London, Ont., has prepared plans for a one-storey cement block school, to be erected at Dorchester. Estimated cost, \$4,000.

Port Arthur, Ont.—Plans submitted by architects Simpson & Young, 17 Toronto street, Toronto, have been accepted by the Board of Education, for the erection of a new Collegiate Institute and gymnasium to cost \$65,000.

Sudbury, Ont.—The Board of Education propose to erect a new high school this summer.

Orillia, Ont.—The Public School Board has under consideration the erection of an additional wing to the West Ward School, and the installation of a steam heating plant.

Dresden, Ont.—Architect J. W. Wilson, of Chatham, has prepared pencil sketches of the proposed new \$25,000 school building to be erected at Dresden, Ont.

Montreal.—Plans for the new building to be erected for the Montreal Technical School are on file at the office of W. J. White, secretary-treasurer, room 52, Montreal Street Railway Building. Ten-

ders will be received up to noon, April 24th.

Montreal.—The Protestant Board of School Commissioners have decided to rebuild the Royal Arthur School, recently destroyed by fire.

Montreal.—Architect G. A. Monette, 97 St. James street, has prepared plans for the erection of a Girls' School in Point St. Charles, for the Catholic School Commissioners.

Notre Dame De Grace, P.Q.—Architect G. A. Monette is preparing plans for a school to be erected at Notre Dame de Grace for the Catholic School Commissioners. The building will be of stone construction, with slate roof, maple floors, open plumbing, hot water heating, combination lighting, fire escapes and fire-proof doors.

Halifax, N.S.—The Civic Finance Committee will recommend to the City Council that the property bounded by Morris, Carleton, Sumner and College streets be sold to the Dalhousie University for the sum of \$10,000, as a site for their new building.

Moncton, N.B.—At a meeting of the School Board a motion was passed authorizing the Secretary to ask for estimates for the cost of a new school building.

St. John, N.B.—Architect F. Neil Brodie has prepared plans for a two-storey school building, to be erected for the Catholic Bishop. The building will be of brick and stone construction, with concrete foundation, steam heating, pitch and gravel roof, plaster interior finish.

Winnipeg, Man.—Work is to be commenced at once on the new addition to St. Mary's Academy. It will be four stories in height, of solid brick construction, and is estimated to cost \$50,000.

Minnedosa, Man.—The School Board has awarded to Mr. Fred. W. Mercer the contract for the construction of the new school building. Contract price, \$36,350.

Vancouver, B.C.—The plans for the new brick High School, to be erected at the corner of Parker street and Cotton drive, have been completed by the School Board architect, Mr. A. C. Hope. Estimated cost, \$40,000.

Kamloops, B.C.—New school buildings will be erected here as follows: One on J. Adamson's property in the south ward, and one on Thos. Cooper's farm on McKay road, in the north district.

Saskatoon, Sask.—Architect W. W. LaChance has prepared plans for a brick school building to be erected at a cost of \$35,000.

Saskatoon, Sask.—The trustees of the High School Board, Saskatoon, have selected a property on what is known as the Louise Grounds, as a site for the proposed new \$100,000 school.

Nutana, Sask.—The Nutana School Board has accepted the plans prepared by architect W. W. LaChance, Saskatoon, for the proposed new eight-room school building to be erected at this place.

Edmonton, Alta.—The School Board have completed negotiations for the purchase of a site on which they will this summer erect a new high school building.

Clareholm, Alta.—The School Board will erect an addition to their present school building at a cost of \$15,000. Architects' plans may be submitted on or before April 20, to the secretary, H. W. Brownlee, Clareholm, Alta.

Civic Improvements

Toronto.—The City Engineer has recommended the construction of the following pavements, viz.: Asphalts—Dufferin street, from Lindsey avenue to Bloor street, \$15,594; Van Horne street, from Dovercourt road to Bartlett avenue, \$6,134; Frizzell avenue, from Pape avenue to Klistwick street, \$3,611; Foxbar road, from Avenue road to St. Clair avenue, \$6,981; Fermanagh avenue, from Soraura avenue to Roncesvalles avenue, \$8,742; Ulster street, from Bathurst street to Major street, \$7,118. Asphalt Block—Shaw street, from Bloor to Essex, \$17,647. Bitulithic—Grafton avenue, from Roncesvalles to Triller, \$2,380.

Hamilton, Ont.—The Board of Works has approved of estimates providing for an expenditure of approximately \$140,000 on road work, of which over \$116,000 will be used for pavement work.

Winnipeg, Man.—The City will expend the sum of \$1,113,483 on asphalt pavement this season.

MONTREAL'S NEW POLICE STATION.---

Continued from Page 41.

other members stood aside in order that the Chairman should have his turn. Probably it was intended that way from the very inception of the project. Ex-Alderman Houle asked, when the site for No. 13 Station was purchased, that it be measured before the city accept it. Mr. Houle's amendment was lost, and evidently for a good reason. What public official would buy as blindly as this in a private deal? We do not know of one. And how was the city to protect itself in event of litigation with adjoining property holders without an accurate record of the size of the lot?

Another thing which looks decidedly "off color," is the fact that \$1,500 of the \$2,500 deposited by Mr. Aube with his tender, was refunded by the City Treasurer to Messrs. Proulx on an order from the Police Board. It is another evidence of official knowledge of the whole transaction. Messrs. Proulx had no right to be recognized in this manner at all. In the eyes of the city Mr. Aube was the general contractor. He was responsible for the execution of the work and the amount of his deposit should have been paid back to him or his depositor, and not to an apparent outsider.

Considering the mass of damaging evidence which has been gathered, what chance did an honest contractor have to secure the work? Absolutely none. Not with an official clique ready to subvert the interest of the city to their own private gain; not with an architect who would permit his professional reputation to be dragged into the mire of political corruption; nor with contractors who were willing to do dishonest work when the opportunity presented itself.

Can it be wondered at, in view of circumstances of this kind, that the honest architect and the honest builder, identified with a public improvement which is over and above board, is often subjected to an undeserving mistrust? Such a condition brings both the profession of architecture and the business of contracting, into disrepute. It is a case where the innocent as well as the guilty suffer, and that is wherein the greatest evil lies. No self respecting architect or one who has any regard for his profession; nor any builder who values his good name, or is desirous of promoting the interests of his craft, would permit himself in any way to become entangled in such a despicable and debasing piece of business.

"That there is good and bad in all things," is a proverb that does not hold good in the case of Police Station 13. In its entire fabric and in the circumstances which led up to its erection, there is nothing but that which is absolutely putrid. It is hard to realize how it was ever permitted to be erected in view of the gross "skimping" which was carried on, and it certainly does not speak very highly for the vigilance of Montreal's Building Department. If a proper system of inspection had been maintained, these glaring defects could not have been possible, as even the most cursory examination would have shown that the structure was being put up contrary to the plans and in direct violation of the building by-law.

After what has been brought to light in connection with this scandal, Montreal is perfectly justified in having a superstitious dread of *Number Thirteen*, and if a Royal Commission is appointed to further, probe the charges, it will be found that its most baneful element is *graft*. Montreal is in need of some sort of exorcism, to drive away its evil spell. Just a purging of certain civic departments would undoubtedly prove efficacious. But the most unfortunate thing of the whole affair is, that Police Station No. 13 is so rotten in its construction, as to be entirely unfit, even to incarcerate those who were responsible for its erection.

MEETING OF A.I.C. AT TORONTO.---

Question of Federation and Other Business Matters Taken Up. ---Exhibition of Toronto Society of Architects.

THE ARCHITECTURAL INSTITUTE of Canada held a council meeting in the rooms of the Ontario Association of Architects, in Toronto, on April 6, at which a number of applications for membership were received and dealt with, and other business matters of the society taken up. A number of associates, fellows, honorary members, and corresponding members were elected, and the vice-presidency, recently held by the late Maurice Perreault, was filled through the election of Mr. J. G. Resther, of Montreal.

