Pages Missing

Oct. issue Bound after Nov. one.

THE first number of CONSTRUCTION brought forth a countless number of favorable comments from almost every quarter in both Canada and the United States, some of which are reproduced elsewhere in this number.

We had anticipated that a journal published along the lines laid out in our initial number would be well received by the building and engineering interests in Canada, but were not prepared for such a gust of enthusiasm as was shown in the reception accorded the first issue of the paper.

ABOUT OURSELVES.

In producing a publication like CONSTRUCTION it is always looked for, by the publishers, that some mistakes or deficiencies will creep into the first number and that later the policy adopted may have to be changed in some few particulars. But we have failed to receive one adverse criticism on our initial issue and shall continue to carry out the vigorous, broad policy outlined in our first number.

When we first talked of producing a high-class journal for the constructional industries in Canada we met, from time to time, with the pessimist who maintained that the field in the Dominion was not sufficiently large to lend patronage great enough to warrant the production of an expensive publication, such as CONSTRUCTION. These views of the pessimist have disappeared and we are satisfied that we have already proven the fallacy of such contentions.

The large number of subscriptions already received, and the number of liberal advertising contracts secured at this early date, render the progress made by CONSTRUCTION, from its very inception, much more rapid and material than that of any journal ever started in Canada (technical or secular).

We trust that architects, engineers and contractors will realize the importance of lending us their co-operation in our efforts. We want every member of the craft in Canada to realize that CONSTRUCTION is *his* paper, the columns of which are always open for comment and criticism. We want every reader to be a correspondent. Every issue we want to make better than the preceding one and hope to give you a fresh surprise each month.

Owing to the lack of space we were unable to treat upon the large number of subjects outlined for our November issue, this month, but they will all be contained in our December number.

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COMPARATIVE figures of the years 1907 and 1908 show the increase in assessment of Toronto, Ont., to be the largest in the history of the Queen City. The figures are as follows: 1907, total assessment, $185,263,260; 1908, total assessment, $207,317,767, an increase of $22,054,507.

TORONTO'S INCREASED ASSESSMENT.

The population of Toronto has also shown a gratifying increase from last year, 253,720 to 272,000 this year, an increase of 18,800.

TO all Canadian architects the judgment lately rendered by Mr. Justice Riddell in the case of Gibson vs. The Canada Furniture Company in the Toronto civil assizes, should be exceedingly interesting as it practically establishes the schedule rates adopted by the Ontario Association of Architects—and consequently throughout the whole Dominion, for they differ but slightly in the distinctive provinces—as legally recognized. It also makes clear the attitude of the law toward the much overworked scheme, on the part of prospective builders, of evading payment where the architect's plans have not been entirely acted upon. Such capers are not uncommon, and it is gratifying to be assured that the judiciary will not countenance them. While, within the past year—in the cases of Ellis vs. Conboy and Carrere & Hastings vs. Hyslop Bros.—the profession has been favored with two sympathetic manifestations in similar cases, the suit of two weeks ago is about the first on record to decide a straight issue of *quantum meruit* in this country.

ARCHITECTS' FEES LEGALLY RECOGNIZED.

On November 12, Architect C. J. Gibson, of Toronto, secured judgment against the Canada Furniture Company for full amount of suit and costs, at the hands of Mr. Justice Riddell. Mr. Gibson had brought action for the sum of $907.75 for professional services rendered. His original bill had been $1,407.75, upon which he had received $500, the Company disputing the value of the services received and withholding the balance. The items of the bill were: $700 for drawing up the plans and specifications of an entirely new factory at Seaforth, valued at $35,000; $600 for drawing plans for the remodelling and extension of the old building after it was decided not to build an entirely new plant; $100 for services in connection with an extension to the Wiarton factory; $7.75 travelling expenses.

A special arrangement with Mr. Gibson, according to which he should not charge the regular 2 per cent. on the cost of the buildings for his services, was claimed by the Canada Furniture Company, but plaintiff denied making any such arrangement. The company further stated that the plans for the new factory were never acted on, and the plans for the remodelling and extending of the old factory were not adopted, but merely used as a guide. Mr. Gibson admitted these facts, but said he failed to see why that should affect his bill, as it did not lessen the work he had performed.

The bone of contention was as to whether the schedule of charges adopted by the Ontario Association of Architects was collectable. The other claim that the plans were never acted upon was only a side issue, to strengthen the argument, if possible, that Mr. Gibson had charged excessively unreasonably throughout the whole deal. Mr. Edmund Burke, President of the Ontario Association of Architects, gave evidence as to the leniency of the charges

and the reasonableness of the estimate upon which the charges were based.

In rendering his verdict, the Judge held that the charges established by the Ontario Association of Architects was reasonable. He did not maintain that it was binding; but it was fair. Had plaintiff sued for a larger amount, he believed he would have given him judgment. He was satisfied the charge had not been excessive, but would not increase the verdict. He would give plaintiff a verdict for the amount for which he had brought action —$907.75, with interest from the teste of the writ and full costs of suit on the High Court scale—usual stay, of course, thirty days.

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BRITISH AUTHORITIES ON BUILDING LAWS.

IT may be of interest to the profession to know upon what authorities Barrister W. N. Tilley, counsel for plaintiff, based his claim. He quoted from Emden's British Legal Hand-book on Building Contracts: "The mere employment of a professional person implies an understanding to give him reasonable remuneration, but this inference may be rebutted by circumstances. There is no rule regulating the payment of architects, but a schedule of Rules of Architects and Charges is published by the authority of the Royal Institute of British Architects. These rules cannot of course be binding upon the parties to a building agreement unless they specially agree that the charges of the architect shall be in accordance with those authorized by the scale."

Counsel Tilley also cited a judgment as chronicled in Roscoe's hand-book, as follows:

"The rule of the Royal Institute of British Architects as to charges is not binding in law because it is not a custom of so universal an application as to be an implied term of every contract, but in considering what was a reasonable charge it was right to take into consideration the practice adopted by the larger proportion of the profession as shown by the rules drawn up by the council of the institute for the guidance of the members of the profession."

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"DILAPIDATED BUILDINGS IN CANADIAN CITIES."

THE following letter from Mr. F. W. Fitzpatrick, of Washington, D.C., in which he comments upon the article "Dilapidated Buildings in Canadian Cities," which appeared in the October number of this journal, is worthy of reproduction. Mr. Fitzpatrick, as Executive officer of the International Association of Building Inspectors and Commissioners, has directed strenuous campaigns for the promotion of better building laws in many of the largest cities on this continent, and has been largely instrumental in bringing about a large number of greatly needed reforms in this direction. Mr. Fitzpatrick says:

I particularly commend the article "Delapidated Buildings in Canadian Cities." It is only by means of reiterating just such articles and the plentiful use of photographic illustrations that people can be awakened to the realization that there are such marring spots in our cities. You can't do too much of it. It was by such tactics that we got action in Washington, in Chicago, in Cleveland, in which cities decided steps have been taken towards eliminating these unsightly places and making those municipalities truly and completely "cities beautiful." You will find just such streets as you portray not only in Toronto but in Montreal, Ottawa, everywhere that there has not been continuous and vigorous elimination of the unsightly. And, by the way, very little of the latter has been done anywhere until recent years.

Such work should properly be an essential part of a "beautifying" committee's duties. Every city should have such a committee, yes, and every town. It doesn't necessarily imply that vast sums of money must yearly be spent in tearing down old buildings and carrying on wonderful improvements, but it does mean that immediately the situation should be thoroughly studied and gotten in hand. A plan for the beautifying should be established, and then it is merely a question of when improvements become due, or cash is available, to have the work done so that it will harmonize and fit in with that prearranged system or plan. That is what we are doing very satisfactorily here in Washington, though it took us eight good, big years to get the Government into seeing things our way and abstaining from slapping buildings and "improvements" down here and there haphazard, or to satisfy a particular craving of some pet real estate holder.

Notice that I said I did not advise the immediate tearing down of everything unsightly. To do so at one fell swoop would savor of extravagance and has generally been deemed poor policy, yet that is what Haussemann did in Paris. He there seemingly ruthlessly threw down block after block, the city condemned property by the wholesale, but, nevertheless and notwithstanding, after doing all this work the city actually made a profit and turned into its coffers over $10,000,000 by reason of what had been called "ruthless municipal extravagance."

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A CRITICISM

Editor CONSTRUCTION:—

IN the first issue of your elegantly printed and ably edited new journal CONSTRUCTION, appears an illustrated article entitled "Senator Cox's Mausoleum," which, it is stated, "is considered architecturally and mathematically correct in every detail." I beg most respectfully to demur to this exathedra claim. Artistically, it is a fine example of the pure classic Greek (Doric) style; but it certainly is not "mathematically correct." The law of esthetic proportion is as 13 is to 8. The ground plan indicates 20 x 28 ft., whereas it should be 20 x 32 ft. 5 in. It is this violation of the canon of esthetic proportion which gives the otherwise beautiful structure such a stumpy appearance both in plan and elevation, hence offends the eye.

Yours respectfully,

Westmount, P. Q. S. GROVES.

In reply to the above, while we would dislike to speak of Mr. Groves as a "hair-splitter," we cannot refrain from regarding him as a little extreme. If editors but had the time and patience to delve into encyclopedias and books of formulae they might even be able to scare up a point of technicality that would baffle an unsophisticated student just as the student might floor the most eminent practising architect through knowledge of his text-book. However, we appreciate very much the interest Mr. Groves has shown in the first number of CONSTRUCTION. It is just such interest that keeps up the standard of a trade paper. Nevertheless, our esteemed critic has taken a decidedly narrow view in this instance. The same edifice which he criticizes as being out of proportion mathematically has been very flatteringly commented upon by architects of esthetic temperament, who appreciated at a glance that the building was no temple and therefore the design had to be modified slightly to meet the requirements. These modifications, as conceived by the designers, have been pronounced most interesting. Moreover in order to have adhered to the principle of constructing the roof of seven monolith stones it were impossible to have secured seven pieces of granite long enough to have carried the structure 4 ft. 5 in. longer. Then, too, the building was only required to be a certain length in order to admit of two rows of sarcophagi on either side, while sufficient width must necessarily have been provided to admit and give room to operate in placing the caskets upon the sarcophodies.

While we must admit that, from a casual reading, Mr. Grove's exception is justly taken, we might also suggest

another interpretation of the article in question, namely: the words "mathematically correct *in every detail*" were intended to apply to the *detail* and not to the proportion of the plan.

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PROTECTION FOR THE ARCHITECTURAL PROFESSION.

AN editorial which appeared in our October number, commenting upon the articles of incorporation proposed by the Canadian Institute of Architects, seems to have been misunderstood by some members of the profession who evidently assumed that we were not in favor of legislation for the protection of the profession in Canada. This is a mistake. We stated quite clearly that we were in favor of such legislation but did not believe it practical for the C. I. of A. to ask the Government to empower it, as a private corporation, to be in complete control of the examination the Canadian architect must pass before he is permitted to practice his profession in Canada, and that every member of the profession in Canada should be forced to join the Canadian Institute of Architects or be deprived of his right to the title of architect.

We suggested a law designed after the one that has been in successful operation in the states of Illinois, California, and New Jersey. This law, known as the "Architects License Law," places the examination of architects directly in the hands of a commission appointed by and directly responsible to the Government. A proposal of this nature we believe would be more readily favored by the Dominion Government and would meet the desired ends of the profession in a much more satisfactory manner, while it would in no way encroach upon the rights of the layman.

We reproduce in another portion of this number the Illinois Architects' License Law, in full, for the benefit of our readers who may be interested in this subject. We advocate the establishment by law of a Government Commission of competent judges, before whom architects should qualify before being granted a license to practice the profession, but maintain that such should be directly responsible to the Government, and not appointed and controlled by a closed corporation.

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THE ARCHITECT AND REINFORCED CONCRETE

THE large number of reinforced concrete structures lately erected in Canada proves beyond all question the permanent popularity and efficiency of this modern method of construction. It is, however, surprising how many reputable architects there are who know little or nothing of the many intricate details and peculiarities of the various systems and methods employed in this type of fireproof construction.

Our attention was called not long ago to the action of a builder in dismissing his architect who had undertaken to plan and superintend a large concrete structure. The owner maintained that the lack of knowledge displayed by his architect in preparing detailed plans and specifications for concrete work would have been fatal to the successful construction of his building.

This lack of knowledge on this subject by many architects has been the cause of nearly all the failures in reinforced concrete structures. Their specifications or detailed plans have not been sufficiently clear or intelligently drawn up, and they have had to depend almost entirely upon the honesty and integrity of the contractor.

"What is the position of the architect to-day?" The question has been asked by nearly everyone in the profession. Is the architect to be the agent of the contractor; is he to be crowded out of the business by those who "design and build," or is he going to maintain his old time prestige, and stand firmly for his rights as to the character of construction which is to go into the building under his management?

These questions must be settled once and for all, if the architect is to maintain his self-respect and the confidence of his clients.

At the present time there are comparatively few architects who undertake to show upon their own plans the methods which must be followed in the construction of the reinforced concrete portions of the building under consideration. It is explained that the good methods are all patented, and it would be wrong to favor any one system. This is true only to the extent that no contractor should be given a preference by the specifying of his system. The architect should assert his independence by showing upon his plans what he knows to be a good form of construction.

This may mean considerable study to some, but to those who prove themselves capable it will mean a restoration of prestige not now enjoyed by many.

Competition where cost is to be the deciding point, and design the battleground, is, to say the least, "penny wise and pound foolish," if not actually amounting to criminal negligence.

Where designers are to be awarded a contract for producing a design costing less money than any other, it is needless to say that one will probably be adopted in which the insufficiency of material is the principal source of economy.

Numerous examples of failures, often resulting in death, have proven the "penny wise pound foolish" principle of procedure. Architects should keep before their minds the fact that they are held professionally and criminally responsible for designs under their supervision, and that no amount of bonding will excuse a contractor from not knowing that the design is incorrect.

The only safe, professional and self-respecting method to follow is for the architect to educate himself to a position where he can design as he would in structural steel, and permit of no tampering with his design in the interests of economy in any way which would decrease the stability of the structure or jeopardize his professional standing.

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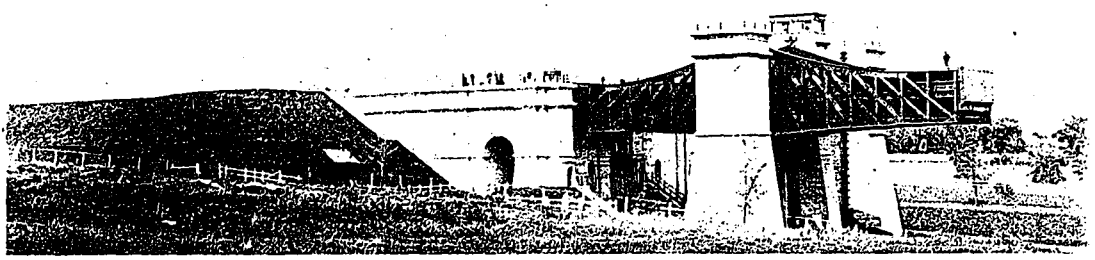
A CASE OF WIREPULLING?

THE contract for the Point Du Bois power development scheme for the city of Winnipeg was recently let to the Anglo-Canadian Engineering Co., of London, England, with offices in Winnipeg. This company, it appears, was formed expressly for the purpose of building this development plant. If they could make good they intended entering the field of Canadian competition. Some one in the company is a shrewd politician, for some inexplicable reason the power contract was secured from the council of the City of Winnipeg in the Mayor's absence. Upon his return, the Mayor took umbrage at what he considered an unwarranted and high-handed action and vetoed the whole proposition. It is now up to the ratepayers of the city to say the final yea or nay at the next municipal elections in January.

A Correction

Owing to a printer's error the Linde British Refrigeration Company, Limited, of Canada, were made to appear through their advertisement in the October number of CONSTRUCTION as manufacturers of "die making" machinery. We desire to state that this well-known concern is not manufacturing any die making machinery, but is prepared to take orders for ice making machinery of all kinds. We would refer interested readers to their advertisement on page 10 of this issue of CONSTRUCTION.



GENERAL SIDE VIEW OF TRENT CANAL HYDRAULIC LIFT LOCK COMPLETED.

Construction of Hydraulic Lift Locks

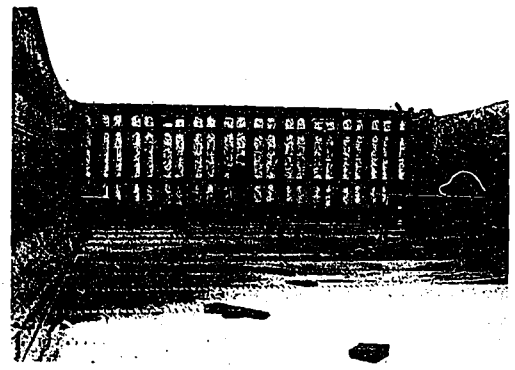
By Walter J. Francis, C.E., M. Can. Soc. C.E., M. Am. Soc. C.E.

Wherein is Given a Thorough Description of the Practical Engineering Methods Employed in Bringing the Greatest Canal Project, of its Nature, in the World to a Successful Completion

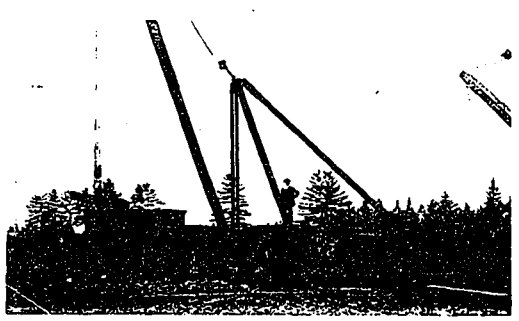
In the preceding number of this journal the Trent Canal Hydraulic Lift Lock at Peterborough was described by the author of this article from a constructional standpoint. We have received many flattering comments upon having secured this most ably written article, not only from members of the engineering craft, but from contractors and men whose association with construction work are quite remote from hydraulic engineering.

In this issue Mr. Francis has taken up, in detail, the gates and their mechanism, the main presses and rams, the tests to which the appliances were subjected and the machinery employed in carrying this magnificent work to completion.—Ed.

THE gates and their operating machinery are of a different type from anything that has hitherto been employed for this purpose. There are eight gates in all, one on each end of each chamber, and one on each end of each reach. Each gate is hinged along its lower edge, and is provided with galvanized air chambers of sufficient capacity to render it practically buoyant. As it is never necessary to operate any gate singly they have been arranged to work in pairs and to engage automatically. Each of the down-stream pairs is operated by a small three-cylinder hydraulic engine placed on the line of the axis of the reach gates in the small room provided for the purpose in the concrete walls between the gateways. A similar engine is employed for the upper gates. Through the chain motion is imparted to the pinion engaging with the segmental rack anchored to the wall. There is a similar rack on each side of the gateway, the top shaft being carried across the gate. When open both gates lie flat upon the bottom, leaving the full navigation depth of water above them. The gates are steel throughout, the framework consisting of a series of vertical I-beam posts, which connect to the top girder, giving a perfectly determinate system of stresses throughout, and bringing definite abutment loads where they can be readily cared for. The



GALVANIZED IRON TANKS IN LOCK CHAMBER GATES.



STEEL CAST PRESS SECTIONS.

plating is all on the outer edge of the gates (that is, the adjacent faces of any pair), is 5/16 in. thick on the upper parts, 3/8 in. thick below, butt-spliced and caulked in the same way as in the lock chamber.

Water-tightness is ensured between the gates and the chambers, or the gates and the reaches, by means of a rubber strip or flap, 2½ in. × ¾ in., fastened along the sides and bottom of the frame against which the gate closes. The pressure of the water keeps this strip tightly pressed against the gate, in this way preventing leakage. The edge against which the rubber bears is machined to a true surface.

There is a space of nearly 2 inches between either end of the lock chamber and the frame of the reach gate. When it is desired to connect the lock chamber with a reach, this clearance space has to be closed. This is done by having a collapsible rubber tube fastened to the frame of the reach gate and arranged so as to lie flat. When the lock chamber is in position for communication, the rubber tube is inflated with air at about ten pounds per square inch pressure, which causes it to expand and press against the end of the chamber.

THE MAIN PRESSES AND RAMS.

The main presses form the most interesting as well as the most important part of the whole structure. It is thought that they are the largest hydraulic presses that

have ever been made. Each ram is 90 in. external finished diameter, and has a working stroke of 65 ft. The gauge pressure in the presses during operation is very nearly 600 lbs. per sq. inch. The inside diameter of the press is 7 ft. 8½ in., giving a water space of 1¼ in. all round between the ram and the press. The rams are

ONE OF THE MAIN RAMS AT FULL STROKE.

built of cast iron, 3¼ in. thick, made up in sections. Each section is 5 ft. 3 in. long, and is bolted to the adjacent one by bolts through inside flanges, for which purpose forty 1¼ in. bolts are used. The joints between the sections are made with a gasket of pure copper, rolled true to gauge, 1/10 in. thick by ¾ in. wide. This gasket is brazed in the form of a ring. The ends of the ram sections are rabbeted to fit into one another, and have male and female corrugations. The copper is put in flat, and when the joint is screwed down tightly it becomes corrugated, making the joint absolutely tight.

It is interesting to note the principles employed in the construction of the presses of the European locks. In the two largest ones the arms are 2 meters in diameter. In one the presses are made of cast iron sections, strengthened by steel hoops shrunk on the outside of them. In the other the presses are made of steel hoops piled upon one another and rabbeted together, watertightness being secured by a copper lining or bag, on much the same principle as the ordinary double-tube bicycle tire, the hoops providing the strength, and the copper lining the tightness.

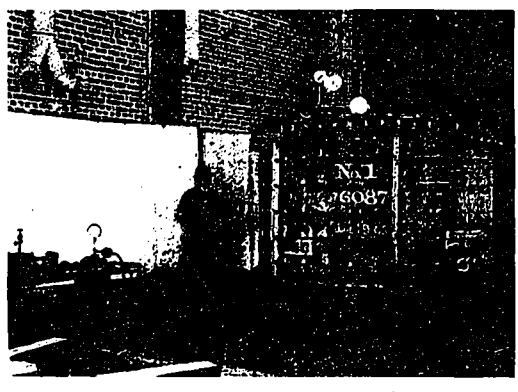
The presses of the Canadian locks are made of plain steel castings, built up similarly to the rams. This method has proven eminently satisfactory in the tests, and in practical operation it leaves nothing to be desired. The internal diameter of the castings is 7 ft. 8¼ in. The thickness of the metal is 3½ in., and the length of the sections 5 ft. 3 in. The sections are flanged at both ends. The flanges are faced and rabbeted male and female. The corresponding faces of the rabbets are also corrugated male and female to receive a soft copper gasket, similar to that used in the rams. In addition to the copper a lead gasket is also used in the press joint, placed in a V-shaped groove cut in the flanges about three inches outside the circle of the copper gasket. The lead was put in round, ¾ in. in diameter and distorted to nearly fill the groove in the process of making the joint. Fifty-six bolts, 1⅝ in. in diameter, were used in each of the press joints.

The top of each press is finished with a stuffing box of rectangular form, 1 in. wide and 10 in. deep. This box contains twelve rings of braided hemp and tallow packing, which, before using, were about 1 in. square. The hemp is tightened down by a steel gland or follower with thirty-six stud bolts tapped into the top section. Each press is braced to the walls of the well near the top by adjustable struts, enabling the press to be accurately centred before the erection of the lock chambers began.

The pipe connecting the presses near the top, immediately below the stuffing boxes, in an extra heavy, lap-welded, wrought iron pipe, 12 in. in diameter, and ½ in. thick. Through this pipe all the water displaced by a descending ram is driven into the other press, causing its ram to rise. Midway between the presses, immediately under the centre of the middle tower, a gate valve is placed in the 12 in. pipe, to make connection from one press to the other, or shut it off as occasion may require. The body of this valve is a steel casting. The valve is controlled solely by the lockmaster in his cabin on the top of the middle tower. Besides the main gate valve there are two auxiliary valves, which are operated automatically by the lock during its motion. These valves serve as a protection against possible accident to the gate valve, and each is closed by the chamber on reaching the end of its stroke, the closing being started about the last ten feet of stroke.

HYDRAULIC TESTS.

After manufacture, and before erection, all the castings of the presses and rams were subjected to a rigid hydraulic test at a gauge pressure of 1,200 lbs. per square inch, being twice the working pressure. A number of these castings were tested to 2,000 lbs. gauge pressure. These higher tests proved so satisfactory that it was considered unnecessary to continue the tests beyond the 1,200 lb. limit. This hydrostatic testing was of absorbing interest, and gave results of importance and value in what was hitherto a practically unexplored field. The higher

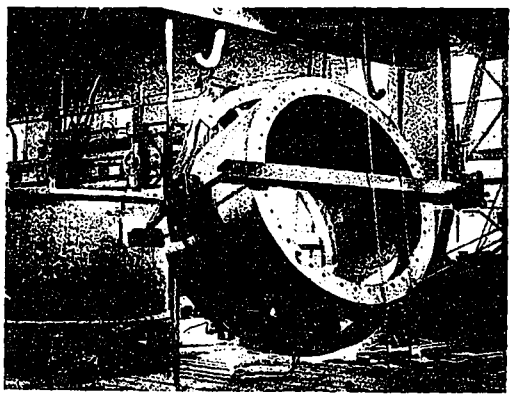


A, A—Spring on Tape. B—Vernier on Scale.

HYDRAULIC TEST OF STEEL PRESS AND IRON RAM SECTION SHOWING MEASURING TAPES AND GENERAL ARRANGEMENT.

pressure, 2,000 lbs., gave stresses approaching the elastic limit of the metal, and proved beyond a doubt the perfectly homogeneous character of the castings. When it

is considered that the length of a full size tension specimen in the test was over 300 in. it will readily be seen that accurate and interesting information should be obtained. The normal press and ram sections were ordinarily set up in pairs and connected by a test-head ring bolted up with temporary gaskets at each end. The hydraulic pressure was applied, as may be seen from the accompanying photograph, by a steam pump, located conveniently near. The pressures were recorded by at least three hydrostatic gauges of standard make, and accurate notes were made of the rate of loading, pressures, extensions, and all other information that might affect the results. The extensions of the steel castings were measured circumferentially by five steel tapes spaced equally up and down the casting. The tapes were accurately



DEVICE FOR TURNING PRESS AND RAM SECTIONS.

located and held to a constant tension by steel springs. The extensions were measured by a Vernier, graduated near one end of the tape, and matching a corresponding scale graduated at the crossing point near the other, so that readings could easily be made to the 1/100 part of an inch. The readings in all cases showed the greatest extension circumferentially on the middle tape, the extension decreasing gradually towards the flanges, where it was practically zero. The tape measurement also clearly showed which end of the casting had been uppermost in the mold when it was poured, the lower, and consequently the denser end, invariably showing the least stretch. The accompanying table gives the average of the results obtained in twenty-four tests. Probably the most remarkable result obtained in the whole of the forty-four tests was that on casting No. SB1, where the gauge pressure was run up to 2,200 lbs. per square inch. This pressure caused, in the walls of the casting, an average stress of 29,100 lbs. per square inch, and the middle tape showed an extension of 1¼ in. The permanent set resulting from this pressure was 1-3/16 in. circumferentially.

In order to study the effect of annealing steel castings the founders, The Penn Steel Casting and Machine Co., of Chester, Penn., offered to anneal a casting in order that we might subject it to a similar test. The test was applied with eminently satisfactory results. The extensions increased directly as the load. At 2,000 lbs. per square inch the elastic extension was only ¼ in., and the permanent set was found to be practically zero. This proved conclusively that the annealing of the steel castings relieved the initial strains in the walls entirely, and left the metal in its theoretical condition.

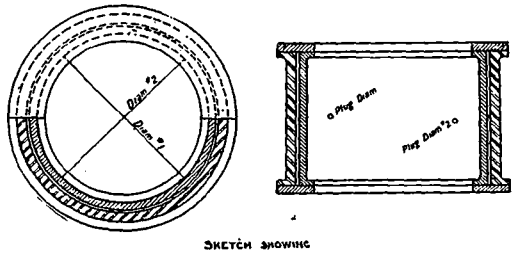
The results obtained on the cast iron ram sections are no less interesting. They showed that in castings of this size the absence of a limit of elasticity in compression for cast iron cannot be ignored. In every instance, in the first twenty-four tests, a permanent set was obtained, and this permanent set was almost in proportion to the applied load. The deformations of the cast iron sections were measured on diameters by means of ordinary high-grade inside micrometers reading to 1-1000 in.