Mr. J. P. Hynes, of Toronto, gave an interesting address on Architectural Education, in which he contended that in true architectural education it was the aesthetic that should be developed, more than the scientific. He did not believe that it was at all possible that the educational standing of architects could properly be determined or regulated through legislation. Such could only examine in construction and sanitation. It would be impossible, as well as impracticable, to provide any examination that would test a man's knowledge of art and design. He believed it, therefore, detrimental to the high ideals of the architectural profession, that any legislative standard should be enacted. Such licensing or registration, he claimed, would have the effect of developing science and not art in the profession, and that a man could not be an architect, and should not be qualified to use such a term, simply because he had qualified before an examination testing his scientific knowledge of construction.

While the significance of Mr. Hynes' remarks were fully appreciated by all those present, his views upon the question of licensing and registration, were by no means unanimously held by his hearers.

The architectural Institute met in the evening, in the rooms of the Ontario Society of Architects, representatives of the various architectural bodies in Canada, for the purpose of determining upon some mutual arrangement whereby all architectural societies throughout the Dominion would become federated under one head (the Architectural Institute of Canada). While no definite action was taken, as a result of this meeting, it was valuable in so far as it gave each representative a complete and fair understanding of the views of the various associations, and it will undoubtedly be the means of forming some equitable basis upon which this desired end may be attained.

A smoker was given at the galleries of the Ontario Society of Artists in the evening, and visiting members were entertained by a number of addresses on subjects pertaining to matters of interest to the profession. One of the splendid features of the evening was the exhibition of architectural drawings, exhibited in the gallery of the O.S.A. by the Toronto Society of Architects. This exhibition is held annually by the latter mentioned organization, and is yearly increasing in both the quality of the work exhibited and the interest manifested in the exhibition by those interested in art and architecture. There were in all 326 exhibits, 221 of which belonged to the architectural section, and 105 to the Arts and Crafts. As an indication of the broad fellow feeling that exists among the various architectural organizations, it was to be noted that a very large number of the architectural drawings exhibited were loaned to the Toronto Society of Architects, by members of other architectural bodies. In view of the fact that this exhibition is carried on annually, solely by the Toronto Society of Architects, this fact augurs much for the broadmindedness of sister associations.

The Toronto Chapter of the Ontario Association of Architects entertained the visiting members of the Architectural Institute of Canada at luncheon at the National

Club. Mr. Geo. W. Gouinlock, president of the O.A.A., occupied the chair. A large number of prominent architects from various portions of the country were present, and addresses were given by Messrs. A. F. Dunlop and J. S. Archibald of Montreal, and Mr. J. P. Hynes, of Toronto.

T.S.A. SMOKER.

IN CONNECTION WITH THEIR annual exhibition, held in the galleries of the Ontario Society of Artists, the Toronto Society of Architects held its annual At-Home on April 13, and its smoker on the evening of April 15. Both functions took place in the gallery of the Ontario Society of Artists. The smoker was not only unique, but proved to be a highly successful event. A very excellent programme was arranged, and everybody present seemed to throw off the garb of conventionality, and enter into the spirit of the evening with great zest. About two hundred guests were present, not one of whom but appeared to thoroughly enjoy himself. This type of entertainment, although not usually indulged in by architectural organizations, proved to be a highly pleasant innovation.

THE LATE MR. HARRY D. WARREN.

MANY MEMBERS of the building fraternity will learn with profound regret of the death of Mr. Harry D. Warren, president and treasurer of the Gutta Percha and Rubber Manufacturing Company, Limited, of Toronto, which occurred at his residence, "Red Gables," in Toronto, on March 5. Mr. Warren had been ill for sometime, and had undergone two operations, but his recovery was confidently looked for by his family and immediate friends.

Mr. Warren was born May 8, 1860, in Brooklyn, New York, being the son of Dorman T. Warren, who is now a resident of New York City. His education was completed at Princeton University, after which he accepted a position with The Gutta Percha and Rubber Manufacturing Co., of New York. The company organized a selling agency in Canada, which was followed by the establishment of a branch factory at Toronto, the business of which, in 1887, was incorporated in Ontario as The Gutta Percha and Rubber Manufacturing Co. of Toronto, Limited. Mr. Warren had meanwhile gone to London to represent there the Otis Elevator Co., in which his father was a director, but in 1887 he returned to America, to accept the management of the Toronto business. In time the New York and Toronto companies became entirely distinct, and Mr. Warren became the head and guiding spirit of the Canadian company.

Mr. Warren was for several years a director of the Canadian Bank of Commerce, and associated in an official capacity with various other companies and organizations. He was a member of the leading clubs of Toronto, Montreal, and Ottawa. For many years he occupied a high position in social and financial circles in Toronto, where he was most highly esteemed, and his death is a loss to the rubber industry generally, the city in which he lived, and the country in which he chose to make his home and in which his large interests were centered.

Mr. Warren was a member of St. Simon's Anglican church, and is survived by a widow and five children. His will provides that the business of the rubber company, in which he held a controlling interest, is to be continued as heretofore.

THE PROVINCIAL GOVERNMENT of British Columbia has appointed E. Cuddle, of Victoria, to the position of Supervising Architect of the Department of Public Works. The position was recently created, and Mr. Cuddle will have charge of the preparation of plans for all public buildings.

BUILDING STATISTICS FOR MARCH.
Steady Increases Noted in All Sections of the Country.
---Twelve Cities Show Average Gain of 127 50 per cent.---No Indications of Let Up.

INSTEAD of there being any indication of a let up in the building line, greater activity becomes manifest as the season advances, and it seems no longer a question as to whether Canada will surpass all previous records, but more of a matter of speculation as to how great the gain will actually be on the year's work. Returns for March as supplied CONSTRUCTION from centers reflecting the situation in every section of the Dominion, show that not only has the month registered a material increase over the substantial gains made in the two preceding months, but that a remarkable building wave is sweeping over the entire country.

Of the fifteen cities reporting, twelve submit comparative figures which place the gain for the month at 127.12 per cent. over the corresponding period last year, while in no place, it is gratifying to note, has a decrease been recorded. One thing quite evident, in view of the volume of construction now being carried on, is that the money of the country has found its way back into the channels of trade and that loans for good prospective investments are much easier to negotiate than for some time past.

The biggest increase for the month (646 per cent.) is noted in the case of Winnipeg which so far this year show an expenditure of \$1,059,000 for new buildings as against \$141,000 for the same months of 1908.

Peterboro has the second largest gain that of 294 per cent., and while the amount is small, it shows nevertheless that work undertaken was greatly in excess of that of the corresponding month of last year.

Edmonton, the only city in last month's table to show a falling off, has reasserted herself by recording a gain of 269 per cent., and Calgary has again come forward with an increase of 125.41 per cent., which is indeed remarkable in view of the high percentages this city has shown in the past four months.

Substantial gains are also noted in the case of Vancouver and Victoria which surpass last year's figures for March by 64.50 per cent. and 9.78 per cent., respectively. Both of these cities have shown a steady advance since the first of the year, and it is reported that at no previous time has there been as great an amount of work in immediate prospect.

A striking features of the month's report is the strong upward trend which prevailed throughout Ontario. Every city submitting comparative figures has more than doubled the amount in building operations, as compared to the month of March of last year.

Fort William's gain was 26.9 per cent.; Toronto 103 per cent.; Ottawa 106 per cent.; London 175 per cent.; Peterboro, as previously stated, 294 per cent.; and it is quite likely that equally as good a showing would have been recorded in the case of Windsor, Berlin and Kingston had comparative figures for the corresponding month

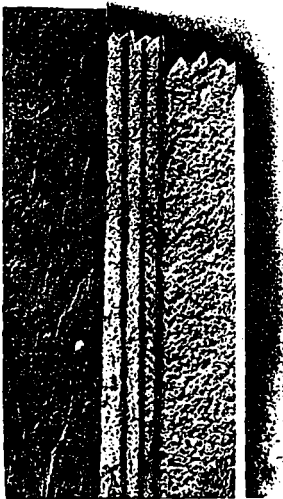
Continued on page 86.