The temporary gaskets used during the tests were generally of leather, which appeared to adapt itself readily to the variations of the specimen during the test. In order to prove the tightness of the permanent gaskets, certain of the sections were set up two storeys high, the middle joint being made in exactly the same manner as the final joint in the field. This gasket proved itself absolutely tight at double the working pressure.

It was anticipated that considerable difficulty would be experienced by the porosity of the steel and iron castings. The tests showed the steel castings to be absolutely tight, while in a few cases the iron castings showed slight traces of oozing at the higher pressures. In these instances the tests were discontinued, and the sections allowed to stand two or three days under the pressure of com-

SUMMARY OF TESTS OF FULL-SIZED RAM SECTIONS

SECTION	DECREASE IN DIAM. No. 1 Inches	DECREASE IN DIAM. No. 2 Inches	MEAN DECREASE IN TWO DIAMS. Inches	REMARKS
W 1	.1330	.1040	.1235	Average decrease diametrically, .1176.
W 2	.1017	.0973	.0995	
W 3	.1096	.1421	.1258	Greatest decrease, one diam., Sect W 10, .1656.
W 4	.1258	.1387	.1323	
W 5	.1467	1 51	.1460	Least decrease one diam., Sect. W. 12, .0667.
W 6	.1370	.1368	.1369	
W 7	.1430	.0974	.1202	Greatest decrease, mean two diams., Sect. W 5, .1460.
W 8	.1983	.0930	.1456	
W 9	.0879	.1160	.1019	
W 10	.1246	.1654	.1450	Least decrease, mean two diams., Sect. E 11, .0937.
W 11	.1192	.1348	.1270	
W 12	.1162	.0667	.0965	Greatest divergence from avr., one diam., Sect. W 12, .0509.
E 1	.1070	.1340	.1205	
E 2	.1120	.1265	.1194	
E 3	.1356	.1322	.1339	Least divergence from avr., one diam., Sect. E 4 and E 6, .0011.
E 4	.1190	.1187	.1189	
E 5	.1135	.0977	.1056	
E 6	.1165	.1004	.1084	Greatest divergence from avr., two diams., Sect. W 5, .0284.
E 7	.1050	.0994	.1023	
E 8	.0910	.1138	.1024	
E 9	.0905	.1105	.1005	Least divergence from avr., two diams., Sect. E 12, .0009.
E 10	.1147	.0910	.1043	
E 11	.1112	.0762	.0937	
E 12	.1145	.1125	.1185	



SKETCH SHOWING WHERE DIAMETERS WERE TAKEN

pressed air at about 40 lbs. gauge pressure, when the tests were again resumed. In every case it was found that the intervening time had given the iron castings ample opportunity to tighten themselves. The tightening was probably due to the formation of oxide in the pores of the casting, which effectively closed these minute passages against the entrance of water.

The conclusions drawn from the whole series of tests on the presses were: 1st, it is possible to obtain steel castings in this form absolutely impervious to water up to 2,200 lbs. gauge pressure; 2nd, it is possible to get castings in which no flaws exist; 3rd, that a slight permanent set occurs at about 300 lbs. gauge pressure, although part of this may be due to self-adjusting of the tapes; 4th, that this permanent set is not increased appreciably by pressures up to 1,200 lbs. gauge pressure, or by repeated applications of the same. The foregoing conclusions apply to unannealed castings. The annealed castings possess all the virtues above referred to, with

the addition of no permanent set up to 2,000 gauge pressure.

In the cast iron sections for the Peterborough lock the permanent set in compression had to be allowed for by making the diameter of the sections slightly larger beyond the flange influence. The tests invariably showed a distortion, as diminution in diameter, which left the sections with theoretical size.

PRESS AND RAM ERECTION.

The erection of the presses was conducted through winter season. The pieces, which averaged about 10 tons each, were handled and lowered with a stiff-leg derrick run by a steam hoist. A very ingenious method was adopted for the erection of the rams. After each press had been completed, the opening for the 12 in. cross-over pipe was closed with a temporary cover, and the press was filled with water to the top. Then the base of the ram was entered into the press, the weight being still held by the derrick. As soon as the packing was placed and the gland screwed down, the derrick hooks were taken off the ram, which was then supported on the confined water within the press. The next ram section was brought and placed upon the base, and after the joint with the base had been finished, water was permitted to escape from the press until the ram settled down through the stuffing box the length of the section. In this manner the ram sections were successfully placed and immersed one at a time until the top section was in position.

GENERAL ERECTION.

The erection plant for the superstructure was a very complete one. A siding was run up to the side of the lock, and all the material was handled by a 15-ton stiff-leg derrick of the simplest design. All field riveting, reaming, and caulking was done with compressed air furnished by a 55 H.P. compressor run by steam, and conveniently located beside the pits. While referring to the erection plant of the contractors, it will not be out of place to make a brief reference to the many ingenious and original devices adopted to carry out the work. As many of the operations required numerous repetitions, the application of time and labor-saving machinery was of importance. Among these may be mentioned the appliances for handling the large press and ram sections. Built steel balance-beams were made for regular lifting by hooks under the flanges, while operations of turning over were accomplished in a few minutes by suspending the sections on trunnions held on the middle diameter of the casting. For transporting the Kirkfield castings over a country road in the summer time, a 15-ton roller-bearing steel wagon was built, with 10 in. tires and 6 ft. gauge. With three teams hitched thereto the castings were transported with perfect ease. Probably the most ingenious device of all is a pneumatic wrench for screwing up nuts on bolts up to 1¾ in. in the large presses and rams. This machine, which consists essentially of an oscillating, double-acting air cylinder, the piston of which rotates a box-wrench through the medium of a ratchet, weighs about 70 lbs., is handled by two men, and does the work of twenty-five in the same time and in a more satisfactory manner.

THE AUXILIARY PLANT.

The auxiliary plant in connection with the Peterborough lock consists of a hydraulic accumulator with its accessories, two hydraulic gate-engines, two hydraulic capstans, an air compressor, an air water-lift, and a deep-well pump. Provision had also been made for the installation of a lighting dynamo.

The duty of the accumulator is to supply water under pressure to the main presses for the purpose of making good any slight leakage of the large glands or the adjustment of the relative height of either chamber. It also supplies power to the gate engines and to the capstans. The ram of the accumulator is 20 in. in diameter, with a working stroke of 30 ft. 6 in. The working pressure is 640 lbs. per square inch. The accumulator is installed in the east side tower, and obtains its water supply from one of a duplicate pair of pressure pumps in the pump room. These pumps are operated by a 15 in. horizontal, "Crocker" type turbine driven under 65 ft. head by water

SUMMARY OF TESTS OF LABORATORY SPECIMENS AND OF FULL-SIZED PRESS SECTIONS

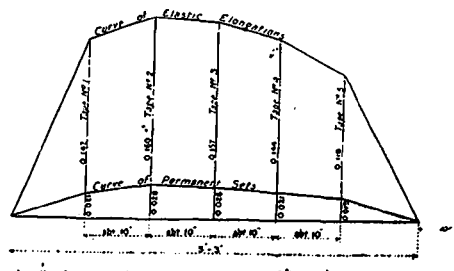
Section	Heat No	Laboratory Specimens: Elas. Lim. per Sq. In.	Ult. Str. per Sq. in.	Elong. p.c. in 2 in.	Reduct. in Area. p.c.	Full-Sized Sections: Tape 1	Tape 2	Tape 3	Tape 4	Tape 5
W 1	2351	35150	67970	15.5	17.18	.135	.145	.160	.150	.125
W 2	2724	31440	66580	20.0	21.53	.195	.235	.225	.205	.170
W 3	2781	31950	66960	17.5	20.91	.130	.170	.175	.170	.145
W 4	2753	32760	68030	17.5	17.30	.125	.150	.155	.155	.135
W 5	2803	34980	67380	15.0	18.11	.135	.160	.165	.130	.100
W 6	2484	35020	67980	26.0	25.30	.130	.145	.150	.140	.110
W 7	2461	36620	66580	24.0	21.80	.130	.160	.155	.125	.110
W 8	2441	34480	64830	20.9	18.90	.130	.150	.130	.20	.110
W 9	2451	33820	74650	15.0	16.25	.120	.135	.130	.125	.130
W 10	2426	33820	70010	13.5	15.32	.130	.130	.135	.125	.125
W 11	2442	34350	65050	20.0	23.44	.135	.150	.150	.125	.100
W 12	2483	34350	66180	20.6	21.97	.195	.185	.145	.150	.120
E 1	2379	34620	68440	20.5	22.60	.142	.160	.157	.141	.118
E 2	2854	32760	68030	17.5	17.20	.150	.150	.150	.135	.125
E 3	2412	33290	67370	16.0	17.20	.145	.125	.140	.130	.095
E 4	2500	31900	66310	20.5	19.00	.135	.160	.160	.140	.110
E 5	2611	33620	65910	26.5	29.70	.160	.195	.190	.160	.135
E 6	2599	32760	66050	26.5	23.97	.120	.140	.130	.125	.110
E 7	2505	33950	70310	17.5	18.10	.125	.140	.120	.125	.090
E 8	2825	33350	66440	22.5	25.30	.125	.150	.155	.160	.120
F 9	2741	31720	64180	27.0	25.83	.185	.220	.230	.200	.135
E 10	2561	33020	64180	27.0	24.50	.155	.190	.155	.155	.115
E 11	2292	31350	67240	15.0	16.24	.155	.165	.160	.145	.110
E 12	2775	33320	68970	12.0	10.62	.125	.135	.150	.116	.100
Averages		33975	67246	19.9	20.47	.142	.160	.141	.144	.118

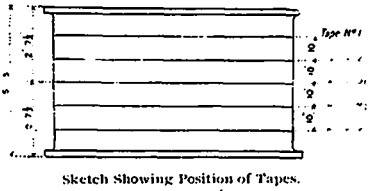
No record. Averages.

REMARKS.—The tape readings are the difference, recorded in inches, of the Vernier readings on the various tapes before any hydraulic pressure had been applied, and at the close of the test, when the pressure was, and had been, held at 1,209 lbs. per square inch for half an hour.

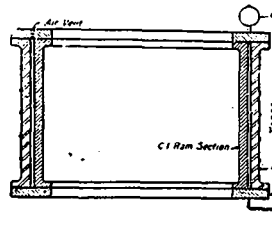
A slight permanent set occurred in the sections after the first application of hydraulic pressure, at about 300 lbs. per square inch usually.

E from these experiments=31,055,880.





Sketch Showing Position of Tapes.



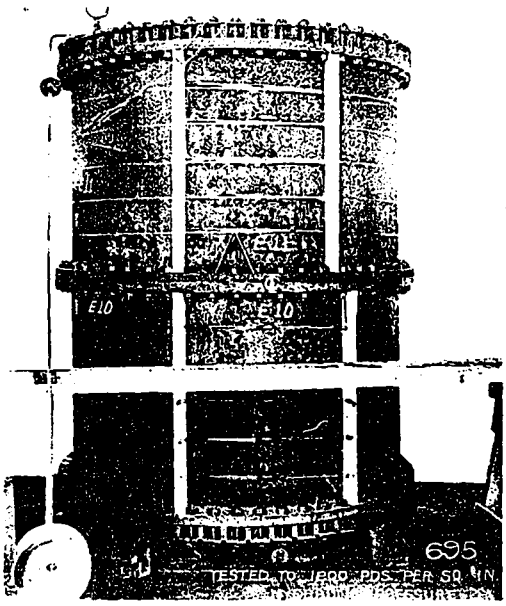
SKETCH SHOWING ASSEMBLY FOR TESTING

from the upper reach of the canal. The accumulator differs from the regular type by having its ballast box directly on top of the ram instead of the usual annular form, the advantage so gained being an efficient bracing of the accumulator press to the surrounding walls of the tower.

The pressure pumps are of the three-throw type, single acting, having 4¼ in. bronze plungers, and are geared down from the turbine. Two pumps are provided, either of which may be used under ordinary circumstances, or, if necessary, both may be connected. The accumulator automatically regulates its motive power.

One three-cylinder hydraulic engine operates the lower gates, and a similar one works the upper gates. One hydraulic capstan is on the lower level and the other on the upper. The gate engines and capstans are all actuated by the accumulator.

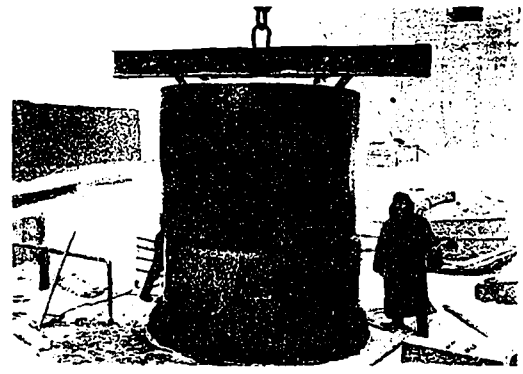
The air compressor, built under the patents of the Taylor Hydraulic Air Compressing Company of Montreal, is in a void in the breast wall. It gets its supply of



HYDRAULIC TEST OF PRESS AND RAM SECTIONS. DOUBLE TEST TO PROVE NORMAL LEAD AND COPPER GASKETS AT MIDDLE JOINTS.

water from the upper reach. The air to be compressed becomes entangled with the water passing through a peculiarly constructed headpiece at the point of inlet, and is then dragged down by the water to a depth considerably below the elevation at which the water escapes, being collected at the lowest level and thence delivered for use. The bottom of the headpiece is about 10 ft. below the surface of the water, and is connected by an 18 in. down-pipe, with a collecting tank 85 ft. below it. The down-pipe descends in a 42 in. shaft, and the tank, 11 ft. in diameter, is in a chamber 14 ft. in diameter. As the collecting tank is bottomless, and on legs raising it 6 in. clear of the floor, the water, after leaving the air bubbles collected in the top of the tank, rises in the 42 in. shaft and escapes through an outlet about 17 ft. below the inlet level. The imprisoned air in the collecting tank is under the pressure due to the column of water from the water line within the tank to the point of escape, which in this case is about 28 lbs. per square inch. From the collecting tank the air is conveyed by pipes to the pump room, and from there to the seal tubes to be used for inflation, and for pumping. The capacity of the compressor is 300 cubic feet of air per minute.

The air lift, which is entirely automatic in its oper-



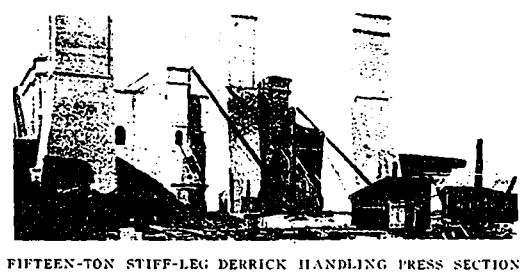
ERECTION OF LARGE RAMS—PLACING A SECTION.

ation, and receives its air from the Taylor air compressor, is somewhat of a novelty, and in connection with the compressor it is very economical and convenient under the existing circumstances. Its duty is to keep the lock chamber pits free from water, which it does by pumping from one of the wells in which the drainage is collected. The device consists of a simple pipe submerged in the water at the suction end, where compressed air is admitted to it. The discharge pipe is 4 in. in diameter. At the inlet it is 3½ in., and extends 35 ft. below the surface of the water in the well. The suction or inlet is in the form of an inverted funnel, 16 in. diameter at the large end. At this point a small quantity of compressed air is admitted, and becoming mixed with the water in the pipe, makes a column of air and water, which rises by virtue of its being lighter than the water surrounding the pipe. The actual lift is 29 ft. from the water line in the well to the water line at the discharge in the lower reach.

MATERIALS AND GENERAL APPEARANCE.

A summary of the amounts and various kinds of metal used in the superstructure is as follows: Rolled steel, in plates and shapes for the lock chambers and gates, 1,640,000 lbs.; cast iron, in rams, accumulator, guides, and various machines, 495,000 lbs.; steel castings for the main presses and accumulator, 668,000 lbs.

Care has been taken throughout to make the general appearance of the work as attractive as possible. All the

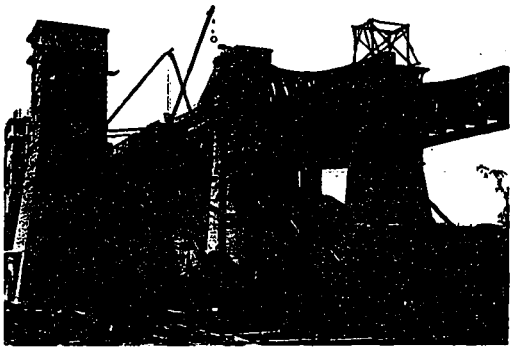


FIFTEEN-TON STIFF-LEG DERRICK HANDLING PRESS SECTION.

walls and stairways are protected by suitably designed railings, and the windows and doorways are closed by ornamental grille-work. The lockmaster's cabin on the top of the centre tower is constructed of concrete as high as the window sills. Above this the steel framework is furred with wood, and the whole of the exterior covered

with copper. The interior is finished in British Columbia cedar in the natural color.

Having given this general description of the Peterborough lock, it will be well, by way of comparison, to state the general features of the two large European



GENERAL VIEW SHOWING PROGRESS OF STEEL ERECTION.

locks before proceeding to note the particular construction of the Kirkfield structure.

THE EUROPEAN LOCKS.

The LeLouviere lock has a double cantilever truss work for the chambers, on much the same principle as the Peterborough lock, excepting that the trusses are only 19 ft. deep at the centre, as compared with 32 ft. in Peterborough. The guide towers, nine in number, are of steel, and the upper gateways are contained in a steel aqueduct.

At LesFontinettes the lock chambers are supported by plate girders, the webs being made use of as the side plating of the chambers. The guide towers are of brick, placed on the transverse centre line in a manner corresponding to those at Peterborough.

In both these locks the clear-head room above the water is required to be only about 9 ft., and in consequence the gates in both cases are raised vertically by means of an overhead gantry frame. The auxiliary power in both cases is very similar, consisting, speaking generally, of a small turbine, a pressure pump, and an accumulator, the latter, as in Peterborough, being the direct source of power for the gate machinery and capstans.

THE KIRKFIELD HYDRAULIC LOCK.

At Kirkfield the chief departures from the design of the Peterborough lock consist in having three steel towers instead of three concrete ones; steel aqueducts for the upper gateways instead of the heavier concrete breast wall; and a much simpler auxiliary plant for operating the gates, capstans, and pumps. The truss work for the chambers is almost identical with that of Peterborough. The gates are likewise of the same type. The manner of operating them, however, has been modified to overcome the difficulty experienced at Peterborough from floating chips and drift-wood becoming entangled in the teeth and chain of the gates and rack.

For the gate operation a simple high-pressure cylinder is the motive power. The end of the piston rod terminates in a rack which, through a segmental gear, imparts a rotary motion to the main shaft, to which heavy steel levers are fastened, as will be seen by reference to the accompanying illustration, this shaft being 57 in. away from the axis of the reach gates. The outer end of the levers engage with the reach gate, which is automatically connected to the chamber gate, and open and close them by the motion in one direction or the other of the actuating hydraulic cylinder.

The main auxiliary plant at Kirkfield consists of a pair of intensifier pumps, either one of which is capable of doing the required work. These pumps have been specially designed for this lock. The engine end consists of a double-acting cylinder 40 in. in diameter, working under the head of water from the upper reach, namely 50 ft. The piston of this cylinder is cast midway of the length of the piston rod, which is 6 in. in diameter, the ends of the piston rod forming the plungers for the high pressure end. The stroke is 24 in. The pumps work automatically and, as well as regulating the large presses, furnish the motive power for the gates and capstans. The capacity of each pump is 50 imperial gallons per minute.

The contract for the superstructure of the Kirkfield lock is $297,300.00. It is expected that this work will be completed about June next.

The Kirkfield lock is located on a gradual rock slope. The upper approach consists of concrete side walls built upon the rock, and terminating on the east side of the roadway at the breast wall. From the breast wall steel aqueducts for the upper gateways extend to the end of the lock chamber, and are supported by heavy steel columns standing in the bottom of the pit. The pit is excavated entirely in the rock, the sides having been cut with a Sullivan Channeller, and left with the machine face exposed. The rock is of a much better quality than that encountered at Peterborough, of the same formation, but in layers 15 in. or more in thickness. The lower gateways are practically the same as those at Peterborough. The total quantity of concrete in the Kirkfield lock proper is about 8,000 cubic yards.

OPERATION.

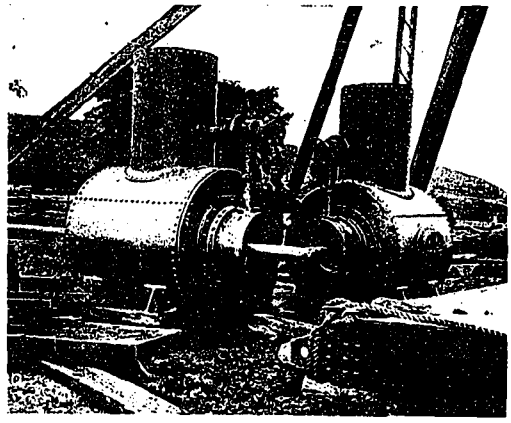
The operation of the hydraulic lock requires three men—or lockmaster and two assistans, or gatemen. The lockhaster is in charge and is responsible for the structure. Two gatemen are required, one at the lower end and the other at the upper, to open and close the gates, to inflate or deflate the seal tubes, and to operate the capstans. The gatemen also take charge of vessels at about 200 ft. on either side of the lock. The lockmaster, during operations, stays in his cabin on the top of the centre tower and has full view of all that transpires. He is also in communication with his two assistants by a simple signal system. The lockmaster has before him the principal levers, and through an interlocking system regulates the working of the lock. The levers for controlling the gate engines and the capstans are situated on the wall

PNEUMATIC WRENCH, SHOWN AS ADAPTED FOR RATCHETING HOLES.

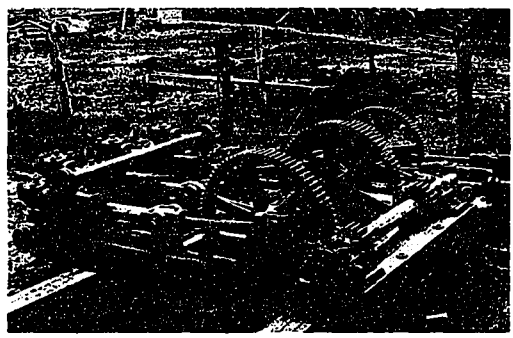
immediately above the respective machines, convenient of access to the gatemen. The interlocking system is so arranged that the lockmaster must set his levers in proper

order, and these having been set neither he nor the gatemen can err by using their levers at the wrong time.

In order to get a clear idea of the complete mode of operation, let us assume that both lock chambers are down at the lower level, empty, as they are at the end of the winter, or when it is desired to prepare them for navigation purposes. The annular space in each of the presses if empty will be filled with water. The main valve on the connecting pipe will be closed and water will be pumped into one of the presses until the ram, with its superimposed chamber rises to the level of the upper reach. An examination of the case will show that it is necessary that the uppermost chamber, in order that it shall be able in descending to cause the other to take the full upward stroke, must contain a volume of water greater than the rising chamber contains. This extra amount of water is equal to the volume of one of the rams, since the change that takes place during the relative motion of the two chambers is that the ram of the descending chamber becomes constantly immersed while the other protrudes. In other words, the descending chamber is losing weight while the ascending is constantly becoming heavier. It is also necessary that some extra weight be provided to overcome the friction of the guides, and of the stuffing boxes of the main presses. The area of each lock chamber is so great that it requires only an additional depth of 8¼ in. to give an extra load of water of 100 tons, which is sufficient for ordinary operation. The addition to this weight will, of course, have the effect of accelerating the time of the relative change in position of the chambers. The ordinary time required in raising the chamber through the whole elevation is about two minutes. But this will depend upon the adjustment of the main glands, the nicety of the working of the guides, and the manipulation of the main valve in the hands of the lockmaster.



FIFTEEN-INCH TURBINES TO OPERATE PRESSURE PUMPS.



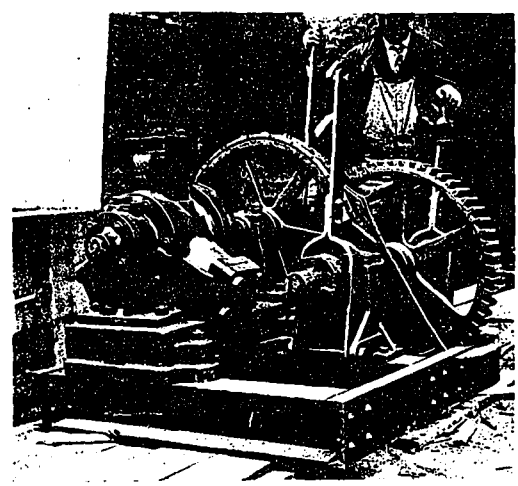
THREE-THROW SINGLE-ACTING PRESSURE PUMPS.

An ordinary lockage is conducted in this manner: Suppose 100 tons of "surcharge" has been found to give sufficient additional to the descending chamber. The uppermost chamber will then be required to stop with its floor 8¼ in. lower than the bottom of the upper reach. On communication being established with the reach, it receives from the reach 100 tons more than the lower chamber contains, assuming the depth in both reaches to be the same. Then the total operations to make the lockage, if the gates adjoining the reaches are opened and the seal tubes are inflated, consists in hauling the vessel into the chamber and mooring her there securely, closing the gates, deflating the seal tubes, and opening the main valve between the presses. The heavier chamber then commences to descend, the motion being allowed to increase gradually by the gradual opening of the valve until it reaches the maximum speed. At about three-quarters of the stroke the main valve is slowly closed, communication between the presses being entirely cut off when the end of the journey is reached. The change in elevation being made, the seal tubes are inflated, the gates are opened, and the vessel or vessels are free to go on their journey, after being towed out by the capstans. The "surcharge" contained in the descending chamber simply flows out into the lower reach, while a similar quantity to perform the next lockage is admitted into the chamber which has just reached the higher elevation.

The record lockage, up to Jan., 1907, at the Peterborough lock was 6½ minutes, being the whole time from the stopping of the vessel in the lower reach to her proceeding on her journey under her own steam in the upper one.

From this description, it will be seen that in order to have the finished structure successful in operation, accuracy from start to finish must have been constantly in mind. This fact, more than all others, probably, was impressed upon the author during the progress of the work: Eternal Vigilance is the Price of Accuracy, and Accuracy is the Price of Successful Operation in a Hydraulic Lock.

It is worthy of note that the locks employed on the Trent canal, both at Peterborough and Kirkfield, can properly be labeled "Made in Canada," being built for the Canadian Government by Canadian contractors and absolutely under the direction of Canadian Engineers. The water load of the Peterborough lock is double the larger European ones.



THREE-CYLINDER HYDRAULIC GATE ENGINE.

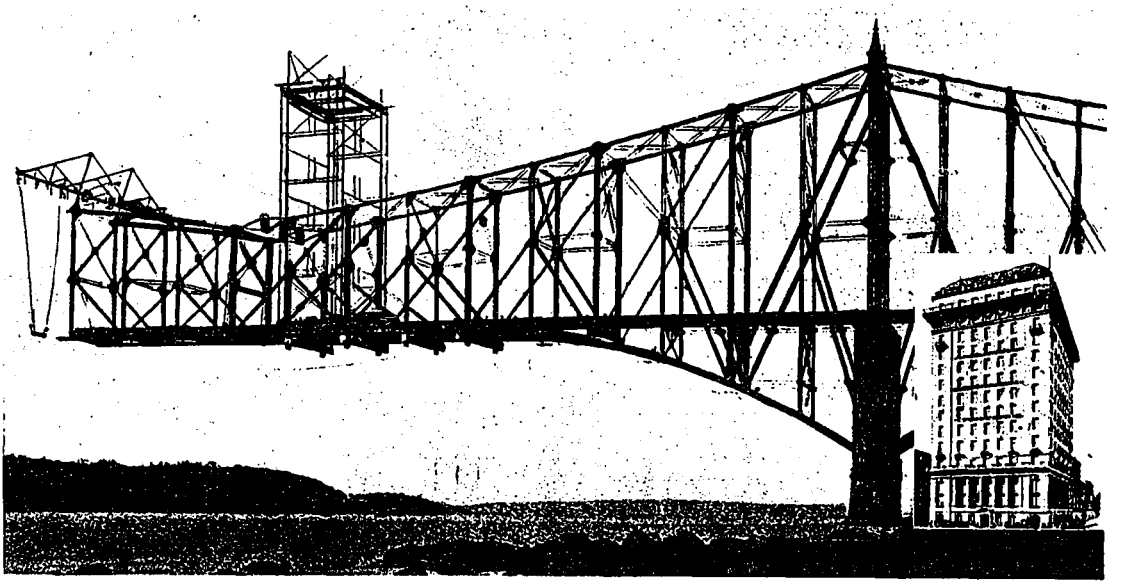


ILLUSTRATION SHOWING THE COMPARATIVE HEIGHTS OF THE QUEBEC BRIDGE STRUCTURE AND THE HIGHEST OFFICE BUILDING IN THE BRITISH EMPIRE. THIS GIVES PROBABLY A BETTER COMPREHENSION OF THE ENORMITY OF THE GREAT BRIDGE WHICH FAILED AUGUST 29 THAN ANY DESCRIPTIVE PEN COULD CONVEY. THE TRADERS BANK SKYSCRAPER, TORONTO, IS A 15-STOREY BUILDING 213 FEET IN HEIGHT. THE HIGHEST PEAKS OF THE MAIN POSTS OF THE QUEBEC BRIDGE SOUTH CANTILEVER ARM WERE 400 FEET ABOVE THE ST. LAWRENCE RIVER.