	Permits issued for Mar. 1909.	Permits issued for Mar. 1908.	Increase per cent.	Decrease per cent.
Berlin, Ont.	\$ 14,000	\$ .....	.....	.....
Calgary, Alta.	94,800	42,100	125.41	.....
Edmonton, Alta. ..	179,395	57,020	232.15	.....
Fort William, Ont. .	56,000	15,150	269.63	.....
Halifax, N.S.	109,490	29,300	273.69	.....
Kingston, Ont.	15,000	.....	.....	.....
London, Ont.	69,058	25,050	175.83	.....
Montreal, Que.	379,275	197,683	89.34	.....
Ottawa, Ont.	149,175	89,775	108.82	.....
Peterboro, Ont.	5,695	1,445	294.11	.....
Toronto, Ont.	1,708,840	836,130	103.29	.....
Vancouver, B.C.	798,750	498,555	64.50	.....
Victoria, B.C.	121,840	110,800	9.78	.....
Windsor, Ont.	42,000	.....	.....	.....
Winnipeg, Man.	851,700	114,100	646.45	.....
	4,510,955	1,986,108	127.12	.....

SACKETT PLASTER BOARD.

A BUILDING COMMODITY which owing to its many meritorious features has much to commend it to architects and builders is Sackett Plaster Board. The universal recognition which this material has received since it was first introduced in 1891, is perhaps the best evidence as to how well it meets the requirements for which it is intended.

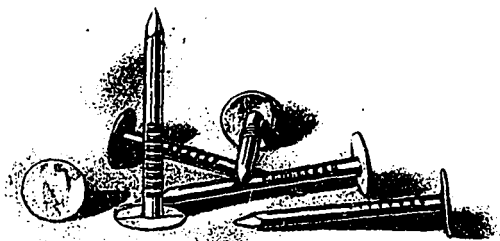
Combining lathing and fireproofing in one material, and effecting economy and speed in construction, Sackett Plaster Board is adapted to every character of building from the largest commercial structure, apartment house, hotel, hospital, theatre, down to the very smallest type of cottage. The material itself consists of alternate layers of felt and plaster, made on special machines, 32 x 36 inches. It is nailed directly to furring and studding, of the ceiling, walls and partitions and can be applied in



SECTIONAL VIEW (FULL SIZE) OF SACKETT PLASTER BOARD, APPLIED TO WOODEN STUD, WITH 3-INCH GROUNDS.

half the time required to cover the same surface area with the ordinary lath.

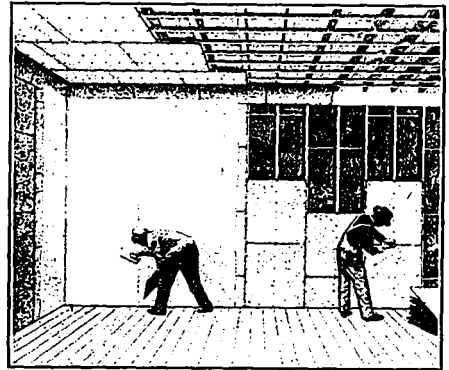
By its use there is no warping or swelling joists and frame work as in the case where wet mortar is applied, and it forms a perfect adhesion with the finishing



LARGE HEAD, 1 1/2 INCH 11 1/2 WIRE NAILS BEST ADAPTED TO SECURE SACKETT PLASTER BOARDS IN PLACE.

plaster which results in a smooth, permanent and highly satisfactory surface.

Illustrated herewith are three cuts showing a full size sectional view of the plaster board, the manner in which it is applied and the style of nails best suited to fasten it in place. These serve to give a good idea of the thickness and texture of the material and the expeditious and thorough manner in which the work can be carried out. The plaster board can be cut to meet any requirement with an ordinary saw when necessary,



METHOD OF APPLYING SACKETT BOARDS TO WALLS AND CEILINGS.

or by scoring it with a lather's hatchet it can be broken on a straight edge.

Aside from being most desirable for walls, ceiling and partitions, it also possesses the virtue of acting as a most effective deadener, and when laid under the floor and roof renders a house warm, dry and vermin proof. It is also especially adapted as sheathing instead of lumber under the weather board and is extensively used for this purpose. In manufacturing plants it is used as an effective and economical covering for exposed wooden parts as a protection against fire and, owing to its non-conductive nature it is an excellent material for insulation in refrigerating plants.

Sackett Plaster Board is now supplied to the Canadian trade by the Stinson-Reeb Builders' Supply Company, Montreal, who have recently taken over the agency for the entire Dominion. This firm through its wide awake business methods have built up a trade which make it one of the biggest factors in the building material line in Canada. Mr. Kennedy Stinson is a member of the executive board of the Canadian Cement and Concrete Association and one of the best known supply men in the field to-day.

Send for their booklet showing views of buildings in which Sackett Plaster Board has been used. Among the Canadian buildings illustrated are Renouf Building, Montreal; the Canadian Pacific Railway Company's buildings, Winnipeg; and the fine residence of Wm. Price, Quebec City.

NEW GREENING CATALOGUE.

THE FIRST OF A SERIES of illustrated catalogues, each on a separate line of goods manufactured in the several departments of the B. Greening Wire Company, has come to hand, and is a most comprehensive compilation of descriptions of wire screen-

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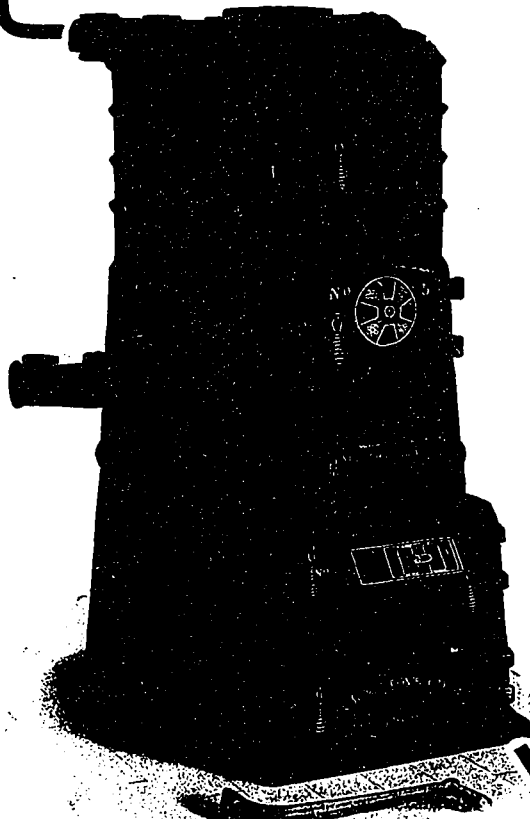
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ing, wire cloth and perforated metal, manufactured by the above firm.

In appearance, this book is everything that could be desired, being an excellent example of the printers' art. To the user of these materials, this book will prove a very instructive and useful one. It is copiously illustrated, and has a number of tables of hard wire screening, showing the decimal of the wire and the weight of the finished article. In wire cloth, tables are shown giving almost every possible mesh and weight in this material that is likely to be called for, from 3-4 in. to 90 mesh, together with the gauge of wire and the decimal size of the opening. Illustrations are given of wire cloth suitable for different purposes, such as milling, bolting, for threshing machines, sand machines, malt kiln floors, etc. The table of both brass and copper wire and further full tables and illustrations of perforated metals in steel, zinc, brass, copper, etc., are also given.

In the introductory pages, a half-tone is shown of the large complete plant of this firm, in Hamilton, and perhaps one of the most interesting half-tones in the booklet is that showing the four generations of Greenings that have been in the wire business as far back as the year 1799, and continuously up to the present date. A short sketch is given dealing with the history of the wire business, and the connection of the Greening family with this industry as far back as the year 1600. This book, we may say again, is one of the most interesting, if not the most interesting and instructive, covering this branch of the wire goods industry that came to our notice, and it will be found a very convenient reference book for those either using, buying, or specifying screening, wire cloth, or perforated metal. Any of our readers who desire one of these books, can procure same by addressing the B. Greening Wire Co., at Hamilton. The other books, taking up the other branches of the wire goods industry, will follow in due order.

MECHANICS' SUPPLY COMPANY.

WE ARE PLEASED to draw our reader's attention to the attractive advertisement appearing in this issue, of the Mechanics Supply Company. Quebec City, one of the largest jobbing concerns

of its kind in Canada. This firm carries a most complete line of plumbing, heating, electrical and mechanical supplies and appliances, and it is admirably equipped to meet the requirements of the trade. A glance at the accompanying illustration will give a good idea of the number of employees the company now requires to look after its rapidly growing patronage.

The company solicits correspondence from any party constructing, remodeling or repairing houses. Their handsome illustrated booklet entitled "The Home Beautiful and Healthful" will be sent gratis to all interested parties.

BUILDING STATISTICS FOR MARCH--- Continued from Page 83.

of last year been submitted. From the manner in which Toronto is forging ahead, it looks very much as though her total valuation for new buildings this year will come close to the \$16,000,000 mark. Fort William also will undoubtedly have a much higher per cent. gain than ever before, while Ottawa will, in all probability, witness the greatest building year in her history.

In Montreal everything is moving along in a most satisfactory manner, the gain for the month of 90.34 per cent. following the marked increases in January and February indicating that the metropolis is enjoying a very material expansion.

Halifax gain of 273 per cent. also brings her conspicuously to the fore, and despite of the falling off experience in January, this city has almost trebled her figures on the season's work.

Reports from the various cities as to future work shows the outlook to be most propitious. Kingston reports "very bright"; London "excellent prospects for all classes of buildings"; Windsor "bright"; Fort William "very bright"; Berlin "good"; Edmonton "looks very bright"; Calgary "excellent, never looked better"; Winnipeg "bright"; while in Toronto, Halifax, Vancouver, and Victoria many large improvements are in immediate prospect.



OFFICE STAFF OF THE MECHANICS' SUPPLY COMPANY, QUEBEC CITY.

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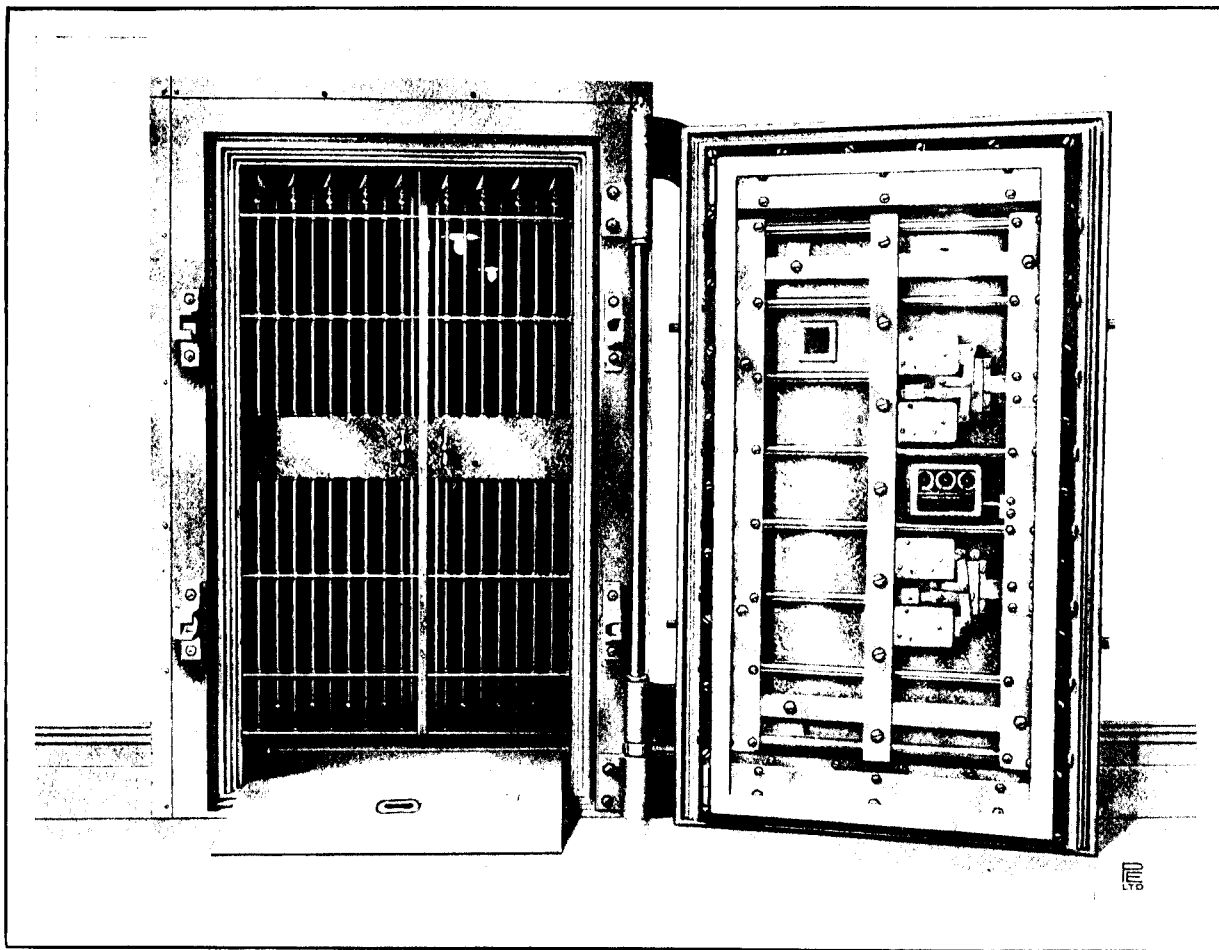