Remarkable Disclosures of Theodore Cooper

Consulting Engineer Declares in His Evidence That Both Contracting Companies Were Guilty of Many Irregularities—Insufficient Funds, Faulty Design and Incompetent Supervision Given as Chief Causes of Failure of Quebec Bridge

DEVELOPMENTS in the enquiry as to the cause of the Quebec bridge failure by the Royal Commission would appear to confirm the opinion voiced in the October number of this journal, that it was clearly the result of an attempt to construct a great span of 1,800 feet with too few tons of steel; and the rashness of this stupendous error cannot be laid at the door of any individual, corporation or concern interested in the enterprise. The slip-shod manner in which the whole transaction was conducted from the time the project first took definite shape until the collapse occurred has left many avenues of escape for the actual criminal responsibility involved in the loss of over seventy human lives.

Mr. Theodore Cooper, consulting engineer, has recuperated from his poor state of health sufficiently to provide the commission with evidence of most startling nature, telling of a systematic paring-down process which had been going on for almost three years, relating to the quantity of material employed in the construction of the Quebec bridge. This most extravagant method of economizing was "not named in the bond," when the Phoenix Bridge Company was instructed to proceed with the work, nor was any mention made of such a procedure in the specifications governing the design. It was found necessary, according to Mr. Cooper, to resort to the "skinning" business when the southern portion of the superstructure was barely well begun, because of insufficient funds. Mr. Cooper is quoted as declaring under oath that the Quebec bridge was not the best bridge, but the best bridge that could be built with the money provided. The amount being limited the structure had to be planned to meet this amount.

Some facts as to the financing of the enterprise are worthy of note just here: The promoting company of which Mr. Parent, M.P.P., ex-Premier of Quebec Province, is president, promised to put up $200,000. The balance of the money required was to be furnished as follows:

Bonus by City of Quebec	$300,000
Bonus by Quebec Province	250,000
Bonus from Ottawa Government	374,000
Bonds guaranteed by Government ...	6,678,200
Invested by Quebec Bridge Company	200,000
Total Resources	$7,802,200

It was estimated that the completed superstructure, not including the two approaches, was to have cost $4,000,000. The approaches cost about $1,000,000. The substructure cost $1,416,394.

Returning to Mr. Cooper's evidence it is noteworthy that he blamed both companies, the Quebec Bridge Company and the Phoenix Bridge Company, for the collapse, inasmuch as, in his opinion, neither had had properly responsible officials at the work, men with sufficient technical knowledge to superintend a construction of such magnitude. The deflection of so important a member as chord 9 west, to the extent of 2½ inches would indicate to an intelligent mind that the chord was less capable of doing its duty, than if in perfectly straight condition. He declared that it would have been perfectly possible by prompt and intelligent action, to have stayed the chord and pre-

vented the failure of the bridge. This would have required only about three hours' work at an expense of only one hundred dollars or so in timber and bolts.

For a week the commissioners worked with Mr. Cooper in New York, as many or as few hours each day as his enfeebled health would permit, going over plans and discussing the matter from every point, after which the consulting engineer repaired with Chairman Holgate to the British Consul-General and made a statement under oath. Throughout he gave his testimony in a way that could not fail to carry conviction, and although in the greater part he seemed to consider that others were to blame for the accident, he did not spare himself in the least. He considered himself partly responsible for the failure, as he was unable, owing to his illness, to look after the work as carefully as he would have wished. There was something very touching in his statement to the commissioners:

DECLINES FURTHER RESPONSIBILITY.

"My responsibilities, gentlemen, end as soon as I have served my duty in aiding you in reaching the truth in regard to the destruction of this bridge. While I have my views, and such views are at the service of those who have heretofore relied on me, I shall decline to take active or responsible position in connection with the correction of the errors that we now recognize in this work. It must be referred to younger and abler men."

Mr. Cooper told at length the whole history of his connection with the work. About February 25th, 1899, he received a communication from the Quebec Company asking him if he was at liberty to take up the examination of competitive plans, and he consented. Some months later Messrs. Parent, Hoare and Barthe came to New York to see him. He stated to them that his fee would be $7,500 a year for inspecting and passing on the plans, and for acting as consulting engineer. Mr. Parent had left him the impression that the plans would be sent; that the work was to be constructed by a private corporation, whose money was limited and the question first to be decided was the possibility of building the bridge within the financial strength of the company. He was also emphatically of the opinion that no previous understanding existed between the Quebec and the Phoenix companies, but that the matter was left entirely to him as to what was the best plan, and the best bridge. Mr. Cooper finally accepted the appointment of consulting engineer on May 6, 1900. He did not recognize at that time that there was to be any disbursement except an occasional visit to Quebec, so he made no agreement regarding expenses. The following August, being in Quebec and finding that the company was apparently embarrassed for funds, he offered to cut his stipend in two. A member of the Board suggested making it $4,000 instead of one-half, and this amount was what he actually received up to the beginning of the present year. His examination of the competitive plans was based entirely upon data furnished by the Quebec Bridge Co.

On the 10th of May, 1903, he was informed that the financial affairs were in such shape that the work could be proceeded with, and then he took up with the Phoenix Company such necessary modifications as the loads and stresses to suit a bridge of such magnitude. It was found that nothing could be done in the way of changing the original specifications without authority from the department.

After much discussion and a personal visit to Ottawa, he received a copy of an order-in-council giving him authority to make modifications from time to time in the specifications and proposed loadings, providing that the efficiency of the structure be fully maintained up to that defined in the original specifications, attached to the company's contract.

Nearly three years ago, before construction work at Quebec was commenced, Mr. Cooper informed Mr. Parent and Chief Engineer Deans of the Phoenix Bridge Company, that he would never be able to go to Quebec again, and asked to be relieved from his responsibilities, as he felt it impossible to give the work the attention that he should, as he was under the ban of his physician. Neither would hear of it.

TO HAVE HAD FULL AUTHORITY.

Mr. Cooper considered the authority given him by the department, gave him absolute and full power to amend the specifications and to order alterations as seemed best in his judgment under the restriction that the efficiency of the bridge be in no way reduced from the original plans.

All important changes were referred to Mr. E. A. Hoare, engineer for the Quebec Bridge Co., and he supposed through him, to the Department of Railways and Canals.

Mr. Cooper said that the original specifications of the Quebec Company were what he would call "scissored," that is, not drawn upon any theory by any person having the importance of the structure in his mind.

There was no recognition of the snow weight that at times must come on the bridge, the requirements for the wind strain were practically those imposed upon the Forth bridge against the protest of the chief engineers of that structure, while the train load and train requirements were not so great as he thought they should be in the present state of transportation.

He saw that a large amount of material was to be devoted to giving it horizontal strength, against an impossible wind, which material could be more favorably placed in giving the structure vertical strength under higher train loads.

The specifications were corrected to provide for a less wind strain with a greater vertical loading than at first called for. He also found the floor system unnecessarily heavy and he wrote Mr. Hoare stating that it exceeded by eighteen or twenty per cent. the best requirements of the big United States railways.

He explained that for every extra pound in the floor system, from four or five pounds extra metal would have to be added to the trusses to carry it, and that the excessive requirement would render it impossible to build the structure within the financial ability of the company.

Mr. Cooper also considered that the work of preparing the construction plans and drawing was done in too hurried a manner. The Phoenix Company practically had the contract for the work several years before the preparation of the plans were commenced. He urged the company to prepare their plans as nearly as possible for the accepted 1,800 foot span for which no plans had been prepared, stating to them that in important work such as this, every caution and careful consideration was necessary in each detail and that this should be done before the rush of construction was on. The Phoenix Company, however, paid no attention, and practically took no steps to prepare the plans until the financial arrangements were completed.

PLANS WERE HURRIED.

In Mr. Cooper's opinion, sufficient time had not been given to the careful study and preparation of the plans free from the rush and push of the practical execution. Then too, the time given for the completion was three years, and against this, too, Mr. Cooper had protested, saying it was an absolute impossibility, that four or five years should be taken.

Numerous and comparatively minor changes were made in the plans of the Phoenix Bridge Company. The most important, however, was a change in the long eye bar chord of the anchor arm and, it was with extreme difficulty he had this changed by the Phoenix Company, whose engineers had declared it impossible, and it was not

until he had personally made the required drawings that it was done.

Going into the question of officials, Mr. Cooper did not think that the local staff at Quebec, employed by either company, was fully competent to handle the work. He regretted to say further that the chief engineer lacked the proper qualifications to render him capable of his important office.

All difficulties, all questions, all decisions or anything relating to the structure, were referred to Mr. Cooper, and looking back over the situation, he believed that he was not only acting in the capacity of consulting engineer, but as chief engineer as well, and that without any staff.

The commercial department of the Phoenix Bridge Co. had shown a reluctance in making good defects which had been brought to the company's notice, although the technical staff always appeared to appreciate the engineering difficulties.

The attention of the company had been early called, to the danger of allowing the 1,100 ton travelling gantry to remain on the cantilever arm and a promise had been made to have this removed as soon as the small traveller was constructed. The consulting engineer did not know that this had not been done until after the calamity.

Regarding the deflection in the lower chord, Mr. Cooper considered this to be the initial cause of the failure and there was a grave suspicion in his mind that the Phoenix Bridge Company had not shown sufficient care and intelligence in placing the members of this chord.

On the day of the collapse, as soon as he had been apprised of the true condition of chord 9 west by Mr. McClure, Mr. Cooper had wired to Phoenixville that no more iron be put on the structure until the facts were considered.

A strange feature in connection with the work was the evidence contained in a couple of letters from Mr. Hoare to Mr. Cooper about the time of the wreck, which came into testimony when Mr. Cooper was being examined. As will be remembered at the time of the Quebec inquiry all documents between the parties were put into evidence, either the originals or copies, but the two came to light only when the commissioners were examining Mr. Cooper. The first is from Mr. Hoare to Mr. Cooper, dated August 28th, the day before the collapse, in which Mr. Hoare tells of the deflection of the chord 9 west, and of Mr. McClure's going to New York to enlighten Mr. Cooper on the subject. In it, Mr. Hoare states that he told Mr. Yenser not to stop work but to go ahead.

In the second letter, however, dated September 2nd, three days after the bridge fell, Mr. Hoare changes this statement, saying that he did not tell him to go on with the work, but to use his own judgment in the matter and do what he though best.

MR. COOPER CONTRADICTED.

Upon examination of the officers and correspondence of the Phoenix Bridge Company at Phoenixville, Pa., the commissioners were provided with data that would appear to disprove, in a measure, the evidence sworn to by Mr. Cooper in New York. It would appear that despite his disclamation of actual responsibility for the catastrophe, he was nevertheless placed in absolute and full charge by both companies, and that if he was not perfectly acquiescent and satisfied with conditions at the bridge, it was because he possibly placed too much reliance in Mr. McClure, his engineer.

Mr. David Reeves, president of the Phoenix Bridge Company, declares that the change from 1,600 to 1,800 feet in the length of the span was made absolutely upon the initiative of Mr. Cooper, and this after all plans and specifications for the shorter span had been completed. Mr. Reeves gave it as his honest opinion, however, that the alteration was a wise one for the river at the bridge site slopes very rapidly and it would have been much harder to have constructed satisfactory piers at the greater distance out.

After the change in the span was made, it was necessary to go over the plans and specifications again and completely change them to conform with the increased length, and these amended plans were also approved by Mr. Cooper.

In the first test at the Phoenix Iron Company's plant at Phoenixville, for the benefit of the Canadian commissioners, evidence that the quality of steel used was responsible for the accident was not forthcoming. In the presence of Henry Holgate, president of the commission, J. G. G. Kerry and Prof. John Galbraith, members of the commission, a steel eye bar, 30 feet long, 14 inches wide, and two inches thick was subjected to a strain of 882 tons in the testing department of the plant. The bar was similar to those used in the structure of the bridge. With 28 square inches of surface the strain was 63,000 pounds to the square inch. The commissioners were gratified by the test, and the officers of the Iron Company made no secret of their elation. The latter considered the test as the first step which will disprove the allegations made to the effect that the steel used in the bridge was defective.

The bar was not made specially for the test, but is one of an order which the company is filling for a bridge to span the Missouri river at St. Louis.

Sinking a Cylindrical Concrete Shaft Through Quicksand to a Depth of 110 Feet

THE cylindrical concrete shaft known as the Bangor which is being sunk by the Foundation Company of New York for Pickands, Mather & Co. at Biwabik, Minn., on the Mesabi range, has reached a depth of 110 feet, and so far the work has progressed rapidly and without any serious delays. This shaft, as described by the Engineering and Mining Journal, is unique, and presents a new and successful method of sinking through quicksand which reduces the chances of loss or delay to a minimum. Briefly the method consisting of placing in position a steel shoe, to which are attached an inside and an outside form, between which concrete is allowed to set. The diameter of the inner form is, at the Bangor shaft, 14 feet 6 inches, while that of the outer form is 22 feet 6 inches. This permits the formation of a hollow cylinder of concrete four feet thick.

Inside of the two forms is placed a hollow steel cylinder, with flanges at top and bottom, about 6 feet in diameter and 8 feet high. Two successive sections are joined by bolting through the flanges. Through this inside cylinder all the sand is brought up in dredges, of either the clam-shell or orange-peel types, no attempt being made to elevate the water, which remains in the shaft all through the sinking.

When the clam-shell bucket has removed sufficient sand the shoe is allowed to drop and 8 feet of concrete is poured between the two forms. Reinforcing rods 1 inch square are first placed all around and near the outer form, every fourth rod being staggered; these rods are made of special high-carbon steel and are bent at right angles, 6 inches from the ends, to allow them to hook on to the next set of rods. A steel band every four feet gives added strength to the reinforcement.

The dredging then continues, the sand coming up the centre cylinder and the water remaining behind in the shaft, until the excavation permits another drop of about 8 feet, when two more sets are placed and concrete added. In this way the concrete shaft is sunk deeper and deeper through the sand, and with each drop new sections of the form and of the steel cylinder are added.

"The Quebec Bridge Disaster"

By T. Kennard Thompson, M. Can. Soc. C.E., M. Am. Soc. C.E.
M. Am. Soc. M.E., C.E. Toronto University

In Which Some Points of Unwritten Law Are Cited for the Benefit of the Bridge Engineer—Attention Called to Important Points in the Ill-fated Structure That Were Either Overlooked or Neglected

T. KENNARD THOMPSON, C.E.

WHEN it is considered how much has been written on this, the greatest engineering calamity that has occurred for many years, it is not surprising that the wheat and the chaff are pretty well mixed up.

Fortunately the Royal Canadian Commissioners have the ability to get at the cause of the trouble and the courage to state their finding, so the whole continent is anxiously awaiting their report, and until that is received, engineers should be more or less circumspec in what they say on the subject.

In the meantime, it is the generally accepted opinion in New York:

1st. That the bottom chord section No. 9 west was the first to fail;

2nd. That the section of these chord members should never have been adopted, and showed, to say the least, want of judgment;

3rd. That there were many other serious and obvious defects in the design and construction;

4th. That there is no reason in the world why a perfectly safe cantilever can not be built for much greater spans than called for at Quebec.

One of the most prominent of the American engineering periodicals has taken the stand that, because the column which failed was so obviously of a poor design, engineers do not know how to design large columns and when a correctly designed column, drawn for a proposed 1,250 foot cantilever some twelve years ago, was published in their columns, they politely intimated that it was doubtful if the engineer could tell why he selected the correct lines, etc. But it is safe to say that no one ever built a bridge by guess and those who have tried have invariably come to grief.

THEORY VS. PRACTICE.

Our column formulas which have been used successfully for many years are not limited o size of the column, but like everything else they should be only used by those who understand them and who have the ability to create. Anyone with a certain knowledge of mathematics can calculate the strains in a structure and, perhaps, make an exact copy of some existing bridge or building, but to originate requires a natural instinct combined with knowledge of the theory and practical experience for that class of work just as much as talent is required for a great artist or musician.

As a matter of fact, we have frequently seen college graduates after years of practical experience turn out engineering structures which have been fully described by the term "fearfully and wonderfully made."

There are a few simple, written or unwritten, rules, which bridge builders follow often by instinct such as:

Making a column equally strong in any direction. (This was disregarded at Quebec.)

Placing the metal as far from the center as possible.

Seeing that every section of the column is strong enough to carry its share, on the principle that the strength of the chain is the strength of its weakest link (also disregarded in the Quebec Bridge).

That the length of the column (or section of a column) shall not exceed its least width, or its radius of gyration, by more than a certain number of times, the portions of the columns between lattice bars or angles being considered separately.

These are a few of a great many very simple but vitally important rules.

Many divide the weight of a bridge into two sections, calling the first the "efficient" weight and the second the "excess," the latter being all those parts which do not carry the direct strain but merely sustain the main members of the section. The "excess," of course, includes all such portions of a column as lattice bars or angles, rivets, connection plates, etc. The object is naturally to keep the proportion of excess as small as possible.

While some rely on "butt" joints in compression (as at Quebec) it is not good practice to do so, and while it is not always feasible to put in enough rivets to transfer the entire strain over the joint, it is always desirable to have a considerable portion of the strain so taken care of.

This question of "butt" joints is a very vital one in all steel skyscrapers and is very liable to be the cause of a very serious accident some day.

It is more apt to be dangerous in a building than in a bridge, for in the former the erector, who is always trying to plumb up his building, should be in constant fear of opening the "butt" joints thus putting all the strain on one edge of his column, which even the layman would know was not safe, if he stopped to consider the matter. This is a question that the engineering periodicals should keep pounding on.

UNWRITTEN LAW.

There is one point that should be, but is not, always understood, and that is, that it is not possible to control the design of a bridge by any specification that has ever been written or ever will be—and that the man who checks another man's plan is often obliged to pass work that he would never have turned out if he had made the original plan. For instance, many years ago, the plan of a bridge was submitted to me for my approval, and on reporting that the design was exceedingly poor, or even rank, the magnate asked me if the terms of the specifications had been complied with, and on receiving a confirmatory reply, he said: "Well, we will have to accept the contractor's plan then, for we have made a contract with him for a stated lump sum to build a bridge according to these specifications."

Some engineers have long taken the stand that in designing a bridge they did not even want to be bound by their own specifications, preferring to be free to use their own judgment for each case as it occurred.

Reference has been made here to the danger of marking plans for a bridge without knowing why. Some years ago a very able young railroad engineer was instructed to construct a 75 foot Howe truss bridge, and instead of frankly saying that he couldn't, he got a carpenter and together they measured up an existing very similar structure and with slight modifications their judgment suggested, proceeded to erect, and finally the young man sat down and wrote to his chief a very pathetic letter, as follows: "Dear Sir,—The bridge at (his) creek was swung at 2 p.m., and immediately failed." It ultimately transpired that they had put the detail of a top chord joint in the bottom chord, with the result that there were only two

three-quarter inch bolts to hold the bottom chord tension member of a 75-foot span.

Another case was that of an eminent chief engineer of a railroad who once tried to change the plan of a through Howe truss into a Deck Howe truss by turning it upside down, not realizing that the bottom chord of a Howe truss is always in tension whether the load is applied at the bottom chord or the top chord. If he had stopped to think, he would have realized that when he stepped on a beam he would put a tension strain in the bottom and compression in the top, and that if he had suspended himself from the bottom of the beam he would have caused the same strains, as the beam would still deflect downwards, not upwards. Instances like these are enough to make the novice go slow; and yet, many such have occurred. As to who was responsible for the Quebec catastrophe is of chief interest to the people who have to pay the loss, for there was absolutely no criminal intent, for it is inconceivable that a single man connected with that concern would have for an instant risked all those lives had he thought he was doing so. It is simply a case of erroneous judgment, or want of judgment, with terrible loss of life and money, and it is pitiful to see the effect on the survivors, who will never recover from the blow.

The Canadian Government Commissioners who have just been taking testimony in New York have had some light thrown on the subject by the evidence of Mr. Theodore Cooper, the consulting engineer of the Quebec Bridge Company.

MR. COOPER'S SALARY.

Mr. Cooper, a venerable man of 70, is one of the pioneers in steel bridge building and none have done better work or held a higher respect in the profession. According to his testimony he was engaged as consulting engineer for the Quebec bridge at $7,500 a year, but as the company did not seem able to raise that amount he agreed to accept $4,000 a year, which was paid him and nothing more, and as the chief engineer was not a bridge engineer, the consulting engineer had to act as chief engineer also, and though he drew attention to the fact that he should be remunerated for the extra work and expense he never was, and as his office expenses, etc., amounted to about $4,000 a year he was actually consulting engineer for that project for some seven or eight years without remuneration. Owing to ill health he has been unable to go to Quebec for several years and he has testified that he had not done much actual designing for some twenty years past. One might infer from his testimony that he had had so many "scraps" about other questions of design, that he had entirely overlooked the faulty cross-section of the main compression members.

After referring to the bottom chord section No. 9 west, which was undoubtedly the first to fall, and which was known to be out of line and in a dangerous condition, Mr. Cooper was asked:

"Do you think that at a moderate expense the ribs could have been made absolutely safe?"

He answered, "I do. I believe if prompt action had been taken to protect chord 9 west from further deflection, which could have been done by the employment of three hours' work and $100 worth of timber and bolts, the deflects and deficiencies which we now recognize in the compression chords and members, could, at a later date, have been corrected and the bridge could have been made perfectly safe and sufficient for its intended purpose."

And yet there was no one on the site in authority, who realized the danger except one inspector who had to take a trip to New York to try to have the defect remedied—and about twenty-four hours after he left Quebec the bridge was in the river. The whole testimony is well worth reading, being absolutely candid, concealing nothing, evading nothing.

It shows the folly of attempting important work without time for thorough study and without the requisite number of trained men on the job, with sufficient judgment to act in emergencies and with ample power to enforce obedience.

It is a well known fact that many financiers and promoters will pay hundreds of thousands of dollars to contractors sooner than a few thousands to an engineer for saving the hundreds of thousands.

Mr. Cooper refers to the fact that consulting engineers cannot afford to keep a staff to do all this designing. They certainly could not, if their fees, as in this case, only covered their expenses. But there are plenty of engineers who can make general designs very reasonably which would cover all essential points, leaving drawing of the shop plans covering, rivet spacing, etc., to the bridge contractor, as these can be easily checked.

HOW SPECIFICATIONS ARE CUT.

The writer once had to report on the plans submitted by some seven or eight contractors for the largest cantilever, at that time, proposed on this continent and he was surprised to see what poor designs could be gotten up, according to the same specification, in order to reduce the cost of the bridge to a minimum.

This does not mean that contractors are dishonest, but that to get a job on competitive plans they have to sail as close to the wind as they *consider* safe and when they have the job every minor employee thinks that he is doing his employer a benefit by cutting out as much expense as possible.

Whereas the independent engineer knows that he is doing his client an injury if he cuts the cost at expense of a safe or durable structure.

There is one thing, however, that the majority of Canadians and Americans are anxious for, and that is to see the Canadian Government build a fine looking cantilever bridge on the same piers but on entirely different lines—as none of us enjoy having Europe sneer at us and say we can't 'touch' the Forth bridge—for we can certainly build a much finer looking structure, of a more economical design, and that too, without making any new tests of material or shapes or calling for any further knowledge of bridge construction than plenty of our Canadian and American engineers have possessed for many years.

Power House Built Entirely Under Water

A SUBAQUEOUS power plant has recently been completed about fifteen miles below Baltimore on the Patapsco river. It is built within a dam and is entirely under water. It is the first of its kind ever built and cost much less than it would have if built in any other known way. The dam is 220 ft. long, 40 ft. thick at the base and 26½ ft. high. The spillway is 168 feet long, but at present only 108 feet of this distance is used for housing the power plant. The dam is reinforced concrete, the shell being 18 inches thick at the bottom and tapering to 10 inches at the top.

The apron extends only half way down from the crown, the remaining downstream portion being entirely open and provided with windows by means of which the interior is lighted. The shape of the apron is such that the water is thrown some little distance away from the windows.

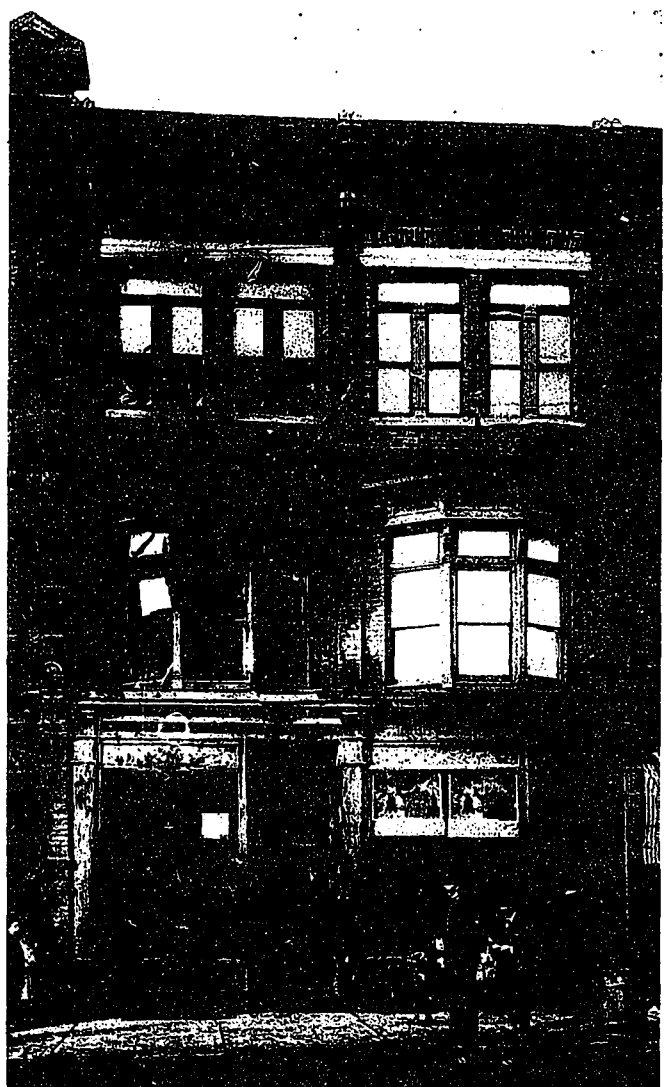
The part used by the power house is fitted with a false ceiling hung five feet from the inside of the dam so as to protect the apparatus from any water that might leak through the outer shell of the dam. The dam is built of a fine and rich mixture, which was laid very wet. Aside from this, no precautions were taken to eliminate water.

The water is led to the turbines through steel pipes passing through the upstream spillway shell and discharged by draft tubes into the base of the dam, dropping into a well sunk some three feet below the river bed. The water passes thence by way of a channel constructed in the dam. The intake is 5½ feet below the crest of the spillway so that the trash racks are kept clear of driftwood, etc.