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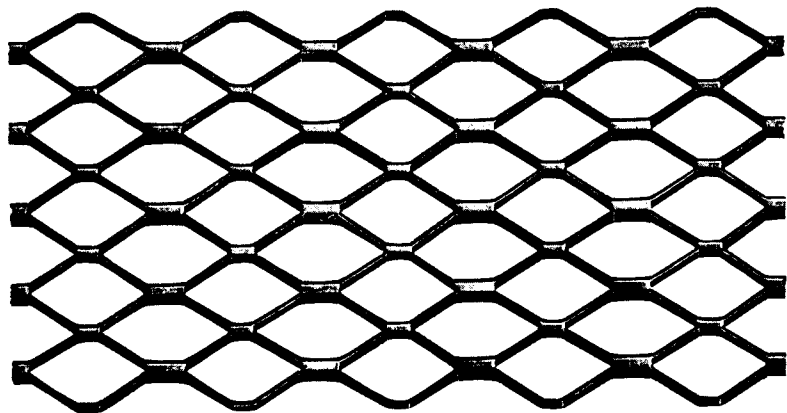
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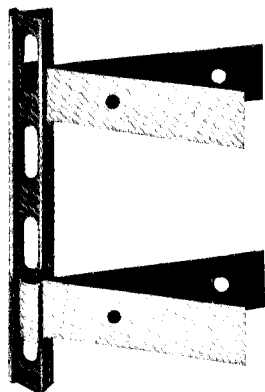
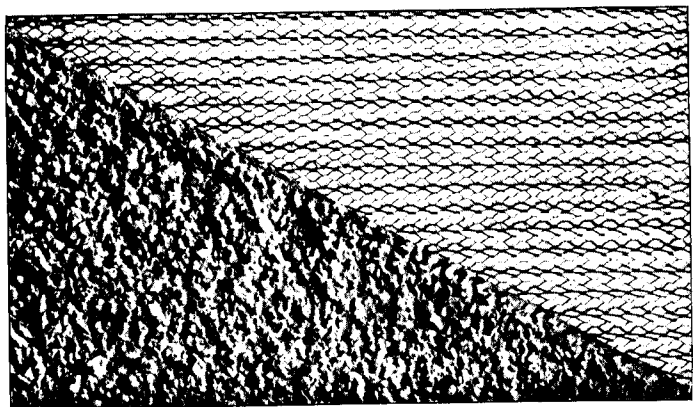
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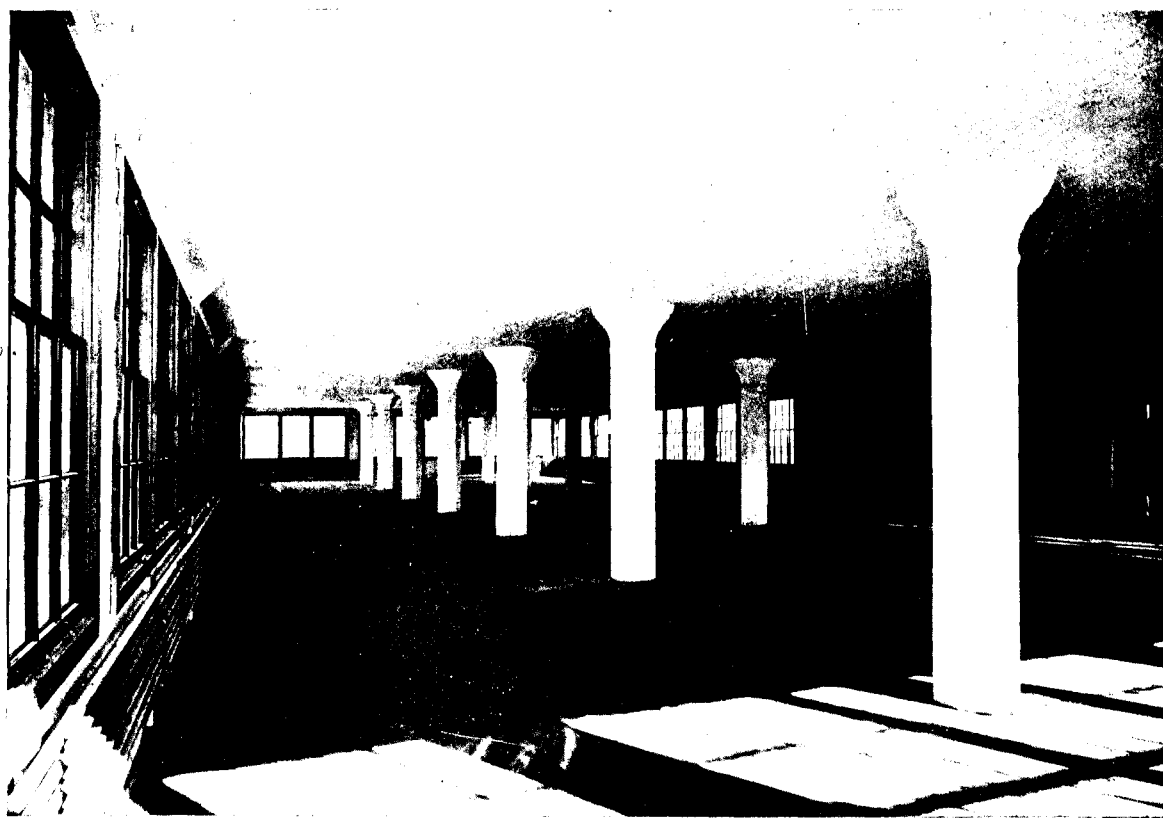
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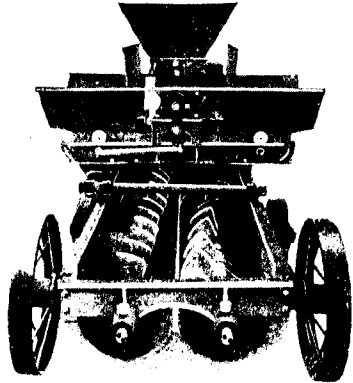
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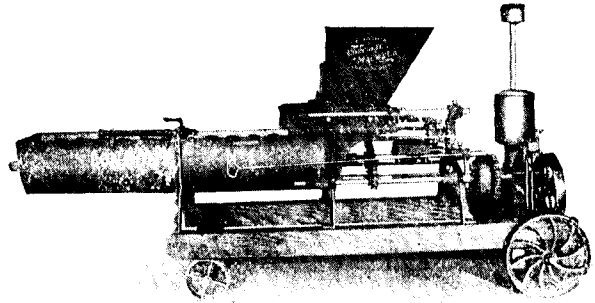
TORONTO

The LONDON Concrete Mixer



The London Automatic Continuous Batch Concrete Mixer will save you from six to eight men every day you use it, simply because the material is only handled once. No wheeling, no measuring; all you have to do is fill the hoppers and the machine will do the rest.

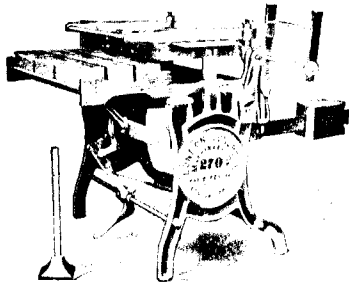
Write us or call at the Factories and we will give you full information. We also make a full line of concrete machinery.



The London Automatic Continuous Batch Concrete Mixer, No. 1

JUST OUT. Has a capacity of 30 yards per day. Price, \$160.00 for hand power; \$275.00 with 2 1/2 horse-power Gasoline Engine. All you have to do is fill the hoppers and the machine will do the rest. This machine is selling as fast as we can make it. Our catalogue tells all about it.

The London Cement Pressed Brick Machine



Showing Brick Discharged

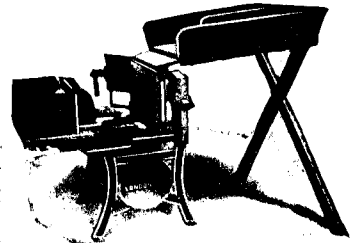
One man operating makes 5,000 brick per day. Every brick perfect and polished on all sides. **The Only Machine** which makes brick with frog impression. **The Only Machine** which allows the use of a self-racking pallet. There are more London Brick Machines in use than all others combined.

For full description send for Catalogue No. 2.

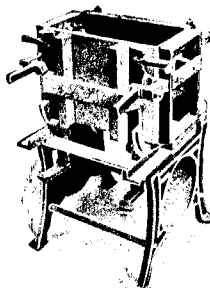
The London Concrete Block Machine

Face-down, Combined, Adjustable

Beats Everything in Competition



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Mould Closed

The Only Machine which allows a colored or richer material to be used on the face, and coarse gravel or broken stone in the body of the block. The only machine which will make any design or any width of wall with any size core opening, and thus meet every Architectural Requirement. These new and important improvements are fully protected by Patents. Send for Catalogue No. 1.

Many Machines in one; blocks for all widths of walls are made in the same adjustable mould; all sizes of blocks made on the one size pallet. The Core is withdrawn vertically, allowing the use of wet concrete, thus making a stronger block.

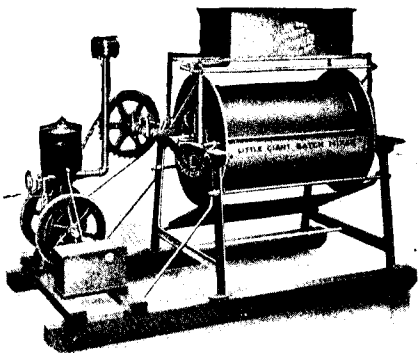
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Municipalities and Contractors, if you mix concrete by hand you waste time and money. **The Little Giant Mixer** is the only practical hand mixer and will take the place of five men. This mixer can be supplied on trucks or skids and also equipped for or with any kind of power. **Easy to operate, perfect mixing, large capacity and small price.** Satisfaction guaranteed. Write for pamphlet No. 11. For large construction work we have other types of mixers. We also make a full line of concrete machinery. Write us according to your requirements.



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The class of work which can be done on this mould is unlimited. Send for pamphlet No. 15.