Lack of Fire Escapes Brings Fatal Results in Tenement House Fire

Two Die and Ten Sustain Serious Injury in Toronto Death Trap. Flagrant Example of Inefficiency of Queen City's Building Code. By-law Calls for Fire Escapes, at the Same Time Rendering Their Installation Unnecessary

A FATAL fire has occurred in a down town tenement house of Toronto since the last number of this journal (containing the first of a series of articles on "Dilapidated Buildings in Canadian Cities") went to press, in which one woman and one child lost their lives, and every one of the ten surviving occupants was more or less seriously injured. If ever there was a death trap, this building was one! The only possible way of escape was through the second or third storey windows, an exit by the one existing stairway being impossible, because it was underneath this that the fire started, and the flames were pouring into the floor above before the slumbering occupants awoke to the awful realization of their peril. We say the only avenue of escape was by way of the second and third storey windows; but as a matter of fact the mad rush of flames prevented even an exit from the second storey openings, driving those who were not already half suffocated to the third floor, and it was from the upper windows that six people hurled themselves in frantic effort toward self-preservation. Fortunately, apart from broken limbs and bruised feet, these were unharmed. The two victims and the remaining four survivors—more dead than alive—were carried down ladders by the firemen.



SCENE OF THE FATAL TENEMENT HOUSE FIRE—TWO OF THE SURVIVORS JUMPED FROM THE THIRD-STOREY WINDOW.

The daily newspapers gave very thrilling accounts of the affair, extolling the firemen for heroism and bravery. Yes, and they even called the building "a fire-trap." While it is hardly likely that any person would question the appropriateness of the term "fire-trap," in this particular application, there are very few, who have given the matter enough consideration to ask, "Why should it be a fire trap?"

It is most unfortunate that the City Architect was indisposed and could not testify at the adjourned inquest into the death of Jennie Ornstein, held Oct. 16. His evidence must surely have answered this important question. He would undoubtedly have announced that there was a clause in the new city by-law governing the inspection of buildings, making it imperative that all buildings, of three or more storeys in height (except private dwellings) be provided with proper fire escapes.

Upon reference to our illustrations, taken the day after the fire occurred, it will be noticed there are no fire escapes—front or rear. The building is three storeys high and because of its not being a private dwelling it is not covered by any exemption provisoes in the building statute. A private dwelling is defined as "a building either detached or in a block used solely as a residence and occupied by not more than two families." This building was not used solely for residence purposes, therefore it was not a private dwelling, and that it was occupied by more than two families, as is evidenced in the following casualty list, quoted from a daily newspaper:

DEAD

1. *JENNIE ORNSTEIN*, aged 6, daughter of the storekeeper: suffocated.

2. *ANNIE ORNSTEIN*, aged 26: burns and shock.

INJURED

3. *AARON ORNSTEIN*, aged 28, tailor; face cut, slight burns and shock.

4. *AARON ORNSTEIN*, aged 3, son; slightly.

5. *ROSIE ORNSTEIN*, aged 1 1-2 years; suffering from smoke and heat.

6. *LOUIS FIERSTEIN*, aged 36, cabinetmaker; very badly burned; not expected to live.

7. *RACHAEL FIERSTEIN*, aged 36, wife of above; slightly burned and suffering from smoke and shock.

8. *ALFRED SWARTZ*, aged 18, cutter; severely burned, and feet injured in jumping from window.

9. *ARNOLD GREENFELT*, aged 30, cutter; ankle broken, both feet fractured in jumping; slight burns.

10. *BENJAMIN ERNSTEIN*, aged 23, tailor; badly burned and suffering from hemorrhages.

11. *DORA ISAACS*, aged 25, tailoress; injured feet and shock.

12. *MARIE ISAACS*, aged 21, sister of above, injured feet and shock.

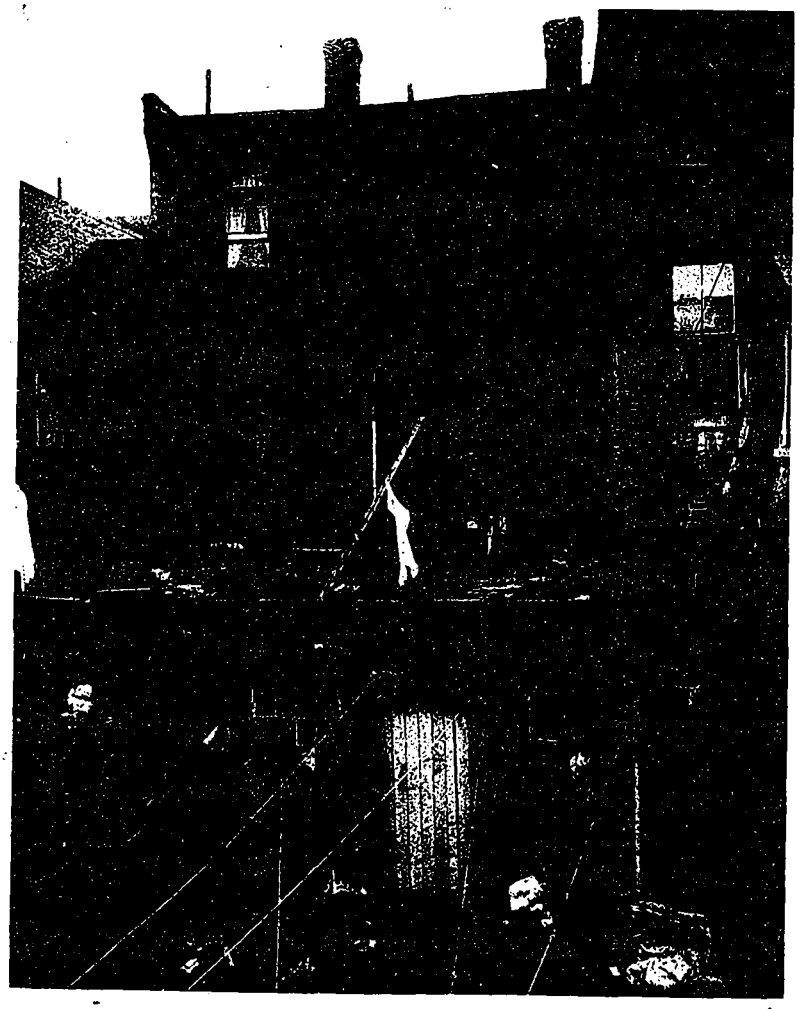
Nos. 8 and 9 jumped from the front window of the third storey to the street pavement. Nos. 3, 4, 11 and 12 precipitated themselves from the third storey rear window to the roof of a shed fifteen feet below from which they leapt into a blind back-yard where they were found in scant attire by the firemen. There was no opening in the fence by which they could have gained the alley. Nos. 1, 2, 5, 6, 7 and 10, as we have already stated, were carried from the building down ladders by the firemen.

Clause 40 of By-law 4,861 regulating the erection and safety of buildings which was passed in Toronto, March 25, 1907, makes it clear that a fire escape should have been provided in this case. Under the caption "Fire Escapes" this is what we find:

"The owner, lessee or agent of every building (except private dwellings), three storeys or more in height, shall, within one month after being notified by the Inspector of Buildings, provide proper fire escapes on such buildings, plans showing the proposed location, also plans and specifications for the proposed construction of said fire escapes to be submitted to the said Inspector for approval within two weeks after he has sent the notification to erect such fire escapes, provided, however, that the erection of no fire escape shall be commenced until he has approved of the plans above mentioned."

What appears to be wrong with the code in this instance, is that it is luke-warm. It provides too many people with too many excuses for tardiness. The owner of the property is immune from any penalty for non-conformity with the building law, because he might argue that *he had never been notified* by the Inspector of Buildings; and this official might in turn disclaim all knowledge of the situation, being kept too busy in other needy spheres. A nice state of affairs, isn't it, when the only likely method of securing timely redress from this deplorable condition appears to rest with the humor of the private citizen, whose privilege it is at all times to call the Building Inspector's attention to some infraction of the law, when it shall become the duty of the said inspector to investigate. We hinted in our last number that possibly the City Architect's department was denied adequate office help and backing by the City Council. There may possibly be something more than idle talk in this suggestion.

There are other points about this York street building that should not be overlooked, because, judging from what we have already seen, it is not unreasonable to believe that many equally dangerous cases can be found in Toronto where an "ounce of preventative" might be advantageously administered if attention could but be drawn to the symptoms of the disease. Glance at the interior il-



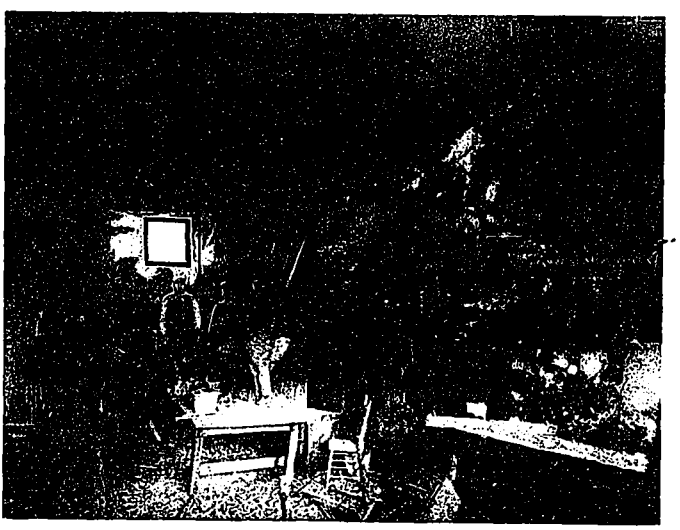
REAR VIEW—LACK OF FIRE ESCAPE MADE IT NECESSARY FOR FOUR PEOPLE TO LEAP FROM THE TOP OF THE WINDOW TO THE ROOF OF THE SHED.

lustration accompanying this article. The whole lay-out in this instance seemed favorable to disaster. A store and workshop, containing a stove, occupied the ground floor from which a dark narrow stairway turned up to the floor above. This stairway—the only possible communication with the living rooms—was neither accessible from the street nor the alley in the rear. Going up or down, one had to travel through either the store and workshop, or the chaotic shed in the rear. And just at this point it might be well to call attention to what looks like a grave omission in the building by-law. There does not appear to be a stipulation governing the entrance and exit of tenants residing over stores or places of business. Such entrances or stairways should, by all means give access direct to the street or an open alley. In fact, while it is always easier to criticize than to construct, the building by-law of the city of Toronto is a very inefficient compilation. Besides stating that "All doors at the foot of stairways or passageways in buildings used as hotels, tenements, lodging, or rooming houses, shall open outwards and never be fastened but with a movable bar or bolt, readily drawn from the inside without the use of any key or combination whatever," something after the style of a corresponding clause in the Cleveland, O., ordinance might have been inserted, viz.:

"All entrance halls shall lead directly from a street, alley or court, or a courtway or yard connected directly with a street and shall be as short and as direct as possible between the street lines and stairways, and every flight of stairs required shall have such entrance hall on the ground floor, and when they pass through a first floor occupied for mercantile or manufacturing purposes with different tenants or grades of occupancy above them, they shall be enclosed entirely with fireproof walls; in non-fireproof buildings such enclosures shall be of brick extending from the foundation up to the top level of the second tier of joists. There shall be no openings into the first floor or basement of such enclosures, and no opening from the first floor to the basement shall be underneath such a stairs unless the street entrance floor and the soffits of the first flight of stairs and the ceilings are made fireproof and completely cut off from the well holes, but no passenger elevator in such an entrance or stair hall shall extend to the basement."

This clause is designed to rectify just such a condition as that which we have been referring to, while in the Toronto by-law it appears to have been overlooked. A speedy amendment along lines suggested in the Cleveland code might save the city no end of trouble in the future. This should be considered very carefully not only in order to arm the Building Inspector with authority to take wise action in the proper direction some time when he happens to feel a bit industrious, but in order to force miserly landlords to maintain structures that insurance companies will not be likely to shun in holy horror. Is there any just reason why a man who is desirous of protecting himself against being reduced to absolute insolvency, in case of accident, by placing a little insurance upon his earthly goods, should be denied this privilege, simply because his landlord's building is too big a risk for any sane corporation to take a chance on? No! Not if the building by-laws are properly framed and assiduously enforced. And yet the unfortunate tailor, Aaron Ornstein, whose wife and daughter were sacrificed to the ravages of the York street flames, was a victim of just such luck. A short time prior to the fire, there was a small blaze near-by caused by the ignition of a box of matches. The owner of the house made a claim which was settled, but the insurance companies concerned, it is said, followed up the matter by cancelling all their policies in the neighborhood, and Ornstein's was included. Three days before his place was burned Mr. Ornstein had put in $800 worth of stock—a total loss.

At the present writing the building is undergoing repairs; in fact it is almost ready for re-occupancy, but there is still no sign of a fire escape. It would be interesting to know if the owner has really taken the trouble to acquire a permit for the operations.



INTERIOR VIEW SHOWING POSITION OF STAIRS, THE ONLY AVENUE OF ESCAPE WHICH NEITHER GAVE ACCESS TO THE STREET NOR REAR ALLEY. REPAIRS ARE BEING MADE WITHOUT ALTERING THIS ARRANGEMENT.

There is still one grave fault in connection with the structure which has formed the subject of this article and that is its deplorable, flimsy and highly combustible construction. Of course it was in all probability erected at a time when comparatively little thought was given to so-called fireproof construction; but it furnishes a splendid example of the shortsighted mistakes in the building operations of fifteen, twenty or twenty-five years ago—mistakes that were positively criminal.

Since the Iroquois theatre disaster cities have busied themselves amending ordinances and compelling really fine construction in theatres. Apartment houses, tenements and hotels are just as important, yet they seem to receive the minimum of attention, though a greater number of lives are more constantly exposed in them than in any other type of building.

Cities vie with one another in improving their fire departments and acquiring new apparatus, things looking to the cure of a long established evil. Past experience with smallpox, yellow fever, etc., ought to teach us that the mere caring for, or attempted cure of the afflicted patients never amounted to much, in spite of the superhuman efforts spent in that direction; real benefits only began to accrue when we became sensible enough to take steps to *prevent* the disease. So it is with fire. We have to learn and our authorities have to insist and compel that all buildings be well built, of non-combustible materials and put together in an intelligent, fireproof manner so as to prevent fire. The only thing to do is to construct our new buildings better and re-vamp our old ones just as quickly and as well as we can.

Incorporation of the Canadian Institute of Architects

By Alcide Chausse, Sec. Can. Institute of Architects

Brief Outline of the Objects of the Incorporators of an Organization for the Protection of the Architectural Profession in Canada by its Promoter

ALCIDE CHAUSSE

THE exact number of persons practising architecture in Canada is not known, but if we can rely on published lists it is about 500. The names and addresses of these 500 architects were secured and circular sent to each in April, 1907, suggesting a general meeting for the purpose of organizing and forming a National Society of Architects. Over 100 replies were promptly received favoring the project and a general meeting of architects was, in consequence, held in Montreal on August 19, at which meeting about seventy-five architects from all parts of Canada were present.

A project of an act of incorporation was approved by this general meeting and a council was elected and instructed to see that the proposed act be presented at the coming session of the Dominion Parliament.

There are now in Canada, two provincial associations of architects, viz.: Quebec and Alberta, which have obtained from their respective legislature special charters restricting the future members of the profession to men who have the proper qualifications. The Institute of Architects in Canada in their proposed Act of Incorporation has a special clause protecting the association as follows: "Nothing in this act shall be deemed to encroach upon the rights and privileges conferred upon any association of architects which has obtained a charter from the legislature of any province in the Dominion of Canada."

Every architect in Canada is aware of the present movement to form the Institute of Architects of Canada and also of the application to Parliament for a charter with restrictive clauses similar to the provincial associations referred to above. Precedents of statutory qualification for architects exist as already mentioned in the province of Quebec and Alberta of this country, also in the states of Illinois, New Jersey and California of the United States, the French government has a special school of architecture—the Beaux Arts—where architects are "diplomes." We believe Cuba and Australia have special laws for the protection of the public by examining and licensing architects.

This bill to incorporate the architects of Canada, if passed, will not prevent any one from drawing plans for himself or for others and charging for them, but it will prevent any one from using the title of "architect" if he has no right to it and as such it will be a protection to the public.

The architects at the back of the movement to incorporate the Institute of Architects of Canada are from all and every province of Canada; there are fifteen from Alberta, fifteen from Saskatchewan, eight from New Brunswick, twenty-seven from Manitoba, ten from British Columbia, seven from Nova Scotia, fifty-four from Ontario, two from Prince Edward Island and sixty-seven from the province of Quebec, making a total of two hundred and five architects petitioning the government for protection. If the number of those who are in favor of the movement and who did not send in any reply is added it may safely be said that the majority of the architects of this country are in favor of incorporation as now proposed.

Among the architects in the above total of two hundred and five are the presidents of every association of architects now in existence in Canada, leading architects from every province and from every large city in the Dominion, the chief architect of the Dominion Department of Public Works, the city architect of Montreal, and the three assessors of the government competition for departmental justice buildings which are to be erected in Ottawa.

The Canadian Parliament in passing this act of incorporation as presented, will be adopting the principle that was approved by the last International Congress of Architects held in London, England, in July, 1906, in the following resolution:

"That this congress considers it desirable in the interests of the public of all nations, and of the profession of architecture that all practitioners should have a statutory qualification."

Rebuilding Kingston, Jamaica

BY the terms of a measure recently passed by the British Parliament, the treasury is authorized to advance a loan of £800,000 ($3,893,200) to the government of Jamaica, "for the purpose of restoring, replacing, or improving public and other buildings damaged by the recent earthquake and subsequent fire in the colony, or purchasing sites for new buildings to replace the same, or for the purpose of making loans to persons within the colony on such security and terms of repayment as may be authorized by the legislature of the colony for the purpose of restoring or replacing such buildings so damaged, or in other ways in repairing the loss and damage caused by the earthquake and fire, any sums not exceeding in the whole £800,000."

Loans will be repayable by annuities of fixed amounts, running from seven to twenty years, with annual charges payable quarterly, and provision is made for interest at 3 1-2 per cent. per annum and for the repayment of the principal within the period for which these annuities are made.

Specimen, Successful Architects' License Law

The Law of the State of Illinois Has Been in Satisfactory Operation for Ten Years and Has Been Copied by Other States. It Contains Some Valuable Suggestions Which Should be Considered by the Government and the Canadian Institute of Architects. Government Examination for Qualification

IN view of the fact that the proposed act for the incorporation of the Canadian Institute of Architects is likely to come up at the approaching session of Parliament; and because this act, if passed entire, will limit the practice of architecture to bona fide members of the aforesaid Institute, it is only natural that the issue is a live one with every Canadian architect at the present time. This interest is manifest in the numerous letters and inquiries that have come into this office since the first number of CONSTRUCTION, in which the proposed charter was discussed, was circulated. A number of our readers have requested more explicit data with reference to the nature and provisions of what is known in the United States as the "Architects' License Law," which is now in force in the states of Illinois, California and New Jersey. We, therefore, reproduce herewith a copy of the Illinois law which was passed by the legislature of that state ten years ago. In practice it proved so satisfactory that the states of California and New Jersey have, within the past few years, adopted measures along almost identical lines. This law has further been a basis for agitations in almost every state in the Union, where legislation protecting the profession of architecture was desired.

It is our opinion that a law modelled much after this style would best meet the requirements of the profession in Canada, and the provisions contained below should, at this particular time, prove most interesting to our readers:

APPOINTMENT OF A STATE BOARD OF EXAMINERS OF ARCHITECTS.

SECTION 1. *Be it enacted by the people of the State of Illinois, represented in General Assembly.* That within thirty days after the passage of this act the Governor of this State shall, by the advice and consent of the Senate, appoint a State Board of Examiners of Architects, to be composed of five members, one of whom shall be a member of the faculty of the Illinois State University, and the other four shall be architects residing in the State of Illinois, who have been engaged in the practice of architecture at least ten years. Two of the said practicing architects appointed as examiners shall be designated to hold office for two years from the date of the passage of this act, and the other two, together with the member of the faculty aforesaid, shall hold office for four years from the passage of this act; and thereafter upon the expiration of the term of office of the person so appointed, the Governor of the State shall appoint a successor to each person whose term of office shall expire, to hold office for four years, and said person so appointed shall have the above specified qualifications. In case appointment of a successor is not made before the expiration of the term of any member, such member shall hold office until his successor is appointed and duly qualified. Any vacancy occurring in membership of the board shall be filled by the Governor of the State for the unexpired term of such membership.

EXAMINERS TO FILE OATH OF OFFICE WITH THE SECRETARY OF STATE—TREASURER TO FILE BOND—SALARY OF SECRETARY AND MEMBERS OF BOARD OF EXAMINERS.

SEC. 2. The members of the State Board of Examiners of Architects shall, before entering upon the discharge of their duties, make and file with the Secretary of State the constitutional oath of office. They shall, as soon as organized, and annually thereafter in the month of January, elect from their number a president and secretary, who shall also be the treasurer. The treasurer, before entering upon his duties, shall file a bond with the Secretary of State, for such sum as shall be required of him by said Secretary of State, and in such form and with such securities as may be approved by the Governor of the State. The board shall adopt rules and regulations not inconsistent with this act to govern its proceedings; and also a seal and the secretary shall have the care and custody thereof; and he shall keep a record of all the proceedings of the board which shall be open at all times to public scrutiny, and the board shall cause the prosecution of all persons violating any of the provisions of this act, and may incur necessary expenses in that behalf.

The secretary of the board shall receive a salary which shall be fixed by the board and which shall not exceed the sum of fifteen hundred dollars ($1,500.00) per annum; he shall also receive his travelling and other expenses incurred in the performance of his official duties. The other members of the board shall receive the sum of ten dollars ($10.00) for each day actually engaged in this service, and all legitimate and necessary expenses incurred in attending the meetings of said board. Said expenses shall be paid from the fees received by the board under the provisions of this act, and no part of the salary or other expenses of the board shall be paid out of the state treasury. All moneys received in excess of the said per diem allowance and other expenses provided for shall be held by the treasurer as a special fund for meeting the expenses of said board, and the cost of an annual report of the proceedings of the State Board of Examiners of Architects; and any moneys that may have been heretofore paid into the State Treasury to the credit of said board are hereby appropriated to the said board, to be held by it as a part of said special fund; and the Auditor of Public Accounts is hereby authorized to issue a warrant for their repayment on the requisition of said board and the approval of the Governor in such amounts as may from time to time be required.

QUORUM—MEETINGS OF BOARD—RULES AND REGULATIONS.

SEC. 3. Three members of the board shall constitute a quorum. Special meetings of the board shall be called by the secretary upon the written request of any two members, by giving at least seven days' written notice of meeting to each member, reckoning from the day on which the notices are post-marked, telegraphed, or personally delivered. The board shall adopt rules and regulations for the examination of applicants for license to practice architecture, in accordance with the provisions of this act, and may amend, modify, and repeal such rules and regulations from time to time. The board shall, immediately upon the election of each officer thereof, and upon the adoption, repeal or modification of its rules of government or its rules and regulations of examinations of applicants for licenses, file with the Secretary of State and publish in at least one architectural journal and one daily newspaper published in the State of Illinois, at least twice, the name and address of each officer, and a copy of such rules and regulations, or the amendments, repeal or modification thereof.

EXAMINATIONS—APPLICANTS FOR LICENSE TO PAY A LICENSE FEE OF $15.00—LICENSE FEE $25.00.

SEC. 4. Provisions shall be made by the board hereby constituted for holding examinations at least twice in each year, of applicants for license to practice architecture, and

any person over twenty-one years of age, under payment of a fee of fifteen ($15.00) dollars to the secretary of the board, shall be entitled to an examination for determining his or her qualifications. All examinations shall be made directly by said board, or a committee of two members delegated by the board, and due notice of the time and place of the holding of such examinations shall be published, as in the case provided for the publication of the rules and regulations thereof. The examination shall have special reference to the construction of buildings, and a test of the knowledge of the candidate of the strength of materials and of his or her ability to make practical application of such knowledge in the ordinary professional work of an architect, and in the duties of a supervisor of mechanical work on buildings, and should also seek to determine his or her knowledge of the laws of sanitation as applied to buildings. If the result of the examination of any applicant shall be satisfactory to a majority of the board, under its rules, the secretary shall, upon an order of the board, issue to the applicant a certificate to that effect, and upon payment to the secretary of the board by the candidate of a fee of twenty-five ($25.00), he shall thereupon issue to the person therein named a license to practice architecture in the State, in accordance with the provisions of this act, which license shall contain the full name, birthplace and age of the applicant, and be signed by the president and secretary, and sealed with the seal of the board. If an applicant fails to pass said examination, his or her fee shall be returned.

All papers received by the secretary in relation to applications for license shall be kept on file in his office, and a proper index and record thereof shall be kept by him.

ARCHITECTS WHO ARE ENTITLED TO LICENSE WITHOUT AN EXAMINATION.

SEC. 5. Any person who shall, by affidavit, show to the satisfaction of the State Board of Examiners of Architects that he or she was engaged in the practice of the profession of architecture on the date of the passage of this act shall be entitled to a license without an examination, provided such application shall be made within six months after the passage of this act. Such license, when granted, shall set forth the fact that the person to whom the same was issued was practicing architecture in this State at the time of the passage of this act, and is therefore entitled to a license to practice architecture without an examination by the board of examiners, and the secretary of the board shall, upon the payment to him of the fee of twenty-five dollars ($25.00), issue to the person named in said affidavit, a license to practice architecture in this State, in accordance with the provisions of this act. In the case of a co-partnership of architects, each member whose name appears must be licensed to practice architecture. *No stock company or corporation shall be licensed to practice architecture, but the same may employ licensed architects.* Each licensed architect shall have his or her license recorded in the office of the county clerk in each and every county in this State in which the holder thereof shall practice, and he or she shall pay to the clerk the same fee that is charged for the recording of notarial commissions. A failure to have his or her license so recorded shall be deemed sufficient cause for revocation of such license.

COUNTY CLERKS TO KEEP RECORD OF LICENSES RECORDED.

SEC. 6. Each county clerk shall keep in a book, provided for the purpose, a complete list of all licenses recorded by him under the provisions of this act, together with the date of the issuance of each license.

LICENSED ARCHITECTS TO HAVE A SEAL.

SEC. 7. Every licensed architect shall have a seal, the impression of which must contain the name of the architect, his or her place of business, and the words, "Licensed Architect," "State of Illinois," with which he shall stamp all drawing and specifications issued from his office, for use in this State.

PENALTY FOR PRACTICING ARCHITECTURE WITHOUT A LICENSE.

SEC. 8. After six months from the passage of this act it shall be unlawful and it shall be a misdemeanor punishable by a fine of not less than ten dollars ($10.00) nor more than two hundred dollars ($200.00) for each and every offense, for any person to practice architecture without a license in this State, or to advertise, or put out any sign or card, or other device which might indicate to the public that he or she is entitled to practice as an architect.

PERSONS WHO ARE TO BE REGARDED AS ARCHITECTS.

SEC. 9. Any person who shall be engaged in the planning or supervision of the erection, enlargement, or alteration of buildings for others, and to be constructed by other persons than himself, shall be regarded as an architect within the provisions of this act, and shall be held to comply with the same; but nothing contained in this act shall prevent the draughtsmen, students, clerks of works or superintendents, and other employes of those lawfully practicing as architects, under license as herein provided for, from acting under the instruction, control or supervision of their employers; or shall prevent the employment of superintendents of buildings paid by the owners from acting, if under the control and direction of a licensed architect who has prepared the drawing and specifications for the building. The term building in this act shall be understood to be a structure, consisting of foundations, walls, and roof, with or without the other parts; but nothing contained in this act shall be construed to prevent any person, mechanic or builder from making plans and specifications for, or supervising the erection, enlargement, or alteration of any building that is to be constructed by himself or employes; nor shall a civil engineer be considered as an architect unless he plans, designs and supervises the erection of buildings, in which case he shall be subject to all the provisions of this act, and be considered as an architect.

LICENSE REVOKED.

SEC. 10. Architects' license issued in accordance with the provisions of this act shall remain in full force until revoked for cause, as hereinafter provided. Any license so granted may be revoked by unanimous vote of the State Board of Examiners of Architects for gross incompetency, or recklessness in the construction of buildings, or for dishonest practices on the part of the holder thereof; but before any license shall be revoked such holder shall be entitled to at least twenty days' notice of the charge against him, and of the time and place of the meeting of the board for the hearing and determining of such charge. And on the cancellation of such license it shall be the duty of the secretary of the board to give notice of such cancellation to the county clerk of each county in the State in which the license has been recorded, whereupon the clerks of the counties shall mark the license recorded in his office cancelled. After the expiration of six months from the revocation of a license, the person whose license was revoked may have a new license issued to him by the secretary upon certificate of the Board of Examiners, issued by them upon satisfactory evidence of proper reasons for his reinstatement, and upon payment to the secretary of the fee of five dollars ($5.00).