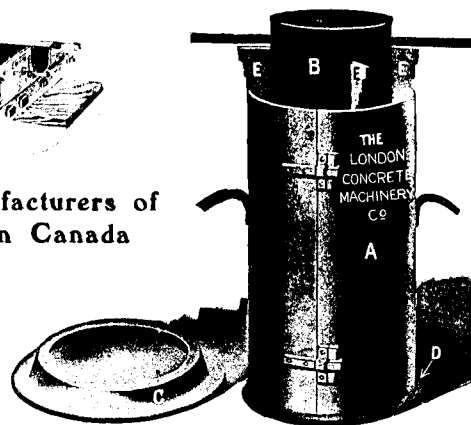
Largest Exclusive Manufacturers of Concrete Machinery in Canada

London Concrete Machinery Co.

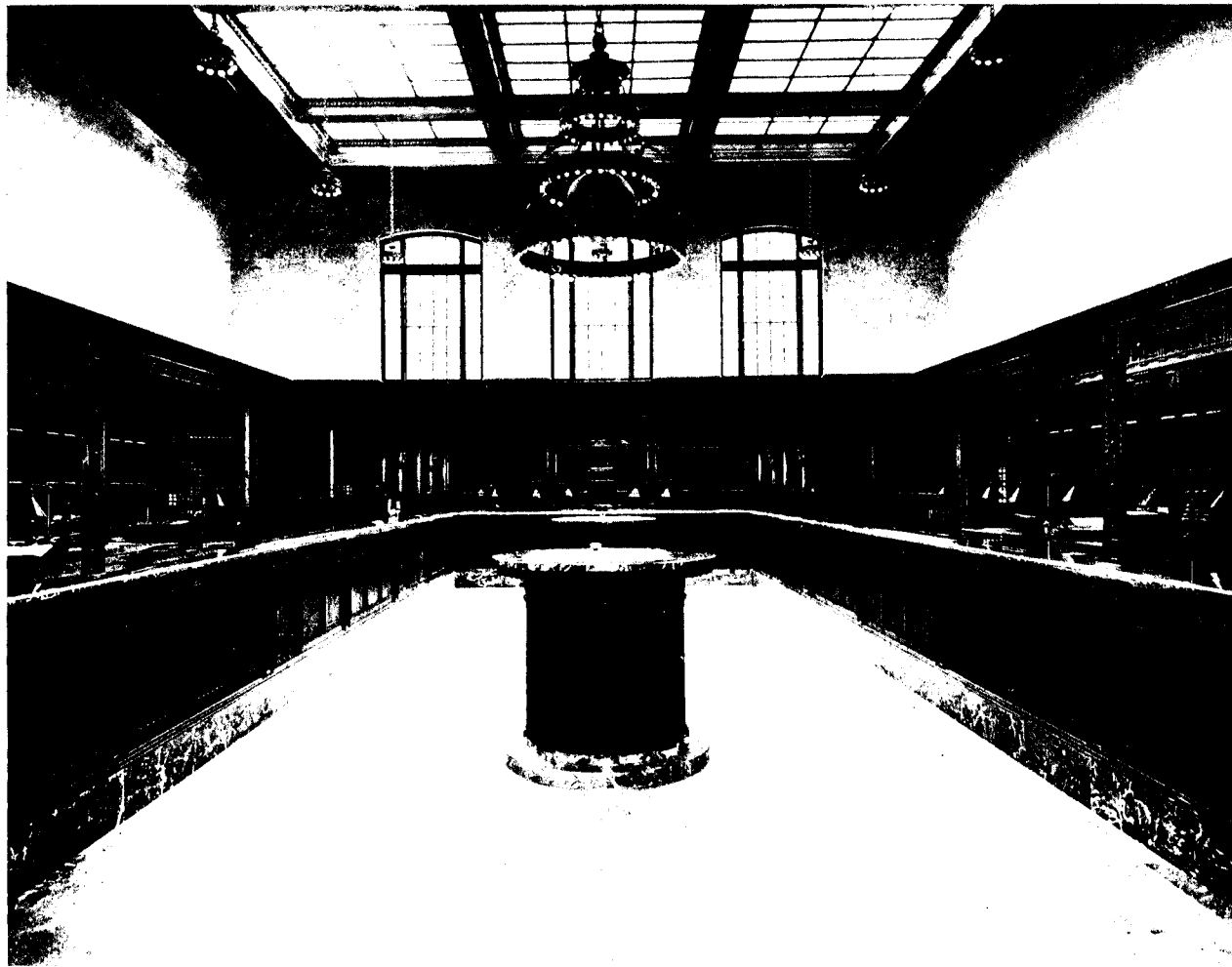
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This machine is really working better to-day than ever before. We are thoroughly satisfied with same and it has never given us any trouble, and people who ride on it remark that we must have the best elevator in the City.

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Yours truly,
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We Also Manufacture

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See What Our Customers Say About Them :

THEY LIKE THE STYLE

Roman Catholic Separate School Board, Stratford.

Stratford, Ont., Sept. 29, 1903.

Messrs. The Parkin Elevator Co.,
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Gentlemen,—

The fire escapes that you have installed on the R. C. Separate School Building for us are very satisfactory. We like the style of fire escape, and we also desire to express our thorough satisfaction with the workmanship connected with the manufacture of them.

We consider that we have one of the finest fire escapes ever installed on any public building in Canada, and it will give us much pleasure to recommend your work to anyone who may be in need of a fire escape.

The Board are very much pleased that they placed the order with you, and wish you every success in your business.

Yours truly,
J. B. CAPTAIN,
Secretary.

The Parkin Elevator Co., Limited

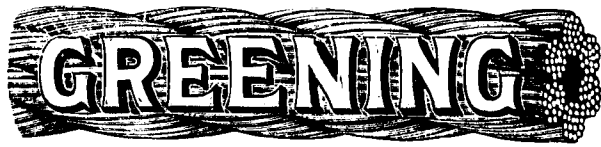
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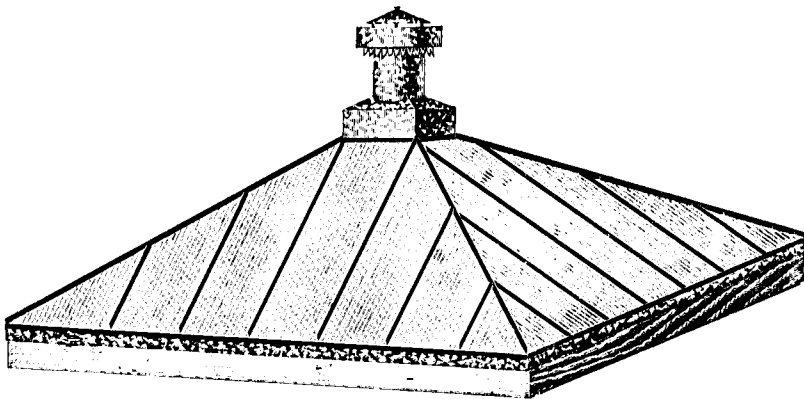
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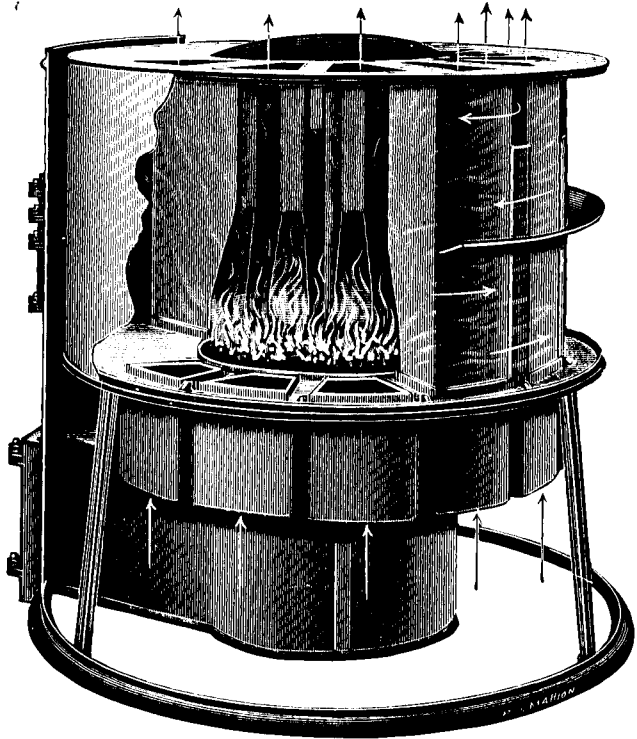
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Calorific
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VICTORIOUS
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It is the embodiment of the most scientific and economical points in furnace construction. ∴ ∴ ∴



Sectional Diagram, showing Interior of Combustion Chamber, Position of Hot Air Columns and Direction of Fire Travel. Record Calorific Warm Air Heat Producer.