For the purpose of carrying out the provisions of this act relating to the revocation of licenses, the board shall have the power of a court of record, sitting in the county in which their meeting shall be held, and the power to issue subpœnas and compel the attendance and testimony of witnesses. Witnesses shall be entitled to the same fees as witnesses in a court of record, to be paid in a like manner. The accused shall be entitled to the subpœna of the board for his witnesses and to be heard in person or by counsel in open public trial.

RENEWAL OF LICENSES.

SEC. 11. Every licensed architect in this State who desires to continue the practice of his profession shall annually, during the time he shall continue in such practice, pay to the secretary of the board during the month of July a fee of five dollars ($5.00), and the secretary shall thereupon issue to such licensed architect a certificate of renewal of his license for the term of one year. Any licensed architect who shall fail to have his license renewed during the month of July in each and every year shall have his license revoked; and it shall be the duty of the secretary of the board to give notice of such revocation to the county clerk in each county in the State, whereupon the clerks of the counties shall make an entry of such revocation accordingly.

But the failure to renew said license in apt time shall not deprive such architect of the right to renewal thereafter; and the secretary of the board shall give like notice of such renewal; but the fee to be paid upon the renewal of license after the month of July shall be ten dollars ($10.00), to cover the additional expense incurred by the board on account of such notices.

REPORT OF PROCEEDINGS TO BE FILED WITH THE AUDITOR OF PUBLIC ACCOUNTS.

SEC. 12. Within the first week of December, after the organization of the board, and annually thereafter, the secretary of the board shall file with the Auditor of State a full report of the proceedings of the board, and a complete statement of the receipts and expenditures of the board, attested by the affidavits of the president and secretary, subject to the approval of the State Auditor.

RULES OF THE ILLINOIS BOARD OF EXAMINERS OF ARCHITECTS.

RULES.

1. Roberts' Rules of Order are adopted as the rules of this board for the conduct of business at its meetings.

HEADQUARTERS AND EXAMINATIONS.

2. The headquarters of the board shall be at Chicago, and the examinations shall take place at Chicago and the University of Illinois at Urbana, or such other place as shall be designated by a vote of the board.

LOCATION.

3. The board room and office of the secretary and treasurer shall be at Room 1112, Chamber of Commerce, in the city of Chicago.

FINANCE.

4. All funds collected shall be deposited in bank to the credit of the board, and all checks shall be signed by the secretary and treasurer and countersigned by the president, and no disbursements shall be made except on order of the board. There shall be an auditing committee of two to pass on all accounts of the treasurer. This committee may be changed at the time of any quarterly or annual report of the treasurer. Bills of members for per diem and expenses shall be presented and audited by the board at each regular meeting, for previous meetings.

MEETINGS.

5. The regular meetings of the board shall be held on the second Friday of each month, at 10 a.m., at the board room, unless the time and place shall be otherwise ordered.

EXAMINATIONS.

6. There shall be a standing Committee on Examinations, of whom the President shall be one, the other two members to be appointed by the President. They shall report a program for the examinations for license and all other matters connected therewith. But this committee may be changed at any time by order of the President, as to the other two members.

In all cases where an applicant for examination for license to practice architecture in the State of Illinois shall cite to the Board existing buildings erected from his or her designs and under his or her supervision, and when the character of such erected buildings and the applicant's connection with the design and supervision thereof, as ascertained by this Board, are such as to satisfy this Board that the said applicant for examination for license is possessed of the necessary knowledge and of the ability to apply the same, as required in section 4 of the Act, then and in such case the demonstration of the applicant's knowledge and ability so made may, if found sufficient by this Board, take the place of written and oral examination.

This rule is to apply only to architects of acknowledged high standing who are known by reputation to members of the Board, and who have practiced the profession of architecture exclusively for five years previous to making the application for examination for license.

7. Applicants for license may have their cases considered at any meeting of the Board without personal appearance, provided the exhibits submitted, with proofs of previous execution of works, establish an ability equal to what is demanded in a regular examination and are satisfactory.

CLASS EXAMINATIONS.

8. The regular class examinations shall occupy not less than three days. Two days shall be devoted to written examinations, and one day shall be devoted to ascertaining the ability of the candidate to make practical application of his knowledge in the ordinary professional work of an architect, which will include an effort toward ascertaining the qualifications of the applicant in draughtsmanship and the art of planning and rendering.

8. A diploma of graduation from the full four years' course in architecture, or architectural engineering, in the Massachusetts Institute of Technology, University of Illinois, Cornell University, Columbian University, University of Pennsylvania, or Harvard University, may at the discretion of the Board be accepted as satisfactory evidence of competent knowledge of architectural construction, of the laws of sanitation, and of the strength of materials, required for license to practice as an architect in Illinois according to law: *provided*, that in each case the applicant for examination shall present evidence satisfactory to this Board to show that he has acquired the ability to successfully apply this knowledge to the design and construction of buildings and to supervise the execution of work.

10. Applications will be received at all times. If the number and urgency of the applications received make it seem expedient to the Board to institute examinations at any other than the times mentioned in the annual advertisements, due notice of such additional examinations will be forwarded by the Secretary to those whose applications are on file at his office. Applications for the regular examinations should be at the Secretary's office one week before the date set. All applications must be upon the form provided, and must be accompanied by the examination fee of $15. If the applications are in regular form, notice will be mailed to applicants, with detailed information as to the time, place and extent of examination.

In all cases in which applications for examinations have remained on file one year or more and the parties have not appeared for examination the examination fees shall be returned and the applications cancelled.

EXAMINATIONS FOR EXCHANGE OF LICENSE FROM "FORM A" TO "FORM B."

11. Architects who have been licensed under the provisions of section 5 may have their licenses exchanged for license for B in the following manner: The regular form of application for examination is to be filled by the applicant, adding in the space after question 12, the words, "I desire to exchange my license, Form A, for license, Form B, if I should pass the examination." All such applicants may take the next following class examination provided the applications are received seven days before the time set

(*Continued on page 43.*)

"Aphrodite discovering Adonis"

MURAL PAINTING ABOVE PROSCENIUM ARCH. FREDERICK CHALLENER, ARTIST.

Royal Alexandra Theatre

Canada's Ideal Playhouse—Fireproof and Convenient in its Every Appointment —Constructional and Architectural Features Worthy of Consideration

THEATRE designing is in a class by itself because of the almost innumerable distinctive, yet equally important, features which must be taken into consideration by the architect, and to provide a structure that will adequately fulfill all requirements is a most difficult problem. This is largely accountable for the many instances where little or no consideration has been given to local architects in the matter of planning high-classed theatres on this continent. A large percentage of the theatrical buildings which have been erected of late years have been designed and constructed by specialists upon this type of building, and the practice of looking to these specialists is becoming almost a habit with prospective theatre builders. It is therefore with much gratification that we announce the success of a local Canadian architect in having executed one of the most praiseworthy theatres, from an architectural standpoint, on the continent of America. We publish in this issue plans, description and a number of views of Toronto's new theatre, "The Royal Alexandra," designed by Architect John M. Lyle, of the same city. This structure has been selected for illustration as an example of the great improvement taking place in the architecture of the country, and also as an instance of the ability of Canadian architects to design and execute buildings of the most monumental character and involving the most intricate problems the prospective builder may confront them with. Many innovations are embodied in this structure. In its material and construction the Royal Alexandra Theatre is as thoroughly fireproof in every particular as modern invention will permit of. The floors, stairs, and walls contain nothing but non-combustible materials. In design a French renaissance of the period of Louis XVI. has been carefully and studiously adhered to, and the same decorative effect is accurately maintained throughout the whole interior, including tapestries, woodwork, furniture and ornate embellishments, cartouches, mascaroons, garlands, fruitful cornucopias, etc. The equipment includes all the best procurable modern appliances for the comfort, safety and convenience of its patrons, likewise the performers. Latest improved automatic exits are plentifully and conveniently distributed about the building, and from each of these leads a distinct stair fire escape to ensure against crowding and panic in emergency cases.

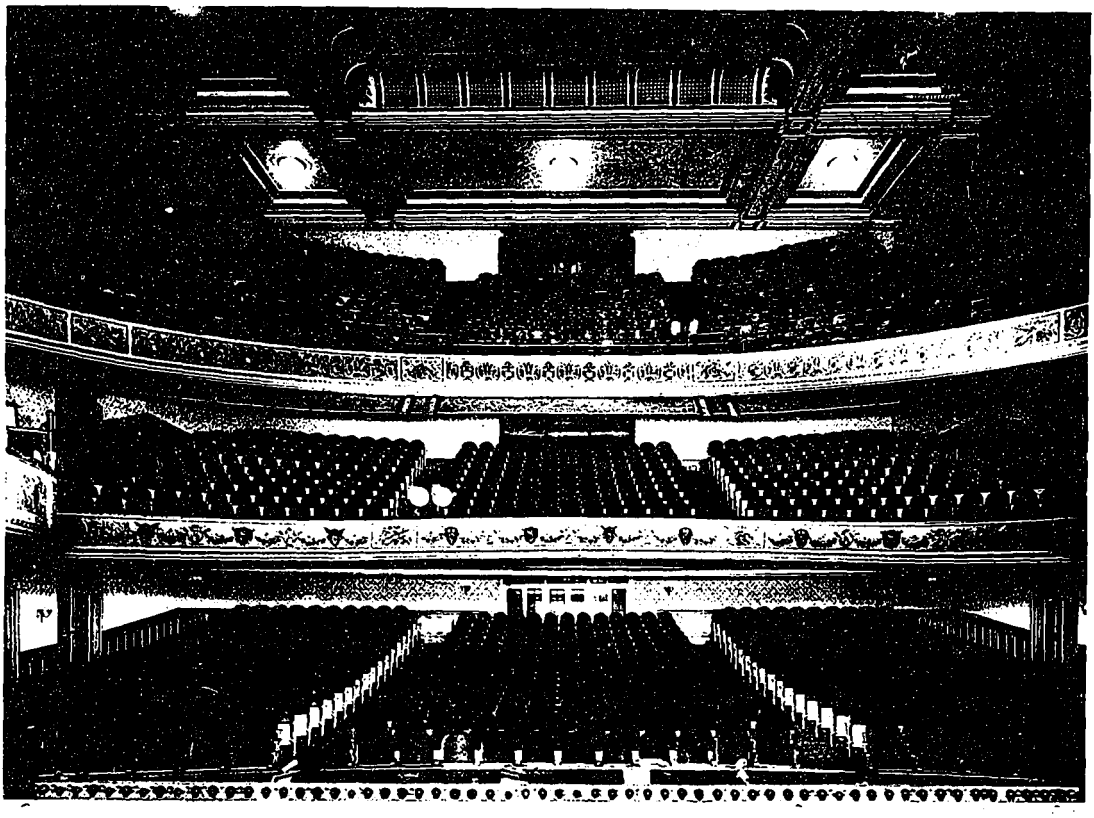
DETAIL OF TROPHY IN PANELLING OF FIRST BALCONY.

In every particular the theatre not only satisfies Toronto's inefficient by-laws, but has been constructed in accordance with the most stringent building regulations of the largest cities in America. We, therefore, have been prompted to devote space to a detailed description of this new structure, not only because of its architectural merits, but we believe that its constructional features are worthy of the cogitation of every member of the building fraternity in Canada.

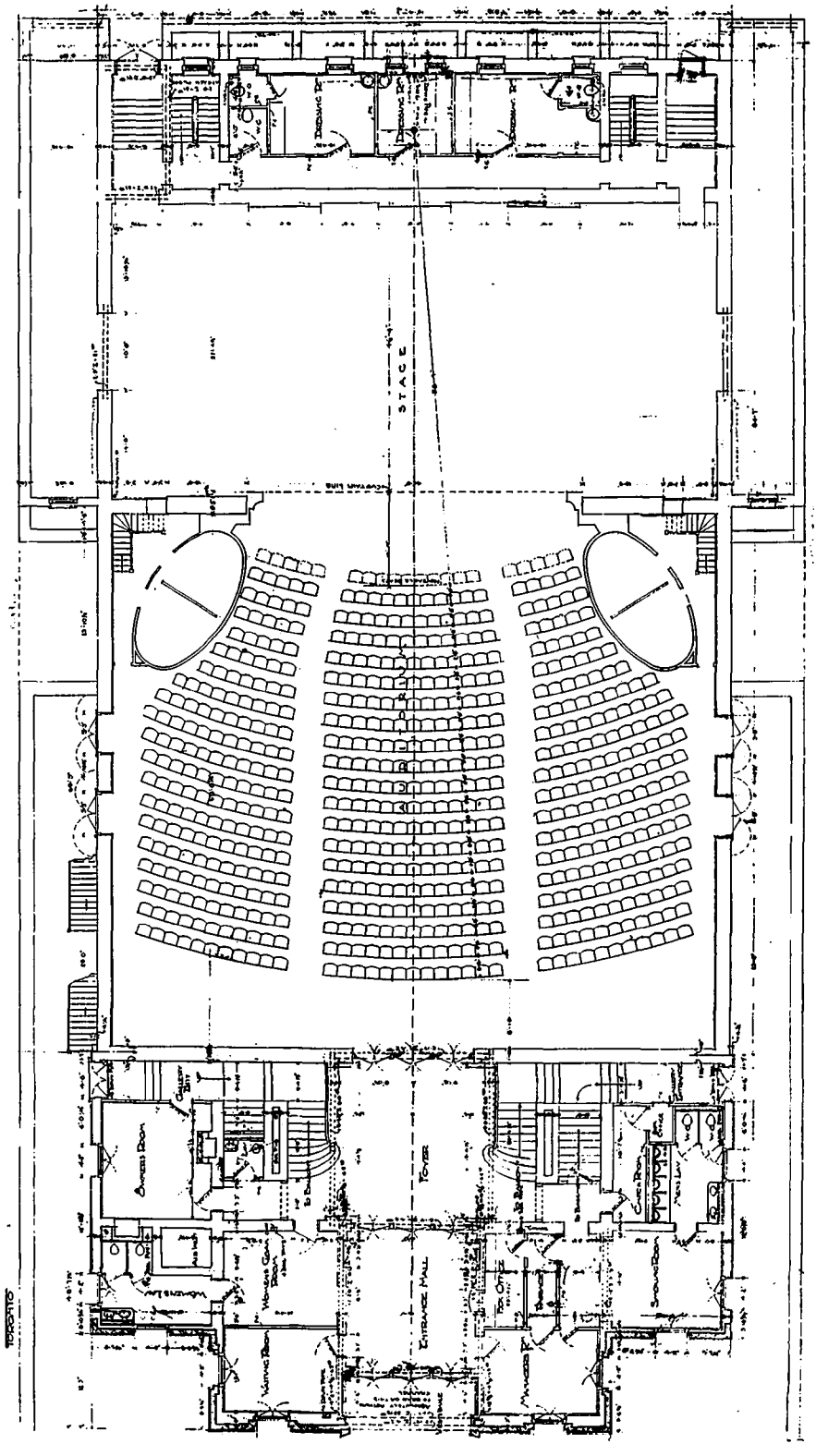
As the building has been generally described in contemporary publications, we confine our remarks to the architectural and constructional side. A reference to the general plan will reveal many features which have been studied with an appreciation of the necessities for the convenience of the public, of the players, and of the successful administration of affairs. The building is practically composed of three parts, namely: The administrative section, the auditorium, and the stage and dressing room section.

Entering from King street are the main entrance hall and the staircase foyer, leading to the auditorium. On the right are the manager's room, box offices, smoking room, men's lavatory and gallery entrance. On the left, ladies' waiting room, ladies' cloak room and lavatory, owner's room and gallery exit. The balcony and gallery are each approached by two distinct and separate sets of staircases—the balcony

FACADE, ROYAL ALEXANDRA THEATRE, TORONTO, CANADA. JOHN M. LYLE, ARCHITECT.



AUDITORIUM OF ROYAL ALEXANDRA THEATRE, LOOKING FROM STAGE. JOHN M. LYLE, ARCHITECT.



Ground Floor Plan, Royal Alexandra Theatre—John M. Lyle Architect

stairs lead from each side of the foyer; the gallery stairs lead from the side entrances, and wind up over the balcony stairs, being concentric with same.

ENTRANCE HALL, ROYAL ALEXANDRA THEATRE. JOHN M. LYLE, ARCHITECT.

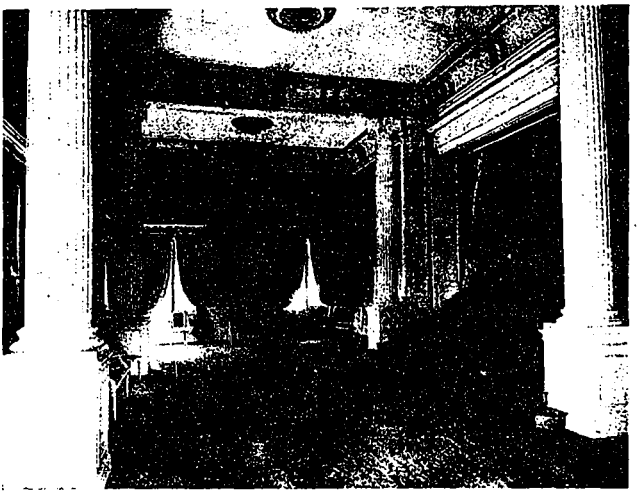
The auditorium is comprised of main floor, balcony and gallery, and is 75 feet wide by 66 feet deep. To the casual critic an objection may be raised to the shallowness of the auditorium; but a little consideration on this point will prove the merits of this scheme. To begin with, it will be observed the auditorium is considerably wider than is usual in theatres of a like capacity, so that what is lost in depth is recovered in breadth. This must necessarily bring the audience near to the stage and therefore relieve the performers of considerable strain and worry in making their voices audible to their auditors. Four boxes are arranged on each side of the proscenium opening, two on the main floor and two on the balcony floor, each one being subdivided, so that there are really eight boxes in all.

On each side of the auditorium there are six sets of fire exits. The exits from balcony and gallery lead to separate sets of fire escapes having their outlets on the side court or alleys. These exits on each side of the house are protected on the outside by fire doors; and the inside doors open by means of a safety device which operates on a pressure of twenty pounds. A view of one of these doors taken at close range is reproduced on page 42, showing the arrangement of the lever which causes the door to fly open when pressure is brought against it. The lever is a flat piece of brass about fourteen inches in length, placed horizontally across the centre of the door and projecting therefrom for about three inches. Upon being pushed in two vertical bars working into mortices in the top or bottom casement are drawn and the door swings outward. The location of these "Push" levers renders it almost impossible for any object the size of a man or youth to miss springing them, in case a rush were made toward the exits.

The stage is 75 feet wide by 37 feet 6 in. deep, having a proscenium opening of 38 feet in width. On each side are large property rooms; at the rear and facing on Pearl street is the dressing room section, cut off from the rest of the building by a solid brick wall. The dressing rooms are arranged in four tiers on floors, approached on each side by fireproof staircases which are continuous from basement to large scene painting room on top floor. Over the property rooms are situated the chorus apartments, which are approached from the dressing room corridors. Each floor of dressing rooms is provided with lavatories and every room has its separate wash basin, the chorus rooms having a series of wash basins and separate lavatories. The convenience and fire protection arrangement of this section is apparent by a reference to the plans.

MAIN STAIRCASE FOYER, ROYAL ALEXANDRA THEATRE. JOHN M. LYLE, ARCHITECT.

Over the stage are three large skylights, the roof of the centre one being so arranged that in case of fire it will open automatically by a fusible link or by the operation of a cord leading from skylight to prompter's stand on stage. All openings in the proscenium wall and entrances to stage are protected by fireproof doors. The windows throughout stage and dressing room section are protected by metal frames and wire glass.



PROMENADE FOYER FOR PATRONS OF FIRST BALCONY, ROYAL ALEXANDRA THEATRE. JOHN M. LYLE, ARCHITECT.

The working properties of the stage consist of four fly galleries, two on each side, and a gridiron which is situated 70 feet above stage floor. This gridiron is constructed of steel throughout, and the fly galleries are of steel fireproofed with concrete. A feature in connection with the stage floor is the fact that it contains twenty-eight movable sections, the object being to do away with the necessity of cutting a different man-hole in the floor for the accommodation of every play that requires a trap-door in a certain location on the stage. One, only, of these sections contains a trap, and this is exchanged at will for any section, thus providing a trap door in any spot required.

LADIES' WAITING ROOM ON MAIN FLOOR OF ADMINISTRATIVE SECTION, ROYAL ALEXANDRA THEATRE. JOHN M. LYLE, ARCHITECT.

In the basement are located the fan and the cooling rooms in front, plenum chamber under auditorium, boiler room under west property room storage rooms under stage, coal vaults, super and band rooms under dressing rooms.

On the first floor of administrative section is balcony foyer leading to the auditorium on one side and to large promenade foyer on the other, the latter being a distinct innovation in theatre arrangement for the general use of the theatre-going public during intermissions. On the top floor are situated gallery lavatories and janitor's quarters.

The auditorium is so arranged that the sight lines are perfect. No columns obstruct the view, as the balcony and gallery are carried on heavy girders of clear span from wall to wall with steel cantilevers resting on same.

The main floor has a gradual fall to the orchestra pit, and the seating is arranged on a series of slight terraces starting from a point about one-third back from the orchestra. The balcony and gallery have a pleasing and gradual drop from the centre to the terminus at boxes. The photographs show in detail the general arrangement of seating and give some idea of these perfect sight lines, as a clear and unobstructed view of the stage may be obtained from any seat in the house. This fact is greatly appreciated by the actors, as it eliminates all straining to reach the eye and ear of every individual present.

OWNER'S ROOM, ROYAL ALAEXANDRA THEATRE. JOHN M. LYLE, ARCHITECT.

In further reference to this point it may be interesting to learn that the shallow but wide type of auditorium will be adopted in the future erection of buildings by the theatre syndicate.

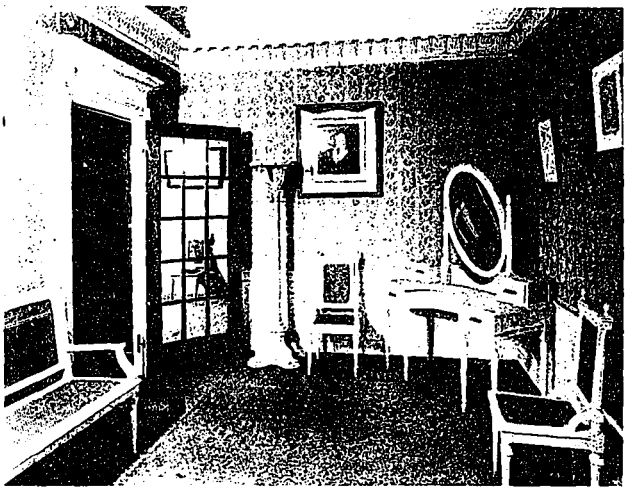
In the gallery the departure has been made from the usual, comfortable opera chairs having been provided instead of the old time "pews."

CONSTRUCTION.

The most modern methods of construction have been followed in the erection of this building, it being fireproof

throughout, and all danger of fire and panic thus reduced to a minimum. It has been built in strict conformity and in accordance with the latest building by-laws and requirements of the fire underwriters.

The basement and superstructure walls are of brick laid up in cement mortar; the main facade and trimmings



LADIES' CLOAK ROOM, ROYAL ALEXANDRA THEATRE. JOHN M. LYLE, ARCHITECT.

of administrative section being executed in Indiana limestone. The roofs and floors throughout, inclusive of gallery and balcony, are of reinforced concrete, carried by steel structural members, fireproofed in the most approved manner.

The partitions are of terra-cotta and reinforced concrete. Fire doors protect all exterior openings, and the stage and dressing room section are protected by a complete sprinkler plant and series of stand pipes, the outlets for the latter being accessible from floors, fly galleries and gridiron. This gridiron is covered by many sprinkler outlets and the fireproof asbestos drop curtain has a continuous water spray arranged at the top of same.

Such a disaster as occurred at the Iroquois Theatre in Chicago, could not take place in this building, owing to the arrangement of dressing rooms and location of fire protection apparatus.

DESIGN.

This building is one of the few period types of architecture in Toronto, it being designed throughout in the style of Louis XVI. The stone details of facade are handled in rather a free type of this style, while the interiors have been treated in strict conformity with the character of this period. Every feature and detail has been closely studied, even to the hardware and furnishings, inclusive of act curtain and furniture, all of which were specially designed by Architect J. M. Lyle, of Toronto, and are in perfect harmony with the general scheme.

The color scheme of the auditorium is yellow and old gold, presenting a rich, cheerful and cozy appearance, which is greatly enhanced by the soft lighting effect. The main sunburst in large centre ceiling panel has two ornamental plaster disks in which are arranged a total of two hundred and twenty lights.

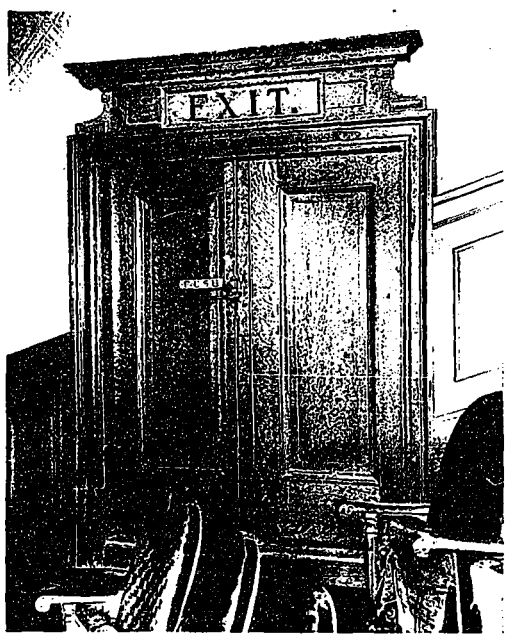
The walls of auditorium are hung with silk and panelled for the complete perimeter in quarter cut oak; the whole of the woodwork, inclusive of chair backs, being finished with a silver filler. The proscenium arch springs from the top of boxes, and is sub-divided in enriched decorative plaster panels, the centre one of which is filled with a mural decoration executed by Frederick Challenor, the subject being "Aphrodite discovering Adonis." This painting lends a rich note of color, which is recalled throughout the decorative plaster treatment. The modelling in the auditorium and administrative section is indicative of, and in true keeping with the architectural period, showing the intimate knowledge and wonderful ability of the French modellers, who were brought specially from New York City to do this work.

Among the features in the front of the house are the staircase foyers, owner's room, waiting room, smoking room and promenade room, some of which are illustrated in this issue. The entrance hall has walls of Verde antique marble, and heavily coffered plastered ceiling, treated in deep blues, reds and gold; the woodwork being in fumed oak, and the floor is a simple yet tastefully designed mozaic. The staircase foyers have woodwork of polished Circassian walnut, and a heavily coved plaster ceiling, springing from an enriched cornice at the back of which are concealed lights, giving a soft glow to the chocolate color scheme and harmonizing with the deep, rich tones of the woodwork.

The smoking room is finished in fumed oak, having panelled walls to the full height, and a plaster ceiling with concealed lights at back of cornice. The manager's room and ladies' waiting room have panelled wood dadoes and trim finished ebony black; the walls being hung with green silk.

The woodwork in ladies' cloak room is finished in French grey, and the walls covered with rich old rose hangings.

The owner's room has an enriched plaster cornice and frieze, panelled dado and trim of walnut finished in a rich dark brown, and the walls hung with deep red silk. The mantelpiece is a feature of this room, being executed



AUTOMATIC EMERGENCY EXIT, ROYAL ALEXANDRA THEATRE.

in Verde antique marble and walnut, carved in an effective yet simple manner.

The Circassian walnut of the ground floor foyer is carried up the balcony stairs and around the balcony hall. The woodwork of the promenade room is finished in French grey, the hangings nile green, and the enriched plaster ceiling and cornice in two shades of green harmon-

izing with the wall hangings. This room is sub-divided by large Ionic columns and pilasters on each side of the approach, and is lighted by means of large sunburst fixtures.

It is interesting to know that almost all the woodwork in the house was made in Canada, at Walkerville, by the Globe Furniture Company.

The fireproof floors, palleries and roof, are constructed of concrete, reinforced with expanded metal. The plastic relief work on the ceilings, proscenium arch and walls is carried on metal furring and expanded metal lath. The fireproofing throughout was executed by the Expanded Metal and Fireproofing Company, Limited, of Toronto.

Complete, the Royal Alexandra Theatre cost in the neighborhood of $500,000.

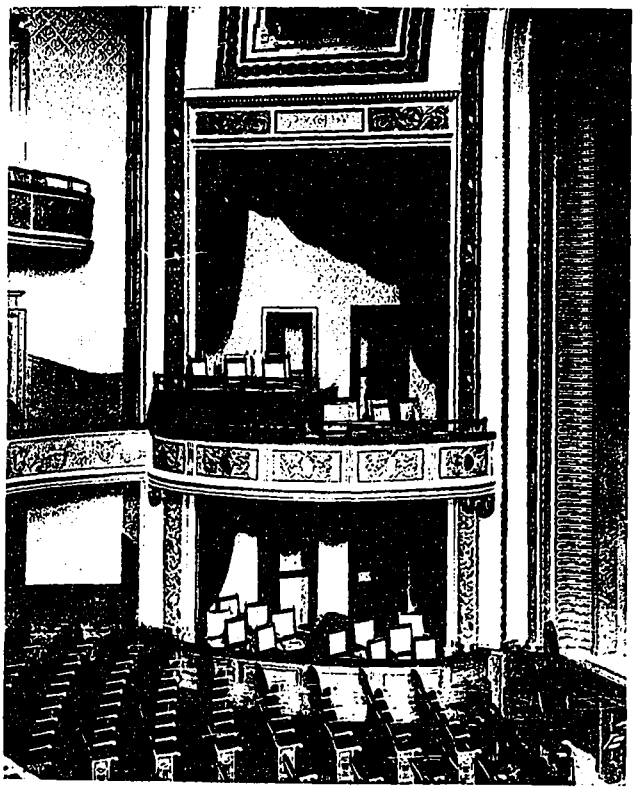
The owners of "The Royal Alexandra" deserve the grateful credit of the public for the promotion and erection of such a building, both from an architectural and theatrical standpoint, as Toronto has long felt the necessity of such an enterprise.

Some measure of the success of this building may be judged by our illustrations, the subjects of which were selected with great care.

Among the various criticisms that may be offered, those of the theatrical profession are greatly valued. Prominent actors, in comparing this building with the best continental theatres, state that the arrangement and appointments are unsurpassed, this being particularly true of the dressing room and stage sections.

The famous Duss, while in Toronto with his band, sounded the acoustic properties very carefully from every quarter before the theatre was formally opened, and unhesitatingly pronounced it unquestionably the most perfect in this respect that he had ever had opportunity of studying.

James T. Powers, starring in the "Blue Moon," studied the sight lines from every point and pronounced the house superior in this respect to any on this continent.



VIEW SHOWING ARRANGEMENT OF BOXES, ROYAL ALEXANDRA THEATRE. JOHN M. LYLE, ARCHITECT.

A Correction

ARCHITECT EDWARD WRIGHT, of London, has called our attention to an error in last month's publication, whereby he was accredited with being the architect of W. H. Reid & Co.'s $18,000 structure in that city. Mr. H. C. McBridge, of Richmond street, London, is the architect of the building.

Specimen, Successful Architects License Law

(*Continued from page 36.*)

for such examination. Previous experience and exhibits will form no part of such examination, except as previous experience is stated in the form of application. Applicants must deposit the examination fee of $15 with their applications. In case the applicant passes the examination, a license, form B, will be issued without the payment of an additional license fee, upon return of the license, form A, which shall be marked by the Secretary "Exchanged for license form B No. ....," and placed on file. If the applicant fails to pass the examination the examination fee will be returned and the licenses' status under license, form A, will not be affected and the results of the examination will not be published.

12. Due notice will be sent of the result of the examination. All Licenses issued before July 1 will run from the preceding July 1. All licensed architects as soon as lists are completed.

PUBLICATION.

13. All publishers of directories or journals shall be allowed to have free access to the files of the board for the purpose of publishing lists of licensed architects as soon as lists are completed.

ARCHITECTS' SEALS.

14. The seals of licensed architects shall be circular and two inches in diameter. The words "State of Illinois" shall appear at the top, between circular lines, and the words "Licensed Architect" at the bottom, between the same lines. The name and place of business of the licensee, to which the street and number may be added if desired, are to be placed within the inner circle. Where there is a co-partnership of architects the individual names of the several members licensed may appear on one seal. As stated in the law, the seal is to make an impression; hence, a rubber or inking stamp will not be lawful.

A Competition

IN considering the proposition of erecting a new City Hall to cost approximately $150,000, the council of Port Arthur has decided to call for competitive plans from Canadian architects.

Sociological and Economic Advantages of the Apartment House

The Modern Apartment House—Pointers on its Architecture, Arrangement and Construction—Its Place in the Development of Domestic Life in Our Rapidly Growing Cities—The Only Alleviation of the Increasing Demand for Rented Living Quarters, Both Luxurious and Inexpensive—Examples of Various Types Illustrated

MODERN conditions require that a considerable portion of the high-priced land in the central, semi-business portions of every city be utilized for residential purposes. Not only do a goodly percentage of the working class of family heads and people of the street vendor type demand places of abode in the down-town regions, in order to be somewhat handy to their places of occupation; but the middle class of toiling single-folk and, in many instances, business men as well, have come to regard the city's midst as preferable to a residence in localities fifty minutes distant from the scene of their business activities by the trolley.

Of late years it is also noteworthy that the pacemakers of Epicurean society have taken to the idea of apartment house dwelling in the business areas of our more congested cities.

This, then, is the age of the Apartment House.

That the demands of the loftier society should gauge the necessity for constructing down-town apartments is not our contention, however. With this class of people it is merely a fad, and the whim may be ephemeral; but it is the requirement of the masses, the people who throng the factories, the stores and the offices in the city's midst, that must be catered to. In practically all large commercial centres on this continent investors have found that money placed in economically arranged, well-built apartment houses, has given excellent returns, while resultantly the inroad of the apartment house has done much of late years toward relieving the "slum" pest, thus working to a double advantage.

In the city of Toronto, as in many other Canadian cities, there appears to be a popular tendency toward the favoring of home building. Let it be understood that our motive is not to discourage this phase of residence construction; but rather to make provision for the large number of people who must of necessity reside down town and who could not possibly procure the land, let alone build, in these most essential localities, if they wanted to. It were much better that they be availed of sanitary and well equipped flats than otherwise crowded into tumble-down shacks, that serve only as tax-assessment-alleviators for the wealthy, though non-progressive, landowners.

NO BABIES WANTED.

The need for apartment houses in Toronto, because of even a graver reason than we have outlined, is pitifully shown in the experience of a young married man of literary profession who very recently was compelled to leave his five-roomed tenement flat because of a tiny addition to his family of three and who, in a disheartening search for new quarters that should be convenient to his arduous employment, was driven almost to desperation by the many refusals, and even rebuffs, he encountered ere he at last located a spot at thirty-five or forty dollars per month where he could keep his tender flock together for the winter. His story is positively sickening.

The objection was always the same: "Well, really, we don't care about having children in our building. We have no trouble keeping our rooms filled with adult families." This brutal reply to his modest solicitations was thrust at him so often in one week that, what with the conflicting tortures of humility, chagrin and despair he became almost frantic with despondency. As he dragged his reluctant feet from one quarter of the city to another, he would find himself wondering if the begetting of children were not really a crime in a man of limited means. When he finally did locate a little haven, it was in a quarter far removed from the office in which his rent-money is gleaned.

Had this young man been a wretch whose record for non-payment of rents could be found upon the card-system of every landlord in the city, a few rebuffs would not have disturbed his equanimity, but nothing of the sort could be charged against him.

The outcome of the whole thing is this, *Toronto has as good as lost a respected citizen*, for the indignant fellow intends to shake the dirt of the place from his feet as soon as he can locate a new field in which to exercise his ability.

We recount this incident merely to show the great field for all types of apartment house construction, which Toronto affords, in lieu of which we have compiled data and plans of various buildings of this nature which have been especially designed for especial requirements, not even excepting bachelor and baby apartments.

Since past experiences in this line have demonstrated the practicability of such investments, we believe that this article will prove of no less interest to the prospective builder than to the prospective designer.

DESIGN AND CONSTRUCTION.

The design and construction of apartment buildings has been given little study by the majority of the ablest practitioners, therefore the examples of good planning and artistic exteriors are an exception. Many of the best and oldest architects have frowned upon this class of building as affording no field for the display of talent, leaving this class of work to the younger practitioners. The result has not been all that is to be desired, and the general public has been content with the mediocre apartment building.

A recent issue of an architectural journal published an article on apartment buildings in Chicago in which the subject was cleverly treated. The writer of the articles says most of the apartment buildings in that city are erected by speculative builders and represent their taste and not the average taste of the community and the conventional apartment house is taken as a basis, hence the numerous bad examples of design and planning are typified by rows of uninteresting piles of brick and stone which bring to one's mind the so-called "Queen Anne" houses designed and erected by builders in days gone by. He also speaks of the conventional New York apartment house as being an architectural hybrid of making certain attempts at display in being covered with trivial and inappropriate terra cotta ornament. This applies to the average apartment building here, except the ornament is usually of galvanized iron, and we are thankful to say that therefore it has no chance to survive.

With regard to the limits which should govern the introduction of architectural elements in design truthfulness should prevail, and in this truthfulness is expressed its proper character. The apartment building should bear the individuality of the architect, and should express that for which it has been constructed, establishing its iden-

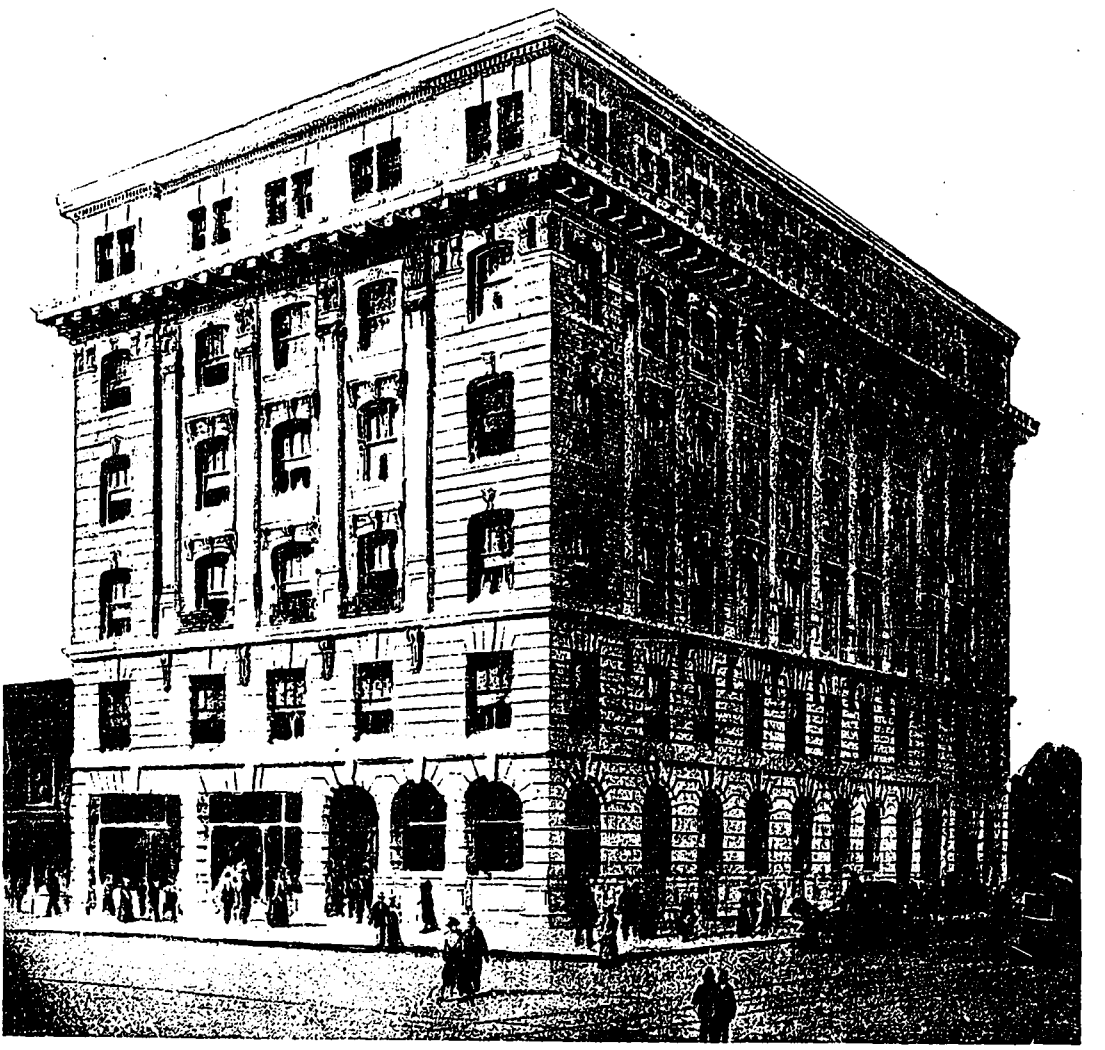
tity. The profession owes a duty to the public to treat this modern problem frankly, sincerely and artistically.

Some apartment buildings are affected with useless mansard roofs, which are hideous when approached from a distance and cannot be seen from the street. The sky line is frequently broken up with sham gables that are braced in the back with iron rods. Bay windows, which are deemed indispensable by some architects, are treated in such a pretentious manner as appearing entirely out of place with the building to which they are attached. In nothing is the lack of knowledge of good architecture so apparent as in the execution of moldings and the carved ornamental work which is to be seen everywhere. Few apartment houses show any harmony of color, and conclusively prove lack of conscientiousness and truth with which they were carried out.

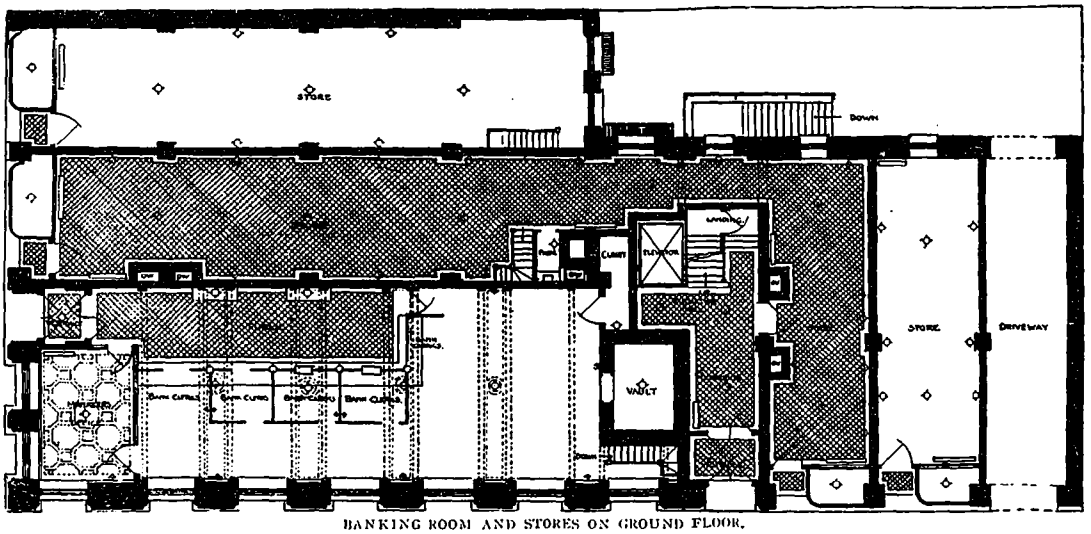
The apartment building is essentially a business proposition, the same as our commercial buildings; therefore it is impossible for the architect to apply the classical styles taken from historical periods. We must also eliminate the imitations of the classical motifs which we see daily around us, remembering that such effigies of architecture are signs of ignorance and bad taste. We do not mean by this that the architect should not borrow from good architectural examples, provided same are treated in a rational manner and the designers' personality is imprinted thereupon.

It should be remembered that individuality of expression can never be attained by exaggeration, bad proportion or composition. It is plain no good drawing can make up for such faults. A noted architectural critic has truthfully stated that our great fault in America is the vast amount of attention we pay to being original to the detriment of attaining actual worth and artistic merit.

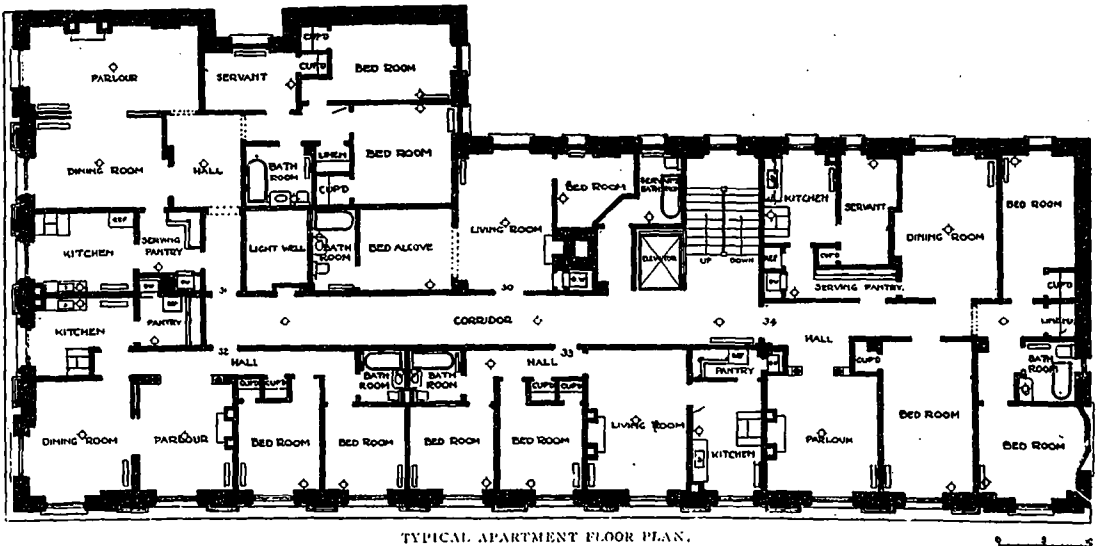
He did not advocate the wild and unrestrained attempts of L'Art Nouveau but pled for the middle path, which allows the architect freedom in design and expression. This could be accomplished by a proper disposition of



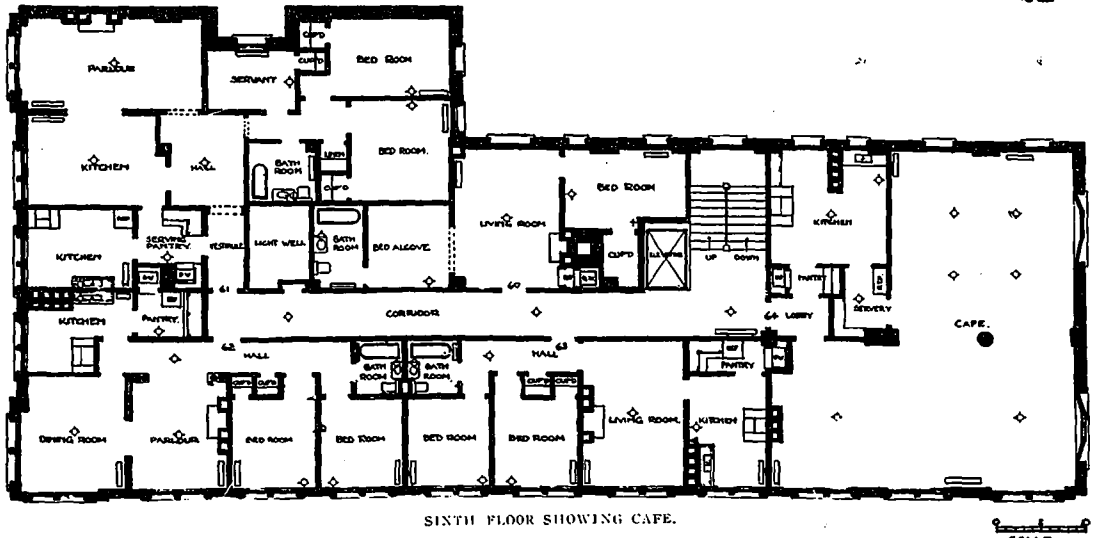
TRADERS BANK APARTMENTS, TORONTO, A GOOD EXAMPLE OF A STRICTLY HIGH-CLASS APARTMENT BUILDING IN WHICH NO EXPENSE OR EFFORT HAS BEEN SPARED TO DEVELOP BEAUTIFUL ARCHITECTURAL EFFECTS, LUXURIOUS APPOINTMENTS AND CONVENIENT ARRANGEMENT OF PLAN. F. S. BAKER, F.R.I.B.A., ARCHITECT.



BANKING ROOM AND STORES ON GROUND FLOOR.



TYPICAL APARTMENT FLOOR PLAN.



SIXTH FLOOR SHOWING CAFE.

Floor Plans, Traders' Bank Apartments, Toronto

E. S. Baker, F.R.I.B.A.
Architect

bays, balconies, loggias, porches, etc., taking into account the color of materials used, affording a pleasing ensemble and harmonious effects.

The design should express the residential character of the building to suggest its domestic functions. The planning is an important problem and requires great care and economy in the arrangement of rooms, which should be isolated in a manner to afford the greater possible convenience and privacy, and the subject of light should be studiously considered.

The apartment house has become an important type of our residential architecture. Due to the domestic conditions of the present day as has been already pointed out, many people of artistic and refined tastes prefer to occupy an up-to-date apartment; hence the increasing demand for high class and artistic buildings of this character.

As we all know the average apartment house contains from six to twenty-four apartments, usually varying in size from four to eight rooms in each apartment; therefore the problem before the architect is how to shelter a number of tenants under one roof and afford each the seclusion of a private residence with the convenience which the average home does not possess.

The sites available are frequently responsible for the planning of very odd shaped rooms, but these with a little care and study may be made symmetrical. The plan which shows ingenuity in arrangements should also eliminate unnecessary breaks and offsets in the masonry walls, as same increases the cost of labor. The following dimensions of rooms may be regarded as typical: Living rooms, 16 x 24ft.; kitchen, 10 x 12; dining room, 14 x 22; bed room, 14 x 14; maid's room, 10 x 10; bath room, 6 x 10.

In some of the more exclusive apartment houses in the fashionable districts where land is expensive, the increase of the area covered by each apartment to accommodate two or three servants involves a considerable increase in rent to each tenant; servants' quarters have been placed in the basement or attic, but the experiment proved a failure and the idea is being done away with.

The typical apartment has its own kitchen and rear porch, which is an ever present problem in every plan, as the rear porches are seldom designed to be attractive and usually darken rear rooms. In the more pretentious apartments this feature is overcome by introducing interior rear stairways and balconies giving access to tradesmen, etc.

Up-to-date apartments must have all the conveniences which it is possible to procure for the tenants, such as electric lighting, shades, safes, telephones, gas stoves and refrigeration, all in keeping with the general surroundings of the building, the equipment being thoroughly modern, even to the crematory for the destruction of garbage and refuse.

Luxurious Apartments of Traders Bank in Toronto

THE Traders Bank of Canada has recently erected a new bank and apartment building at the northeast corner of Yonge and Bloor streets, Toronto, on a site 57 ft. 6 in. on Yonge street and 120 ft. on Bloor street. The structure is designed in the style of the French Renaissance, and is six stories and basement in height. Built of grey limestone and buff pressed brick, it is of fireproof construction, the Expanded Metal system of reinforced concrete having been used. The building has been designed to suit the location which is in the heart of a considerable business section and surrounded by the best residential district of the city.

On the ground floor a branch office of the bank is located, which contains every convenience for the comfort of the staff and customers, including a handsomely furnished room for lady clients, with neat lavatory. The banking room is decorated in the style of Louis XV and furnished with deep mahogany woodwork with white marble floor, and rich bronze grilles, with an unusually successful verdigris finish.

On this floor are also situated a tobacconist's store; a large chemist establishment with soda fountain and palm garden; and a barber shop. There is an open court at the rear with a driveway entrance to same, protected by heavy iron grille gates. This court provides the tradesman's entrance to the residential apartments in the upper part of the building. The second floor of the building is given up to offices, and is occupied almost entirely by professional people, doctors and dentists. Ample accommodation is provided on this floor.

The upper part of the building is entered from Bloor street through a wide doorway protected by a handsome wrought iron and glass marquise. The entrance has a white marble floor and marble wall linings leading up to the elevator and the wrought iron and slate staircase. From this hallway there is an entrance to the palm garden of the chemist shop, and also a stairway to the basement.

The main staircase continues from the basement to the roof of wrought iron and slate with highly polished brass rail, and at each landing of this staircase is a large window looking to the north.

The elevator runs at the west side of this staircase, and is covered by a neat bronze grille. It is an electric elevator of the most modern type, equipped with every device for safety, speed and comfort. It lands at all floors, including the basement.

The four upper floors are divided into nineteen residential apartments of various sizes, and these will rent at from $500.00 to $1,200.00 per year. With the exception of four (4) bachelor apartments, they are all housekeeping apartments, equipped with sink, laundry tubs, refrigerator, gas stove, electric fixtures, window shades, awnings, weather strips, fireplace with gas logs, and all beautifully decorated throughout. Each apartment is provided with a complete bathroom, and large linen storage, also a large storage room in the basement.

To each apartment there runs an electric dumb waiter of the most modern type, the machines for which came from New York. A complete signal system is installed and the cars operated in such a way that the dumb waiter door cannot be opened in any apartment except when the car is opposite to it, thus minimizing the danger of accident.

The building is heated by low pressure steam. Each apartment is supplied with hot and cold water.

A cupboard is arranged off the corridor on each floor for the various electric and gas meters, the tenants paying for their own light and gas.

On the sixth floor there is arranged a large cafe, with the necessary kitchens, pantries, etc. This room, which is beautifully decorated, has windows to the north, east and south, and seating capacity for about one hundred guests.

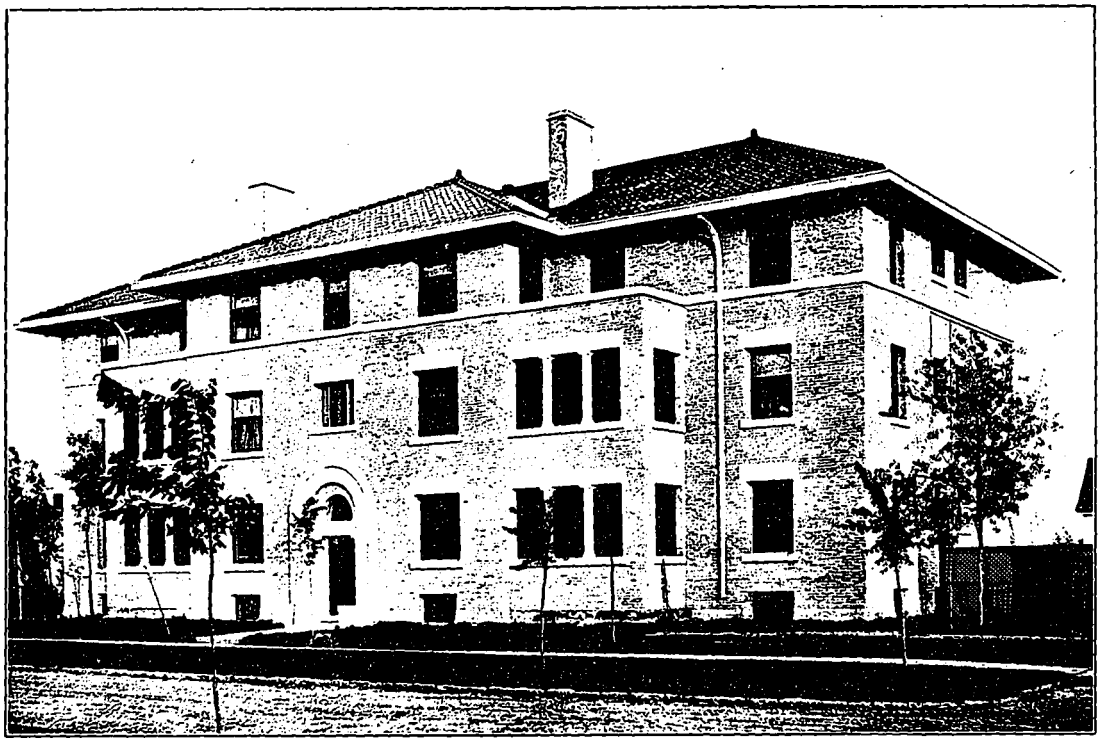
From this floor a wide stairway leads to the roof, which it is proposed to utilize as a roof garden, the flat tile roof making this possible, and this building being the highest in the neighborhood, has a beautiful view of the city.