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Read what a satisfied customer has to say of the ADMIRAL :

Record Foundry & Machine Co.,
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Kingston, Ont., February 18th, 1908.

Gentlemen:—

I respectfully give answer to your favor of the 12th inst., concerning the No. 47 Admiral Furnace installed by Messrs. Simmons Bros., of this city, at my residence, No. 23 Mack street. I beg to say that the Furnace gives entire satisfaction, and no praise of mine can possibly convey how well satisfied my wife and myself are with this Admiral Furnace. The house is not by any means an easy one to heat, having three flats, and rooms so arranged and works like a charm.

that equal distribution of heat is difficult, but the Admiral Furnace has mastered all difficulties. During the past month of unusually severe weather this Furnace has done more than we could expect. The consumption of coal is very small for the heat it throws through all parts of the house. No Furnace that I have yet seen equals this, so far as I am able to judge. It also burns the coal thoroughly and uniformly, and the ashes require little if any sifting.

Yours respectfully,

(Signed) J. H. METCALFE,
 Kingston, Ont.

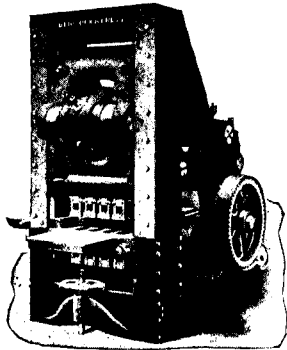
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Berg Improved Brick Press

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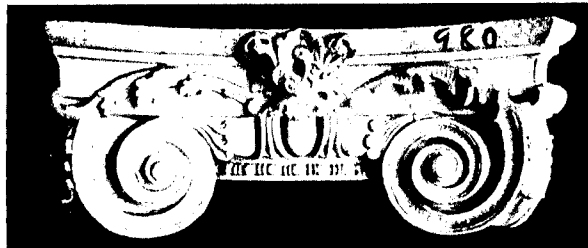
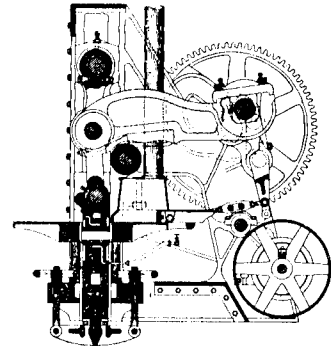
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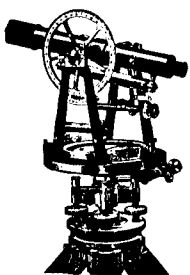
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It was designed by a concrete engineer and contractor of practical experience—not with the idea of “getting up something new” but to start where other designers stopped, and to overcome the weak points of the batch mixers of other makes which has caused trouble and delay on contracts which he had, or which came under his observation.

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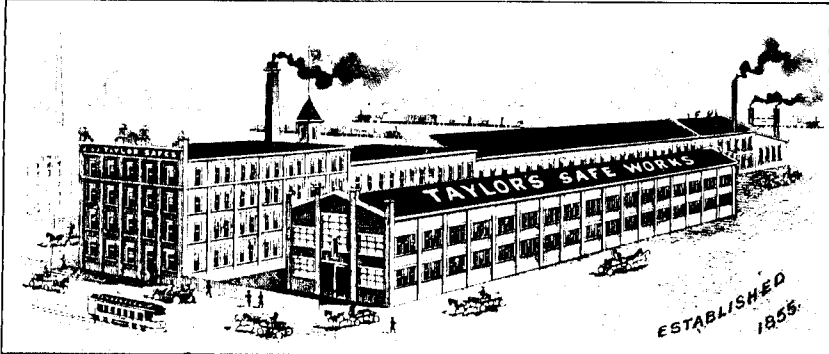
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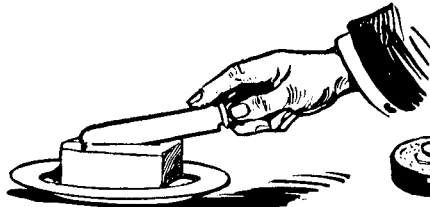
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You pay for the plaster that goes through and falls off.

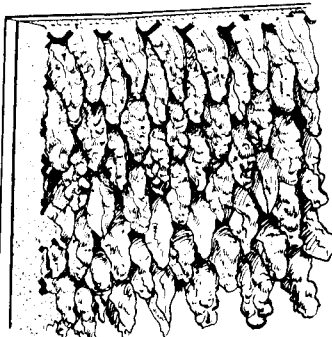
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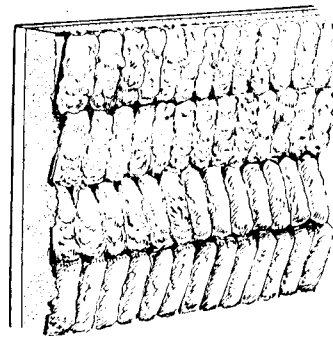
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And you spread it with the filament twisted **flatwise**.