Ample fire escapes and also a stand pipe and hose, watchman's pull boxes, and patent portable extinguishers are installed in the building, which, when fully occupied, will probably house upwards of two hundred people. The rentals for these apartments will range from $65 to $85 per month.

The erection of the building was commenced in July, 1906, and it was occupied in September of this year. Complete it cost about $125,000.

The building was carried out under separate contracts, more than twenty different contractors being employed on the work.

The architect is Mr. E. S. Baker, F.R.I.B.A., of Toronto.

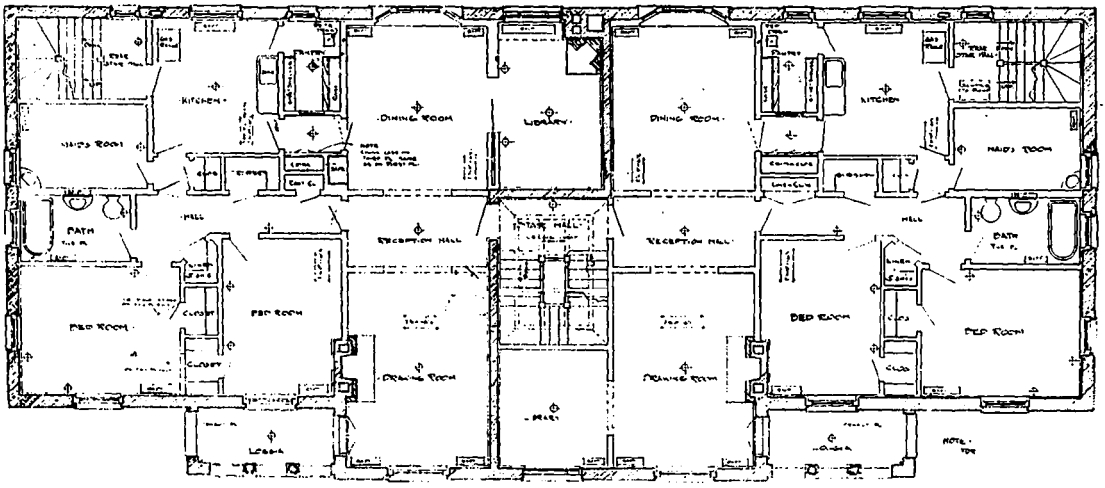


WARDLOW APARTMENTS, WINNIPEG—A GOOD DESIGN WHICH DEMONSTRATES THE VARIATIONS IN EXTERIOR ARCHITECTURAL EFFECTS OFFERED THE DESIGNER IN APARTMENT HOUSE CONSTRUCTION. THE TILED ROOF, WITH ITS HEAVY EAVES AND THE CLOSED PORCHES OR LOGGIAS, ARE SOMETHING UNUSUAL IN THIS CLASS OF STRUCTURE. JOHN D. ATCHINSON, ARCHITECT.

Splendid Arrangement of New Winnipeg Building

ENTERING the majority of the more modern apartments, the impression is most pleasing with a spacious reception room and large, pleasant, home-like living room, quite a refreshing departure from the old time front and back parlor with long narrow dark passageways ever present in the older buildings, considered quite passe by the average occupant.

The most notable changes from the old type, are the regularity of rooms and home like and inviting atmosphere due to the efficient lighting and the studied interior arrangement where the principal rooms are thrown together, a feature most desirable for entertaining, while the bedrooms are grouped in a separate corridor in such



TYPICAL FLOOR PLAN, WARDLOW APARTMENTS. THE CONVENIENT ARRANGEMENT OF ROOMS, PERMITTING THE DRAWING ROOM, RECEPTION HALL, DINING-ROOM, AND LIBRARY TO BE THROWN INTO ONE LARGE, GREAT ROOM ON FESTIVE OCCASIONS, IS A FEATURE NOT ALWAYS FOUND IN HIGH-CLASS PRIVATE RESIDENCES, MUCH LESS IN APARTMENT BUILDINGS.

a way that occupants may pass from one sleeping room to another without being in view, thus maintaining domestic privacy. A large and commodious dining-room readily accessible from all parts of the apartment without the presence of a long, narrow passageway is essential.

It is the pleasing combination of all these features that makes the Wardlow Apartment Building, erected in Winnipeg this year, worthy of particular consideration. The privacy and comfort of the tenants has been looked into with great care by Architect John D. Atchison of Winnipeg. Every convenience to be found in the seven or eight-room house is provided in this arrangement. The plan is superior to most apartment buildings. The location of the dining-room, library, drawing-room and reception hall and their relationship to each other is most admirable, and the kitchen and sleeping apartments are nicely cut off from the living rooms. Each flat is provided with fireplaces in both dining-room and library. Each has a safe. China closets, shelves, and built-in cupboards are to be found in precisely their proper places, and the pantry is not a stinted affair, as is too frequently the case with the apartment house. Perhaps the most attractive feature of the building from the tenants' point of view is the fact that every apartment possesses a closed porch or loggia leading off the drawing-room. In these window openings are designed so as to present a finely finished appearance in summer when the sash have been removed. In the winter these compartments can be used either as flower conservatories or as bright, healthful sitting-rooms when a sun bath is desired. The Wardlow Apartments have hardwood floors and finish throughout, and have been decorated to suit the tenants in each case. Everything about the building is first-class. The average rental is $85 per month.

In appearance there is nothing distinctive about the building; but in employing a cottage roof, the architect has shown that a little variety in this regard is obtainable. With the modern apartment house the flat roof is becoming decidedly too much a fixture.

Madison Apartments, Toronto

THE MADISON APARTMENTS, designed for Mr. M. M. Cohen, by Architects Langley and Howland, of Toronto, and situated in the best section of Madison avenue, Toronto, will be completed about January 1st, 1908. They consist of twelve similar housekeeping suites, each having an ante-room, drawing-room, four bedrooms, dining-room, kitchen, pantry and bathroom. These apartments have been designed with a view to a quiet domesticity, rather than the somewhat institutional effect often produced. The corridors have been reduced to a minimum length, and have been made of ample width in order to admit of proper treatment in rugs, hall furniture and picture hanging.

There are two front entrances, each serving one-half of the building. The woodwork, including floors throughout (except trimmings of drawing-rooms, bedrooms and bathrooms, which will be white enamel) will be of quartered oak, antique finish. The vestibules will have handsome panelled walls and ceilings and mosaic floors, and the usual apartment letter box and call bell fittings. The entrance halls, ante-rooms, dining-rooms and corridors will have leather effect treatments, in oil paint on stucco, giving a rich though very quiet impression. The drawing-room and bedrooms will be daintily decorated in high grade papers. The dining-rooms will have panelled walls, plate shelves, beamed ceilings, built-in sideboards with leaded glass doors. These rooms facing east, and opening with French door to large verandahs, make a most attractive feature. The bathrooms will have tiled floors and walls.

The fixtures, hardware, gas ranges, refrigerators, etc. have been carefully selected from the highest grade of goods. The fixtures throughout will be of unique and stylish design. There will be handsome brass fenders at drawing-room fireplaces, canopy pendants over dining tables, and other little touches calculated to add to the general effect of completeness.

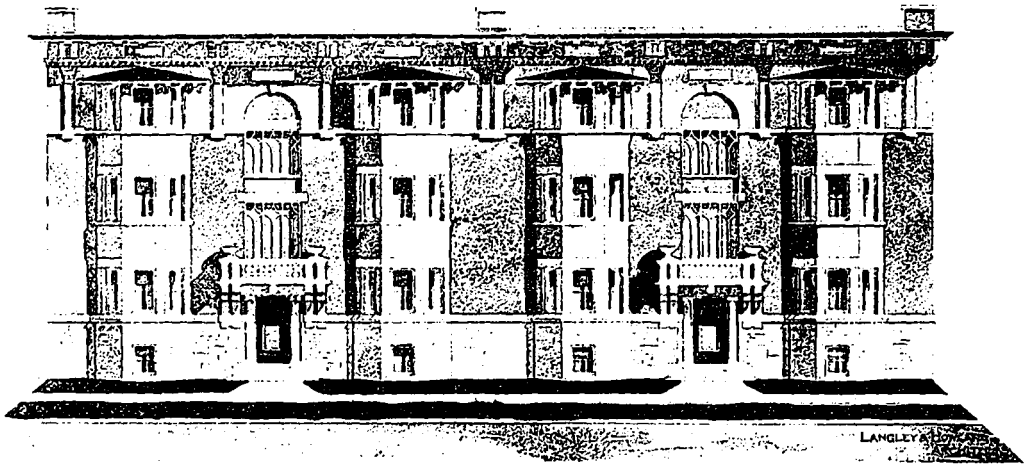
Very careful attention has been paid to the matter of providing and locating all modern conveniences and fixtures. Each ante-room will be provided with a stationary hat and cloak rack with a large mirror forming the door of a cupboard. Each kitchen will contain a drop-leaf table, canopied gas range and built-in cupboard. The pantries will have built-in refrigerators. The principal bedroom of each flat will be equipped with a panelled cabinet with large mirrored doors. The clothes cupboards will be void of hooks except in the inside of the doors, the cloaks and garments being suspended from poles equipped with special coat racks. The bathrooms will have mirrored medicine chests placed in between windows and flanked on either side by electric lights. The virtue of this arrangement will quickly impress itself upon any man who is in the habit of shaving himself. The same thoughtfulness has been displayed by the owner in insisting that two wall-lights be placed in the kitchen, thus avoiding the usual error of having a pendant in the centre of the ceiling, making it necessary for a person to persistently stand in his own light. Special attention was also paid to the arrangement of the bedrooms in order to permit the placing of a full-sized bed in a corner. This is a feature which should be carefully considered by every architect and prospective builder, as too often it happens that a misplaced radiator or an unfortunate break in the centre of a wall by a window, will leave no other alternative than to place the bed in the centre of the room. Each hall is provided with a combination linen cupboard and dresser.

There are two laundries in the building. Each apartment will have separate gas supply to the laundry stoves, controlled by lock and key; also speaking tube to laundry. A large storage room for each apartment has been provided in the basement. The flats on the first and second floors will rent for $75 per month; those on the top floor for $65. The exterior is of a substantial character, built of dark red brick, with white stone trimmings, and having stained wood cornice, the four bays being roofed with bright red Spanish tiles. The whole effect is elaborate, but very homelike, and admirably suited to its good surroundings. Complete, the total cost is estimated at $50,000.

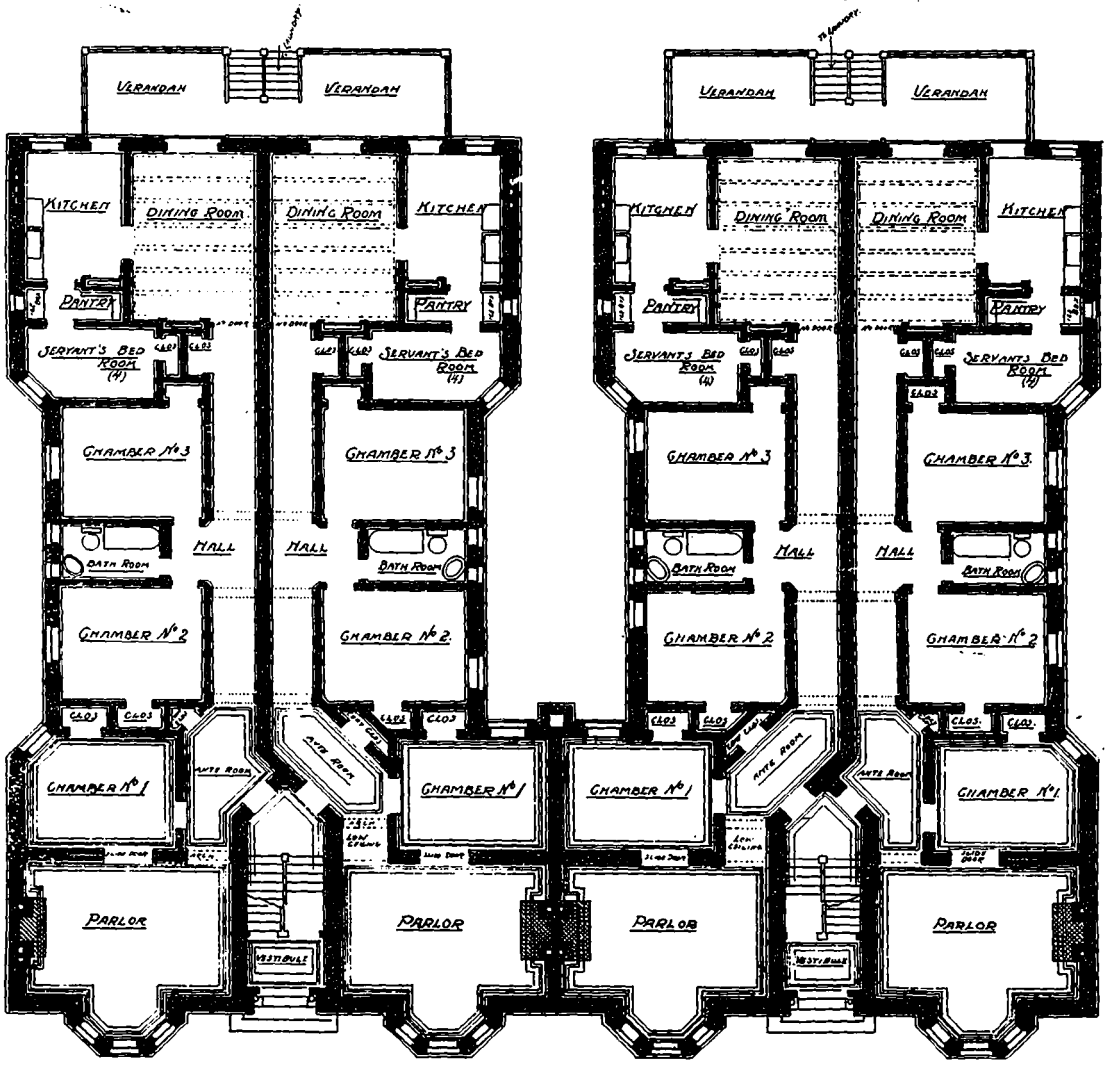
Relieving the Overcrowding in the "Ward," Toronto

THE overcrowding in the Jewish section commonly known as the "Ward" has been to a great extent relieved within the past few months by the erection on the north-east corner of Agnes and Elizabeth streets, Toronto, of a large three storey apartment building, which has been erected on unique lines and an entirely original plan from anything hitherto conceived. The owner of the property is Mr. Harry Wineberg, and we understand that the Messrs. Bachrack Bros. are also interested in the enterprise. The plans and elevation are reproduced in this issue.

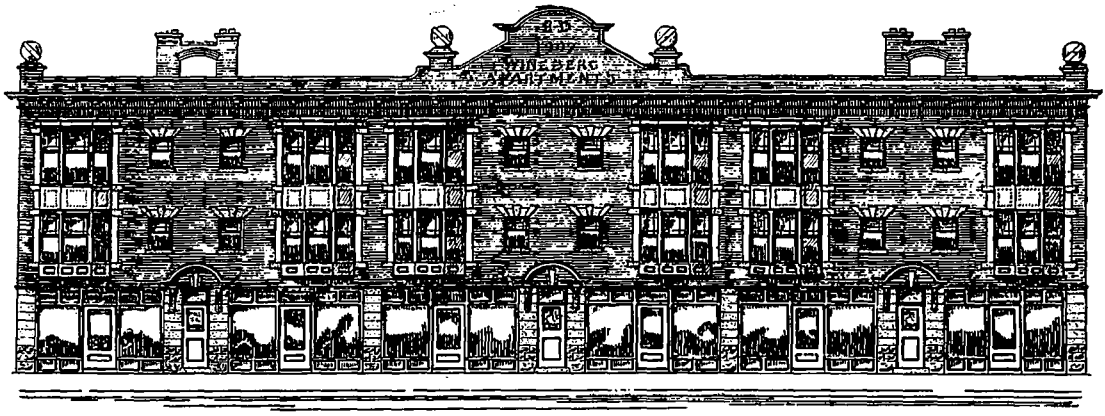
The site has a frontage of 132 feet on Agnes street by a depth of 101 feet on Elizabeth street. The building is practically divided into three separate and distinct units with fire walls separating each unit. On Agnes street there will be six stores and three entrances to the apartment, while on Elizabeth street there will be five stores on ground floor. It is proposed to derive most of the revenue from these stores so that the upper portion of the building can be let at a nominal rental. These will consist of twenty-eight apartments which will have four rooms, consisting of kitchen, dining room with pantry, clothes closets, gas range, hot and cold water heating,



FRONT ELEVATION, MADISON APARTMENTS, TORONTO, ANOTHER EXAMPLE OF THE ARCHITECTURAL POSSIBILITIES IN APARTMENT HOUSE CONSTRUCTION, IN WHICH THE DESIGNER HAS SUCCEEDED IN RELIEVING THE CUSTOMARY COLD, UNINVITING APPEARANCE PREVALENT IN THIS STYLE BUILDING, BY PRODUCING DISTINCTIVE EFFECTS IN THE BAYS, ORNAMENTAL GLASS WINDOWS AND ENTRANCES. LANGLEY & HOWLAND, ARCHITECTS. (THIS SHADED ELEVATION BY NO MEANS DOES THIS DESIGN JUSTICE.)



TYPICAL FLOOR PLAN, MADISON APARTMENTS. ONE OF THE MANY FEATURES OF WHICH IS THE FACT THAT EVERY FLAT HAS ITS PRIVATE ANTE-ROOM AND HALL. SCALE 13½ FEET TO 1 IN.



FRONT ELEVATION, WINEBERG APARTMENTS, IN THE "WARD," TORONTO. A NOTEWORTHY DESIGN OF MODERATE PRICED APARTMENTS. A STYLE OF BUILDING MOST NEEDED IN THE CONGESTED DISTRICTS OF OUR LARGER CITIES. A GOOD EXAMPLE OF A PLAIN, SIMPLE, ECONOMICAL STRUCTURE IN WHICH THE DESIGNER HAS ACCOMPLISHED HIS PURPOSE WITHOUT THE USELESS EXPENDITURE OF MONEY ON UNNECESSARY ORNAMENTATION. FRED HERBERT, ARCHITECT.

The hot water for the building will be supplied from a 600 gallon capacity boiler situated in the basement.

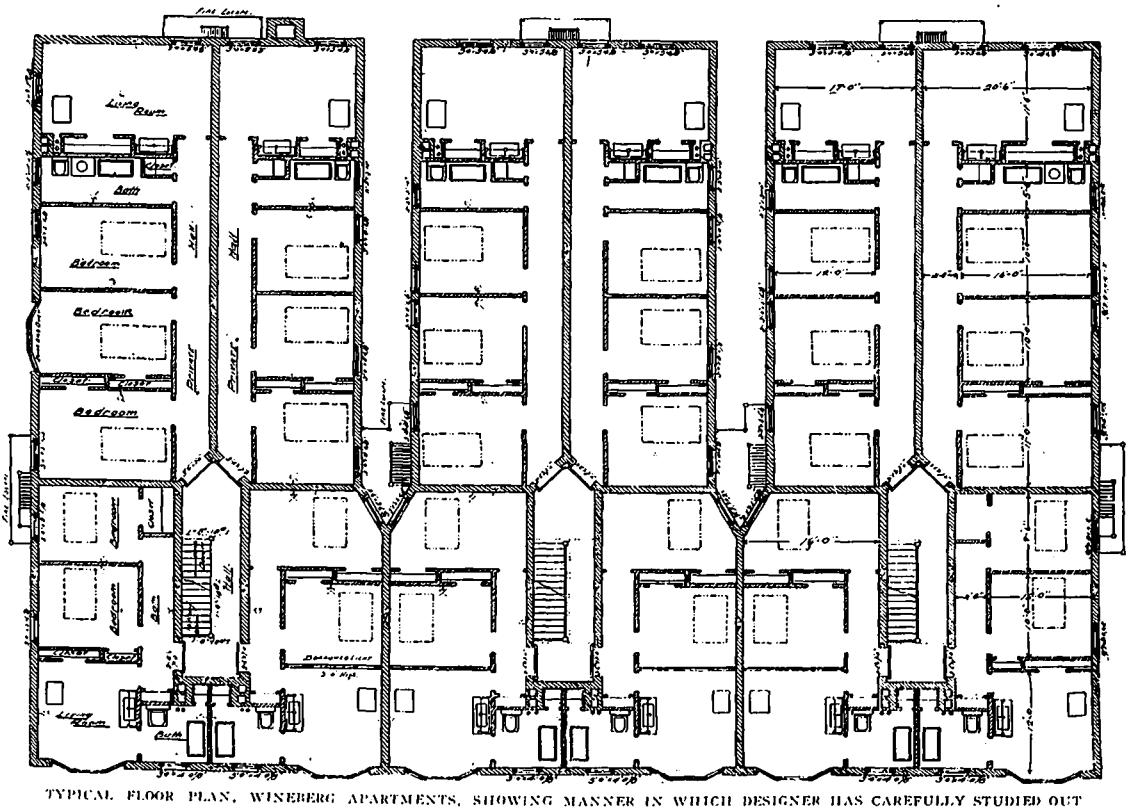
A distinctive feature of the building will be the main entrance hall from the street line to every flat which will consist entirely of steel and concrete with a cast iron fire escape leading from the basement to the roof, thus making all the hallways practically fireproof. Every tenant in the building will have an outside window to the flat, which will be provided with fire escapes, having access to the outside of the building.

Provision has been made for the disposal of garbage and for the delivery of goods to each apartment.

Nearly the whole of the building has been rented and it is expected that it will be occupied in the early part of the new year.

The building has been designed and carried out under the superintendence of Architect F. H. Herbert, who has given the work his personal attention.

Structural steel, common brick and concrete are the constructional elements employed in this enterprise, which involved an investment of $80,000. It is expected that from $25 to $30 per month will be realized by the land-



TYPICAL FLOOR PLAN, WINEBERG APARTMENTS, SHOWING MANNER IN WHICH DESIGNER HAS CAREFULLY STUDIED OUT THE PROBLEM OF AFFORDING PLENTY OF LIGHT AND AIR AND ALL POSSIBLE CONVENIENCES IN THREE AND FOUR-ROOMED FLATS THAT MAY PROFITABLY BE RENTED AT FROM $18 TO $25 PER MONTH.

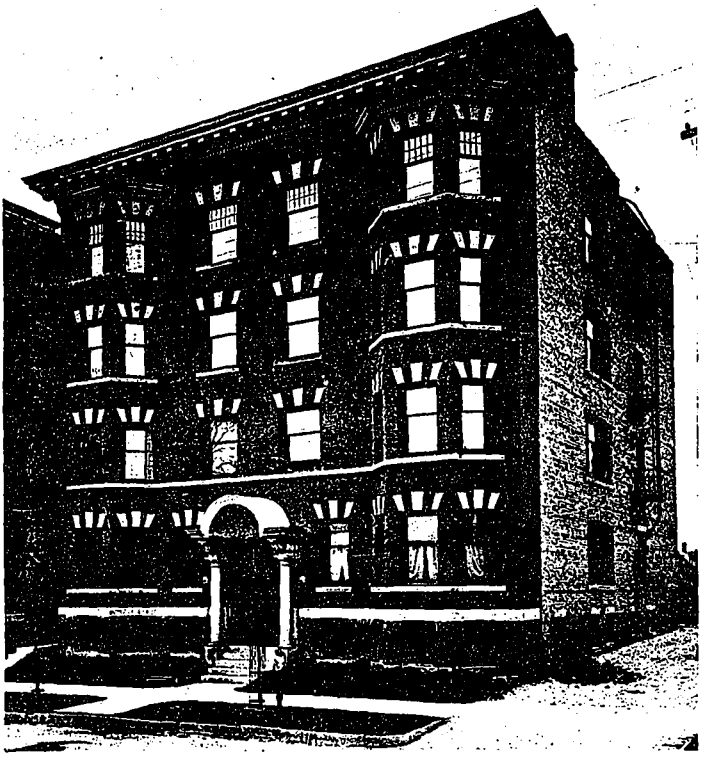
lord on each of the eleven stores, while the apartments will rent from $18 to $25.

At the rear of the stores on the ground floor will be located six apartments, each comprising four rooms and a bath.

This design has been selected as an excellent example of what may be accomplished in the erection of apartment buildings well adapted to provide convenient, cosy and sanitary places of abode for the poorer classes whose occupation necessitates their living in close proximity to the business centres of the city. Every large city in America is confronted with the problem of providing sanitary accommodations for this class, and while there is an aversion toward the establishment of tenement districts, apartment buildings of the nature of the one described herein are infinitely much better from every standpoint than the low half-tumbled down, unsanitary, inflammable shacks, with their unsavory outhouses, to be found in these districts in almost every large city.

Property is too valuable in these sections to allow the landowner to build private dwellings that may be rented at a price within the reach of those who would live in them. While on the other hand real estate owners have found the well constructed, economically planned apartment building with flats at a moderate rental well within the reach of the poorer classes, a most profitable investment. A few buildings of this character would soon effect a solution of "the Ward" problem in Toronto.

The Winchberg Apartments are the first of this class of building to be erected in "the Ward" in Toronto, and the success and effect of the venture should be watched with great interest.



ONE OF THE TWIN FLATS "ELIZABETH AND STUART," KNOWN AS THE "BABY" FLATS, LATELY ERECTED IN MILWAUKEE, U.S.A., BY GENERAL LOUIS AUER, ONE OF THE MOST NOVEL AND MOST WIDELY TALKED OF INNOVATIONS IN APARTMENT HOUSE CONSTRUCTION. GENERAL AUER PRESENTS THE PARENTS OF EVERY BABY BORN IN THESE APARTMENTS WITH A MONTH'S RENT. A TYPE OF APARTMENTS GREATLY NEEDED. LEISER & HOLST, ARCHITECTS.

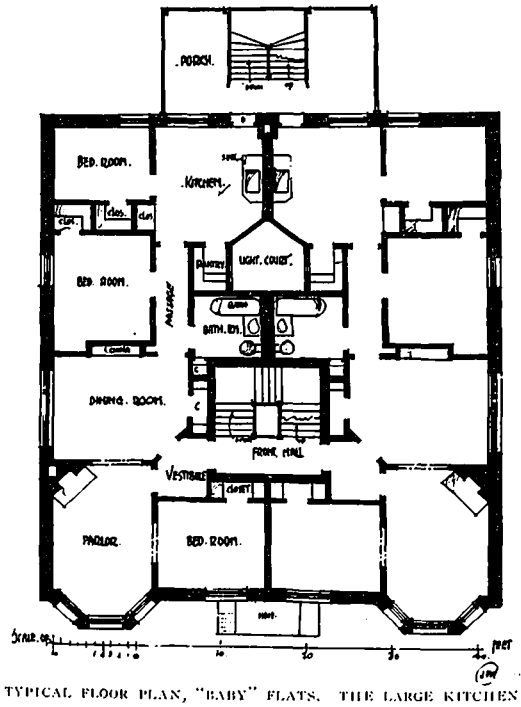
Novel Example in Apartment House Construction. "Baby" and "Bachelor" Flats

IN these days when "no children allowed" is one of the first stipulations which greets the would-be renter of a flat and when the situation arising from the unyielding preference of landlords for couples without young hopefuls is really appalling, it is certainly a refreshing innovation when the builder of new apartments handsomely furnished, and designed to meet the demands of people of refined tastes, issues an ultimatum not only that children are not to be barred, but that their presence is welcomed. When the builder goes still further and makes a deliberate bid for the patronage of people with families of children by planning the flats with special reference to nursery accommodations, by laying out and equipping playgrounds for children and actually gives substantial prizes for babies born within the buildings, he places his sincerity above question.