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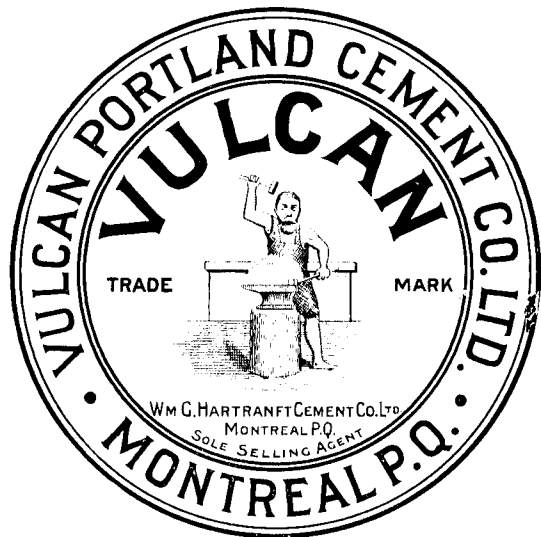
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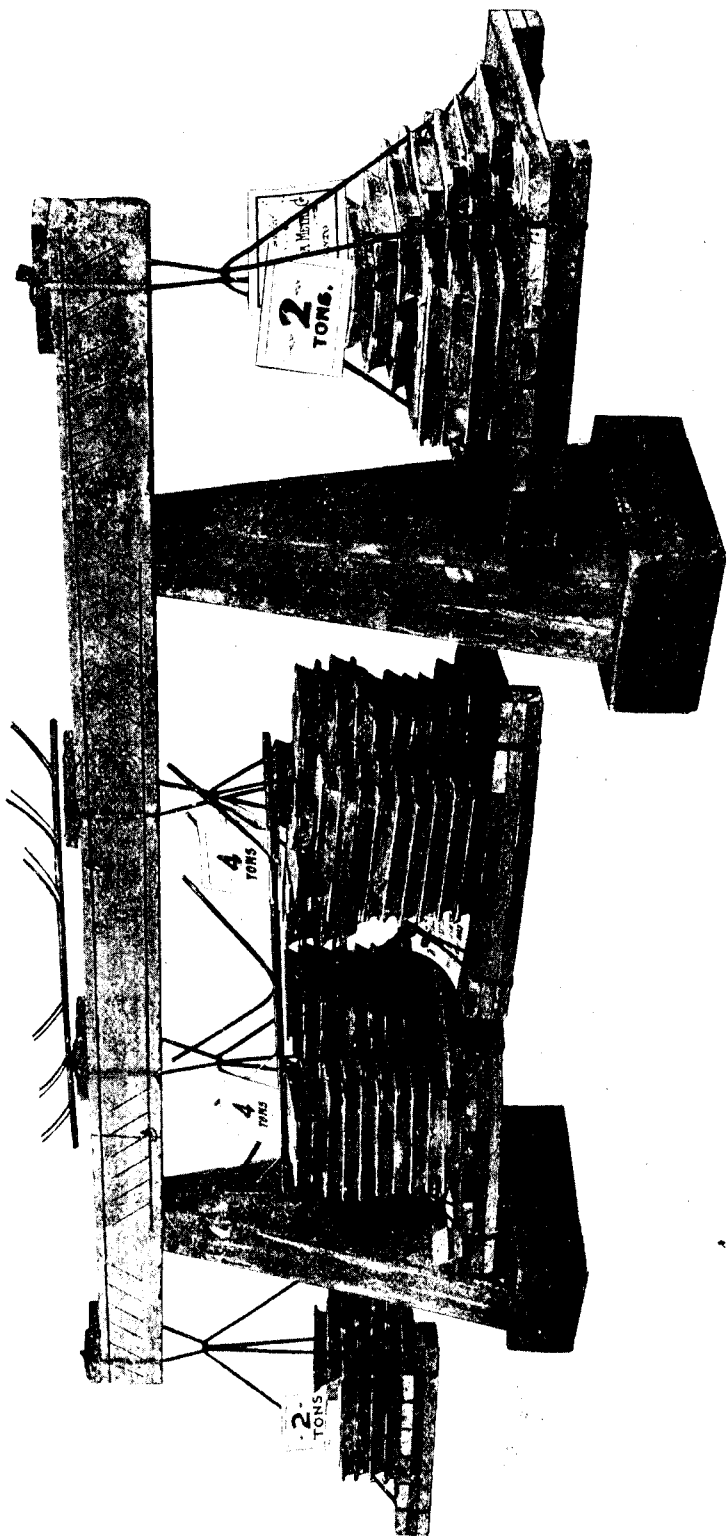
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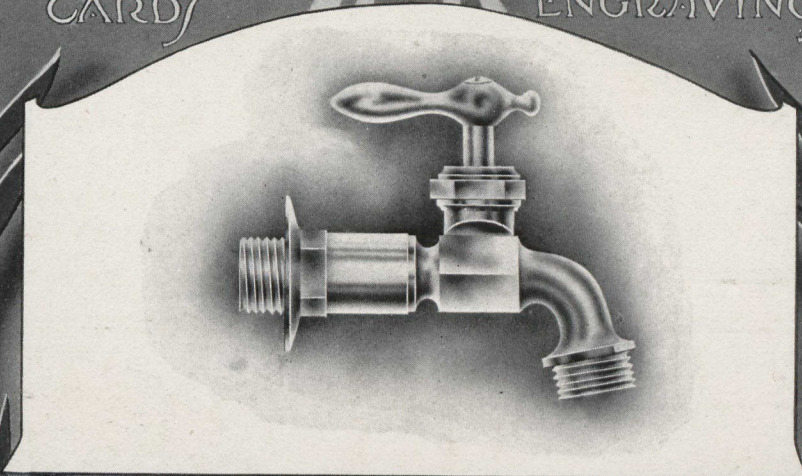
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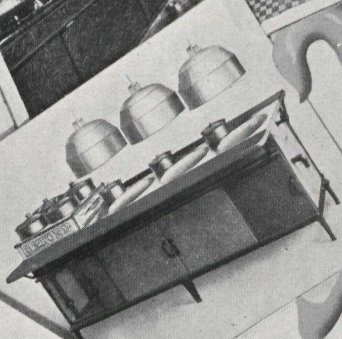
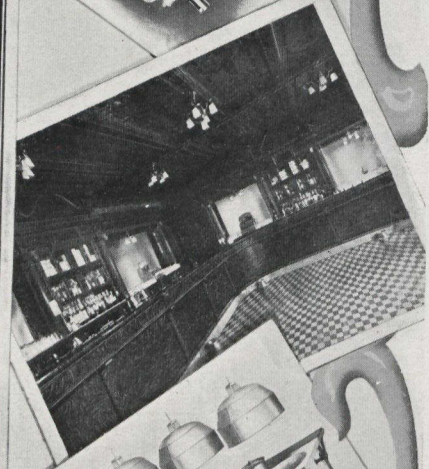
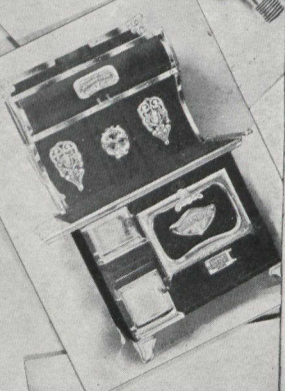
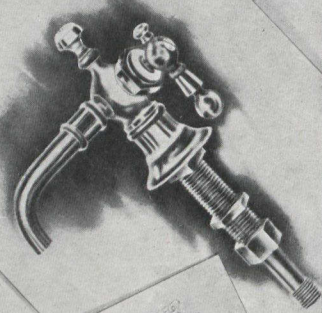
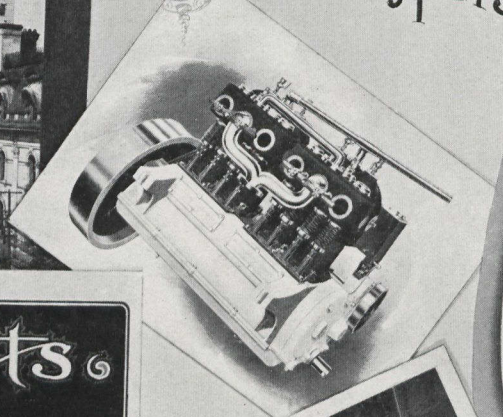
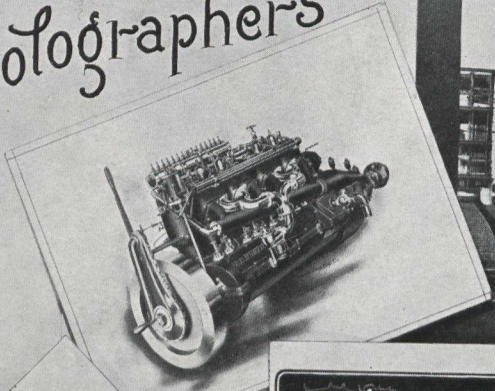
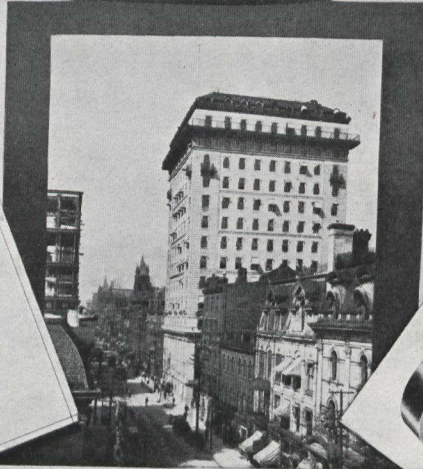
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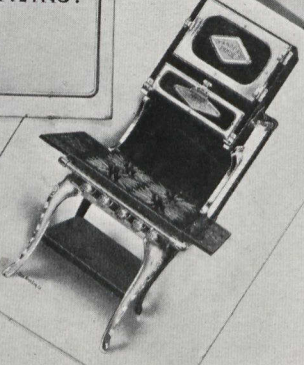
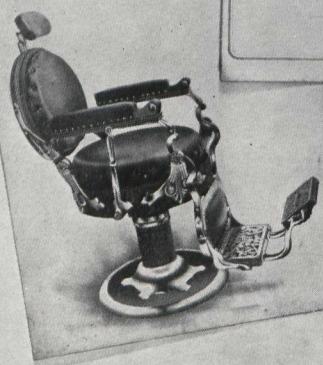
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