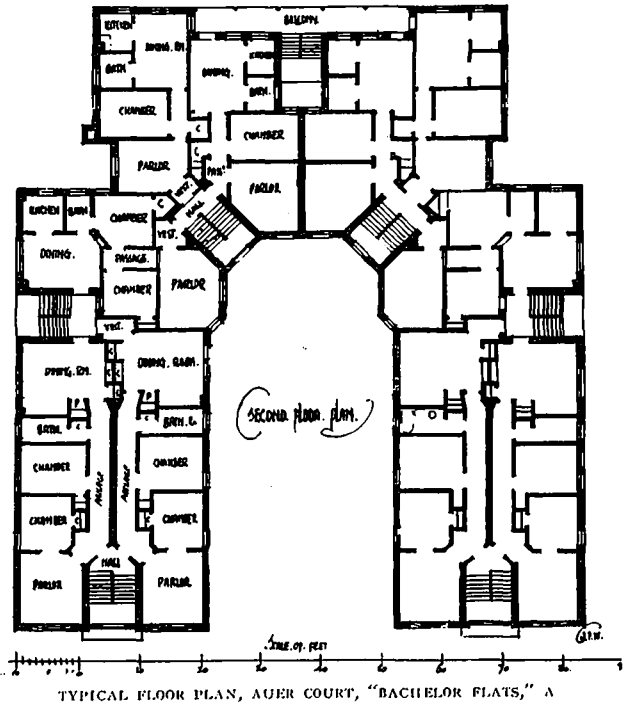
Such is the exceptional position held by Gen. Louis Auer, real estate dealer, of Milwaukee, Wis., who in 1905 erected in that city two flat buildings four storeys and basement in height and containing eighteen apartments each, designed especially to accommodate families in which there are small children.

Scarcely is there a city on the continent of America but is now feeling the need of such philanthropy. That the race-suicide plague has made an inroad in Canadian cities is evidenced in the incident cited in the introductory paragraphs of this article dealing with apartment houses of various types. Owners of flats in the city of Toronto to which a certain young man applied for shelter made no effort to conceal their aversion to allowing families with children to occupy their buildings, and the horrible significance of the thing is that every flat landlord who was interviewed declared unhesitatingly that he had no difficulty in keeping his apartments filled with childless families. It cannot be that a large percentage of married people of the present age are barren. It is much more probable that, realizing the brutal abhorrence of children on the part of those from whom they must rent, the people of this generation, who cannot own homes of their own, are compelled to forego the issue of children. After it was announced in the October number of this journal that the next issue would contain an article dealing with apartment house construction, the attention of the editor was called to the fact that it might be well to suggest a remedy for the inhuman exception taken to children by owners of apartments. It is therefore with a double purpose that we have secured views and plans of the Auer Baby and Bachelor flats of Milwaukee, Wis., through the erection of which Mr. Auer has not only made an interna-

AUER COURT, OR "BACHELOR FLATS," ANOTHER NOVEL APARTMENT BUILDING LATELY ERECTED IN MILWAUKEE, U.S.A., BY GENERAL LOUIS AUER. THE BUILDING IS PLANNED AND DESIGNED TO GIVE COSY, ATTRACTIVE QUARTERS TO BACHELORS AND BACHELOR MAIDS. EACH OF THE FORTY APARTMENTS OF FIVE AND SIX ROOMS IS RICHLY DECORATED AND SUPPLIED WITH EVERY CONVENIENCE. GENERAL AUER PRESENTS EVERY COUPLE MARRIED IN THESE FLATS WITH A MONTH'S RENT. LEISER & HOLST, ARCHITECTS.



TYPICAL FLOOR PLAN, "BABY" FLATS. THE LARGE KITCHEN AND BACK PORCH COMMEND THE APARTMENTS TO FAMILIES WITH SMALL CHILDREN.



TYPICAL FLOOR PLAN, AUER COURT, "BACHELOR FLATS," A NOTABLE FEATURE OF WHICH IS THE SEVEN ENTRANCES.

tional reputation for himself as a "population promoter," but has demonstrated the practicability of apartment house construction as a profitable investment.

The "Baby" flats, the Stuart and Elizabeth, (named after the owner's children) represent with the ground, an approximate value of $40,000 each. The rents range from $35 to $40, according to floors, averaging $37.50 per month for the thirty-six apartments. The buildings are among the most modern in Milwaukee, being of solid brick, stone, iron and concrete construction. Extra precautions have been taken in deadening the floors to prevent the transmission of sound—one of the chief objections to children in flats—and a further bid for popularity with the mothers is made in unusual kitchen equipment. Every available inch of space in the rear of the apartments has been parked as a playground and swings and other apparatus for the amusement of the children have been plentifully provided by the owner. For every baby born in these flats a prize of two months' rent is given. Absolutely no concessions are granted to childless couples. Eight children have been born in these flats within the past two years.

The success which attended this scheme prompted the ingenious owner to erect an attractive building for bachelors and bachelor-maids, which was completed this summer.

Auer Court, as the new building is called, covers an area of 106x138 feet, is four storeys in height, contains forty-two apartments of five and six rooms each, representing, with the ground, a value of $130,000. These rent from $27.50 to 32.50 per month. Each flat is supplied with refrigerator, gas range, consol, hall rack, electric fixtures and a new article in the Lourie steel wall safe, which has a combination lock and is set in cement in the solid brick wall. These safes are large enough to accommodate silverware, money, papers, and are guaranteed burglar proof. All of the rooms are decorated in burlap or oil, excepting the dining room and kitchenette, which are finished with beamed ceiling, art glass panels, paneled wainscoting and stained plaster.

The exterior, facing the street and court sides of the building, is constructed of rock face brick, maroon in color, with trimmings of dressed Indiana limestone.

In his "bachelor" apartments General Auer has followed up his bonus system—this time to encourage matrimony. At a moderate rental bachelors and bachelor maids are afforded an opportunity of living in a desirable neighborhood with appointments of the best, and presenting the opportunity of social communication. While realizing that a bonus of a month's rental might offer little temptation to single persons contemplating matrimony, the owner nevertheless has promised this inducement to all who marry while residing in Auer Court.

Palatial New Apartments of Wm. Waldorf Astor, New York City

WILLIAM WALDORF ASTOR will shortly add to his immense holdings of fine buildings in New York City by erecting an apartment house. This building, which will be twelve storeys in height and occupy the block bounded by Broadway, West End avenue, 78th and 79th streets. The structure will cost $2,000,000, which, added to the value of the land, will make the total cost of the property $3,000,000. The plans for this splendid building were recently filed with the Bureau of Buildings by Mr. Astor through his architects, Clinton & Russell.

The building will be known as the Apthorpe Apartments and will contain 110 apartments of from six to fourteen rooms each. It will have a frontage of 204.4 feet in Broadway and West End avenue and 248 feet on the two streets. The architecture of the building will follow the Italian renaissance and be executed in limestone and stone-colored brick. In the interior will be a court 96x134 feet in size, the center of which will be parked and planted with grass and flowers. This court will be reached by driveways from the Broadway and West End avenue fronts. At each corner of this court entrances to the apartments will be provided. Thanks to this immense court, the interior rooms will all receive strong daylight, and prove almost as attractive as those opening on the streets.

At each front of the building there will be elevators leading to the various apartments. Leading from an immense basement court will be elevators for servants and delivery of supplies. Vehicles will have an entrance into the basement court.

The apartments on the ground floor will be arranged with special reference to the needs of physicians and will have entrances direct upon the street.

Every apartment will be built in two floors. On one floor will be a foyer hall, billiard room, dining room, kitchen and servant's rooms, and on the other, bedrooms, parlor, bathrooms and library. The Apthorpe will possess no hotel features, being purely an apartment house of the finest type. The owner will furnish his own plant for heating, etc.

Danger of Using Rusty Iron Reinforcement in Concrete Construction

REGARDING the use of rusty iron reinforcement in concrete construction, Mr. W. H. Brown, of York, England, states:

Many writers on reinforced concrete assert that there is no danger in using iron with a slight coating of rust; others emphasize the fact and cite experimental data to prove that a coating of rust is a distinctive advantage, inasmuch as the chemical action between the concrete and rusty iron forms a coating of silicate of iron, which not only protects it from rust, but also removes any little rust that may be on the iron when placed in the concrete. The presumable advantage is the greater adhesion of the two materials in consequence of the roughened surface of the reinforcement.

A vital point, which will in time make itself painfully apparent, is here entirely lost sight of. Suppose rusty bars (and they usually are rusty) are used in the construction of a beam and are properly seated in the stirrups, at, say, twenty points along its length, each stirrup being from one inch to two inches in width, how is it possible for the above mentioned chemical action to take place?

Obviously if the bars are properly seated in the stirrups, as they should be to be effective, the cement cannot reach the bar, and subsequently no protecting coating of silicate of iron can be formed at the points, as is proved by the following experiment:

In May, 1906, being engaged in the construction of a large reinforced concrete factory, and designing others, I had reason to doubt the advisability of using iron even partially rusted. I therefore had inserted in a block of concrete a bar of iron covered with a slight coating of rust, firmly seated in a stirrup which was entirely free from rust, and its mill face undamaged and unscratched. Recently I have had the block broken up, and find at the point of contact between bar and stirrup that not only has the bar continued to rust, but the stirrup has commenced to rust also. It is obvious that in a few years the stirrup at least will be eaten through, with only one result.

CONSTRUCTION

A Journal for the Building and Engineering Interests of Canada

H. GAGNIER, LIMITED, PUBLISHERS
Saturday Night Building
TORONTO - - - - CANADA

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

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

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ADVERTISEMENTS.—Changes of, or new, advertisements must reach the Head Office not later than the first of each month to ensure insertion. Advertising rates on application.

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

Vol. 1 November, 1907 No. 2

Items of Interest

ARCHITECTS R. B. McGiffin and A. H. Chapman, who have been occupying distinctive offices in the Toronto General Trusts Building, Toronto, have recently united interests. The new firm will be known as Chapman & McGiffin.

* * *

THE trustees of the Methodist church of the town of Welland are suing the corporation for $15,000 damages for the destruction of their church by fire recently, resulting from the breaking of a gas main, caused by the alleged negligent use of a steam roller by the corporation.

* * *

THE annual banquet of the Montreal Builders' Exchange will take place at the Place Viger Hotel, of that city, December 12. Hon. Lomer Gouin, Premier of Quebec, will be the guest of honor and the principal speaker, besides other representative speakers from the architectural profession, sister associations, civic and provincial institutions.

* * *

ALL the fire adjustments and the other accompaniments of the San Francisco disaster have been tabulated and arranged and it now transpires that what was supposed to be a total damage of about $350,000,000 amounts to much nearer $600,000,000. Only $200,000,000 can be properly charged up to insurance and, therefore, the country has suffered a total wiping out of existence, to the amount of $400,000,000 by that fire.

BUILDING permits in the city of Calgary, Alta., tend to demonstrate that building is keeping up to its usual volume. For the month of October the value of building permits issued in that city shows a total of $451,100.

* * *

VANCOUVER, B. C., in building permits for October, 1907, as compared with 1906 show an increase of $30,000, and for the ten months of this year a gain of $1,507,360, over the corresponding period of 1906.

* * *

ACCORDING to figures issued by Mr. McCallum, architect of the city of Toronto, an increase over last year of $1,877,712 in the value of buildings erected from January 1 to October 31, but a comparison of the months of October, 1906, and October, 1907, shows a falling off of $760,040.

* * *

THE boundaries of Manitoba will be extended along the eastern border of Saskatchewan to the sixtieth parallel; then eastward to the Hudson Bay and southward to York Factory and the Nelson River. Under this extension Manitoba will have 200,000 square miles added to her area.

* * *

THE council of Guelph, Ont., have asked Mr. Graydon, engineer of the city of London, for copies of the proposed London building by-law and also asking him for his opinion as to the qualifications necessary for a Building Inspector.

* * *

THE solicitor of the city of Toronto on November 5, applied at Osgoode Hall for a mandamus to compel R. P. Hall, who built a house at 41 and 43 Jerome street, to take off a storey, and for an injunction to restrain him from building unless he conforms to the plans submitted to the City Architect. Mr. Hall was convicted and fined in the Police Court for not building in accordance with the plans submitted. Toronto's citizens would do some loyal work if they would pay more attention to the many infractions of the city's building laws.

* * *

VANCOUVER'S recently amended building by-law relating to buildings within the fire limits is being rigidly carried out by Mr. Jarrett, the building inspector. Three applications which were made for permission to repair and add to buildings within these limits to an extent not authorized by the by-law have been turned down by the building inspector and the city council. In one case the owner of a frame building within the fire limits started to make alterations to his building without first securing a permit, but was promptly stopped by the building inspector.

* * *

EDMONTON, ALTA., has a building by-law which is apparently honored more in the breach than in the observance. Out of five requests recently made for permits to erect frame structures within the fire limits proscribed by this by-law, four were granted to prominent citizens, and the fifth was laid over for a report from the Fire Chief.

The Board of Trade of that city will make strong recommendations against the summary setting aside of the by-law, and if it is repeated a prominent firm in Edmonton proposes taking action against the council for thus needlessly preventing any possibility of the insurance rate being reduced, as this by-law distinctly states that "no frame dwellings shall be erected within the fire limits."

THE International Waterways Commission has indorsed the proposal to build a canal round the Long Soo rapids on Rainy river which will give a clear waterway from Kenora to Fort Frances for two hundred miles. The Dominion Government will probably do the work. The estimated cost is half a million.

* * *

JUDGE KILLAM, of the Dominion Railway Commission, in an interview a short time ago, stated that the commission had under consideration a plan for the abolition of level crossings, substituting therefore viaducts, subways or bridges as the conditions warrant.

* * *

GRAVENHURST, ONT., has now in operation their new hydro-electric power development station situated on the south bank of the Muskoka river, which will develop energy at a cost of $7 per horse power, the most cheaply developed energy in Ontario. At a total cost of $45,000 for the plant, this should prove to be a very profitable investment for the town.

* * *

TIGHT money does not seem to have retarded the development of Berlin, Ont., to any appreciable extent. According to reports, this enterprising town is expanding industrially in advance of the population. Several concerns there are experiencing considerable difficulty in securing sufficient help, in fact one concern has been forced to establish a branch in Preston owing to this difficulty.

* * *

WATER was turned into the new channel of the St. Mary's river at the West Neebish, Oct. 14, marking the completion of one of the biggest projects undertaken on the great lakes since the building of the Poe lock. The new channel is over two miles in length, 9,000 feet of which is cut through solid rock. The channel is 300 feet in width, with a depth at minimum stage of water of 22 feet. It will not be formally opened to navigation until spring. The project has cost upwards of $3,000,000.

* * *

IN view of the increasing number of electric signs being placed over stores in the streets of Toronto, and the careless and defective manner in which they are put up in the majority of instances, involving danger to life and property on account of their close proximity to high tension light and power feed wires, City Engineer Rust has taken action with a view to forcing all such signs to be erected and wired according to the rules of the Canadian Fire Underwriters' Association.

* * *

IN laying a new section of pipe on Yonge street between Crescent road and North Toronto, an historic water conduit buried below the frost line on the east side of the street was discovered by the workmen. This pipe is made of wooden logs, hollowed out in the centre, about three inches in diameter and is still in a good state of preservation. This conduit conducted water from a spring near the present reservoir on north Yonge street to Severn's brewery at Yorkville, and was laid somewhere about 1840 or 1845.

* * *

GLAZING clay deposits have been discovered in large quantities near the town of Dorchester, Ont. Samples of this clay have been submitted to Mr. Hays, government analyst, Toronto, who states that the quality is of the finest. Quantities of it have been burned, it is stated, in the kilns of some of the large English potteries which manufacture fine glazed sanitary ware and the finished product has shown a quality of the best. The principal glazing clay beds have heretofore been found in the state of Ohio, the above being the first deposit of the kind found in Canada.

THE refuse of to-day is made a source of profit for to-morrow. Nothing in industry is more indicative of economic efficiency than the utilization of products which are residues of previous processes. Whenever a substance performs no function towards a useful end, it is simply because human ingenuity has not yet reached its highest development. It can be said that there is nothing which has not an economic value for some purpose, and it remains only for the manufacturer or the chemist to discover where and how each material can be turned to the most profitable account. The rehash of by-products and so-called refuse of the world's table of late years is cutting quite a figure in the manufacture of building and structural material.

* * *

THAT garbage and ashes may be utilized for other purposes than filling in dumping grounds, has been demonstrated at Nottingham, England, where the garbage is first reduced to ashes in an incinerator, then mixed with cement and pressed by hydraulic machinery into building blocks of a very hard quality, forming a very excellent substitute for brick. This scheme appears to have proven so successful that the city is about to install a third incinerator. It will soon develop that there is no such thing as an absolutely useless material.

* * *

AN ingenious inhabitant of Davenport, Tasmania, claims to have discovered a means by which such waste materials as sawdust and sea sand can be made into articles of commercial value and domestic utility. Sawdust, when submitted to his process of manufacture, is turned into what he calls "carbodite," and comes out as substantial pieces of household furniture, while sea sand is transformed into "lapidite," which is said to be almost indistinguishable from real marble. A factory has been started for the manufacture of mantels, fenders, mouldings, and all kinds of wood and stone work.

* * *

ANNOUNCEMENT that he had successfully converted artificial graphite, made from coal dust, into such a condition that it would pass through the finest filter paper, and that he had succeeded in dissolving graphite in water—in other words, making it celloidable, was made recently by E. C. Acherson, "the wizard of Niagara Falls" at the opening session of the twelfth general meeting of the American Electro-Chemical Society, in the Chemists' Club, New York. Both of these discoveries would appear to have a wide application in industry, especially that of the dissolution of graphite in water, for it can be used successfully now as a lubricant, where heretofore, when dissolved in oil, it has fermented a sediment at the bottom, resulting in much waste. The graphite is much cheaper than oil.

* * *

A COMPOSITION resembling concrete, now being considerably used in France and known as lime beton, is described as being more generally used than concrete. Is a cheaper composition than cement beton or concrete, easier to work, and if the initial load be not too great it is for nearly every purpose just as good. A good lime beton can be obtained by mixing mortar and stones, gravel, or cinders, mortar and good-sized stones making the best composition. Probably one-half of the houses in Marseilles have been built of this material, and thousands of the older buildings, many hundred years old, are held together by ordinary lime. Walls built of quick-lime beton must be laid up slowly, but with hydraulic lime beton they can be erected as fast as masons can work. The solidity of lime beton construction is shown by the sea walls and docks in Marseilles, where masonry of this kind was employed both above and below sea water, the most difficult test to which building material can be subjected.

COMMENT and CRITICISM

Interesting Excerpts From Some of the Many Congratulatory Letters Received Upon the Initial Issue of CONSTRUCTION

IN presenting for the consideration of our readers the following comments, we beg to call attention to the fact that they are not only from some of the most representative men in the industry in Canada, but from our contemporaries, as well as experts in various branches of construction in the neighboring Republic.

It is particularly gratifying to the publishers to know that their efforts in attempting to produce not only the finest journal in its line in Canada, but one that will compare favorably with journals of like character published in any country, have met with such enthusiastic appreciation from representative men in the industry in both Canada and the United States

RENE P. Le MAY, Pres. Q. A. A., Quebec:

Enclosed please find my contribution to CONSTRUCTION for the coming year. Such a publication as yours deserves all the encouragement possible and I consider it so valuable to the profession in general and to every architect in particular, that I feel it is my duty to contribute, so little as it may be, to its financial success and not be contented with being on your list of subscribers as a "Abonne complimentaire."

MR. ALCIDE CHAUSSE, Secy. C.I.A., P.Q.A.A., A.I.A., M.S.A., Etc., Montreal:

I have received a copy of the first issue of CONSTRUCTION for which please accept my most hearty thanks. CONSTRUCTION is a very nice publication and is all that could be desired. The first number was of particular interest to me, first as a member of the Board of Assessors of the Ottawa Competition, and, secondly, as the promoter of the Institute of Architects of Canada, I was very much interested in the articles on the two subjects.

MESSRS. DARLING & PEARSON, Architects, Toronto:

We have looked over with much interest the initial number of CONSTRUCTION, and beg to congratulate you very warmly on its general appearance. The paper, type, and illustrations are most excellent, and a very great credit to all parties concerned. We wish you every possible success.

T. KENNARD THOMSON, Consulting Engineer, New York:

Allow me to congratulate you on Vol. 1, No. 1, which is undoubtedly not only the best first issue of any engineering periodical ever published, but is also in the front rank of all existing publications.

F. K. IRVINE, Editor of "Rock Products," Chicago:

I congratulate you on the fine appearance of your initial number.

JAMES PHINNEMORE, Interior Decorator, Toronto:

Allow me to compliment you on your first issue of CONSTRUCTION. I am sure it will fill a long felt want and more than compensate any who desire to avail themselves of the valuable information it gives. Wishing you every success, etc.

MR. F. W. FITZPATRICK, Executive Officer International Association of Building Inspectors and Commissioners:

Congratulations, and lots of them! The first copy of CONSTRUCTION came to hand this morning, and I am agreeably surprised, amazed indeed. Knowing what Mr. Macdonald had done in the West, I expected something pretty nice in this new journal, but was not prepared for such a display as this. CONSTRUCTION is a work of art from cover to cover, and, by the way, especial praise is due Mr. Marten for his very clever cover design. The matter introduced is diversified, interesting and well put together; the illustrations are particularly good; the selection of subjects is cosmopolitan and covers a wide enough range to satisfy anyone. All in all, the publication at its very start is the equal of any of our technical journals, and if the pace established is kept up it will not be many moons before it entirely outstrips anything done here or broad. No architect, American or Canadian, can afford to be without this new journal. And the amount and class of its advertising indicates that already the manufacturers and builders appreciate the excellence of the medium and that it is going to carry great weight with its constituency.

ARCHITECT F. H. HERBERT, Toronto:

I am only too delighted to express the agreeable surprise that a perusal of the first number of CONSTRUCTION afforded me. Knowing something of the ability of your energetic proprietor, I was contemplating something out of the ordinary, but I was not prepared for a periodical which for interesting reading, well and cleverly written, scientific matter and concise articles of news, for the builder as well as the architect, has certainly not been approached in Canada, and for that matter it equals in my mind the best publications on the other side. The special articles by your contributors, Mr. W. J. Francis, C.E., and Mr. Martin J. Quinn, Consulting Engineer, were in themselves very valuable for their data and illustrations. I look forward with all other architects to your labors receiving the encouragement and patronage you so richly deserve.

MR. G. M. BAYNES, Toronto, Manager of the Colonial Dolomont Co., Ltd.:

I wish to say that myself and the company are very much pleased with the manner in which you have handled our advertising. We think your publication, certainly in its first edition, has proven itself the finest we have seen in Canada. I may also add that through our advertising with you we have had a number of enquiries and hope to close business for same.

HARRY de JOANNIS, Managing Editor of "Brick," Chicago:

I have received your first bow to the public and compliment you upon its splendid make-up and the interesting character of its contents. Such a trade journal is a valuable addition to Canadian literature. I wish you all success in your enterprise and trust that you will always be able to maintain the standard of quality shown in the first issue.

MR. F. G. B. ALLAN, Managing Director of the Canadian Portland Cement Company, Toronto:

We are just in receipt of your new paper, CONSTRUCTION, and congratulate you upon the excellence and scope of the paper throughout. We trust your enterprise in the publication of this periodical will be given tangible encouragement by all who are in any way interested in construction work generally throughout the Dominion.

MR. J. H. LAUER, Secretary Montreal Builders' Exchange:

Through pressure of business I was unable to answer your esteemed favor of the 1st sooner, and I now hasten to express in the most unequivocal terms my appreciation of your first number of CONSTRUCTION. You are to be congratulated on turning out as your first issue a trade paper which is a credit to the printing and pub-

lishing fraternity of Canada, and if you keep up this standard you deserve and I feel sure will succeed in obtaining a wide circulation among all interested in building and architectural professions. I commend the policy you express, not to make your journal too technical in character, but to appeal to a wider circle of readers than those confined merely to the building trades.

ARCHITECT HENRY SIMPSON, Toronto:

I must congratulate you on your first issue of CONSTRUCTION, which I think promises to fill a long felt want; namely, a first class publication combining science and art in architecture. I admire the taste and marked ability displayed in the way it is set up. Architects, engineers, contractors and dealers in all kinds of structural requirements, as well as artists, will bless the time when such a publication was put within their reach.

MR. H. C. CHAPIN, President and Manager "The Improvement Bulletin," Minneapolis:

We have to hand a copy of your journal and want to congratulate you on your "first offense." We are making complimentary reference to the new journal in our current issue. Wishing you the success you deserve, we are, etc.

MR. JAMES D. BROWNLEE, Ontario Representative of the Canadian Heating and Ventilating Co., Ltd.:

I desire to extend to you my congratulations upon having produced such a unique work of art in the first issue of CONSTRUCTION. It contains a liberal quantity of brainy, intelligent literature, which will not only appeal to the architect and technical man, but will be interesting to the general public as well. It strikes me very forcibly that the acme of perfection has been reached in this initial number and I predict for CONSTRUCTION a healthy and brilliant career.

MR. FRED. B. SOMERVILLE, Managing Director of Somerville, Limited, Toronto

We wish to compliment you upon the style, general make-up and character of the initial issue of CONSTRUCTION. We are satisfied that its advent into the Canadian field is timely. In our opinion there is no journal that equals it in the Dominion and we believe it compares favorably with journals of like character published in the United States. It is with pleasure that we commend you upon the production of your initial number, and hope that you will receive sufficient encouragement from the building trades to permit you to continue along the lines of the first issue of your publication.

MR. GUSTAVE KAHN, Director of the Trussed Concrete Steel Co. of Canada, Ltd., Toronto:

To say that we are pleased with the first number of your paper is expressing it mildly. We think the general make-up and selection of subject matter excellent. If your succeeding numbers will keep up to the high standard set in this, your first issue, there is no reason why your publication should not fill a long-felt want in Canada. We congratulate you.

W. W. NEAT, President Ontario Iron and Steel Company, Ltd., Toronto:

We consider that the initial number of CONSTRUCTION (a copy of which we have received) to be very attractive in appearance and the subject matter contained in same is excellent. If the same standard is kept up in future numbers, your periodical should meet with great success.

MR. E. H. TURNBULL, Managing Director of the Colonial Dolomont Company, Ltd., Montreal:

Although I am a Canadian I have not been, up to the last six months, immediately in touch with the building trade in Canada, and do not feel competent to criticize at all fully your publication, but I certainly think that it is far above anything of its kind in the Dominion. It is a great credit to the country and should have a large field of usefulness. When I came here last April, I made a careful search through the papers connected with the building trade, and can assure you I found nothing to equal your publication. Wishing you every success and hoping that we may be able to do business together in the future to our mutual benefit, I remain, etc.

ARCHITECT CHAS. F. WAGNER, Toronto:

Your initial issue of CONSTRUCTION is good: about the best of its kind I have ever seen.

MR. G. W. COOPER, of the Contracting Firm of Frank B. Gilbreth, New York:

I should like to congratulate you on having produced such an attractive first number. I do not remember ever having seen a trade journal make a better start. Wishing you every success, etc.

R. J. CLUFF, of Cluff Brothers, Toronto:

We have to hand the first issue of CONSTRUCTION and must say that it is a source of great gratification and pleasure to know that the long-felt want in this country, for a paper of this kind, has at last been filled. Not only is there every evidence that expense has not in any way been spared in its production, but the matter and illustrations have been chosen with good judgment; and it has, we feel sure, proved highly interesting to all those who have had an opportunity of reading it. We trust that your efforts will meet with the degree of success which they most certainly deserve.

MR. E. L. HATFIELD, General Manager "Cement World," Chicago:

We are in receipt of your new magazine and are very highly pleased with its make-up and contents. It is by far the best periodical of its kind that we have seen from Canada.

MR. O. F. BYXBEE, General Manager "American Carpenter and Builder":

We are in receipt of the initial issue of CONSTRUCTION and find it a very fine magazine. We trust we shall receive it regularly.

MR. F. W. BARRETT, Manager Expanded Metal and Fireproofing Co., Ltd., Toronto:

We have received your initial number of CONSTRUCTION. We compliment you on having a most pleasing publication both in make-up and matter. From an advertiser's point of view we would very much commend the superior results obtained with the high grade of material used and the workmanship in the press work. By keeping up the high standard you have set this journal should be very successful.

MR. T. A. RANDALL, Publisher of "The Clay Worker," Indianapolis, Ind.:

Copy of CONSTRUCTION received. We compliment you heartily on its splendid appearance.

PORTER TAYLOR & CO., Publishers of "The Natural Builder."

We want to congratulate you on the good looking publication that you have produced.

MR. MYRON H. LEWIS, C.E., Editor and Publisher of "Waterproofing," New York.

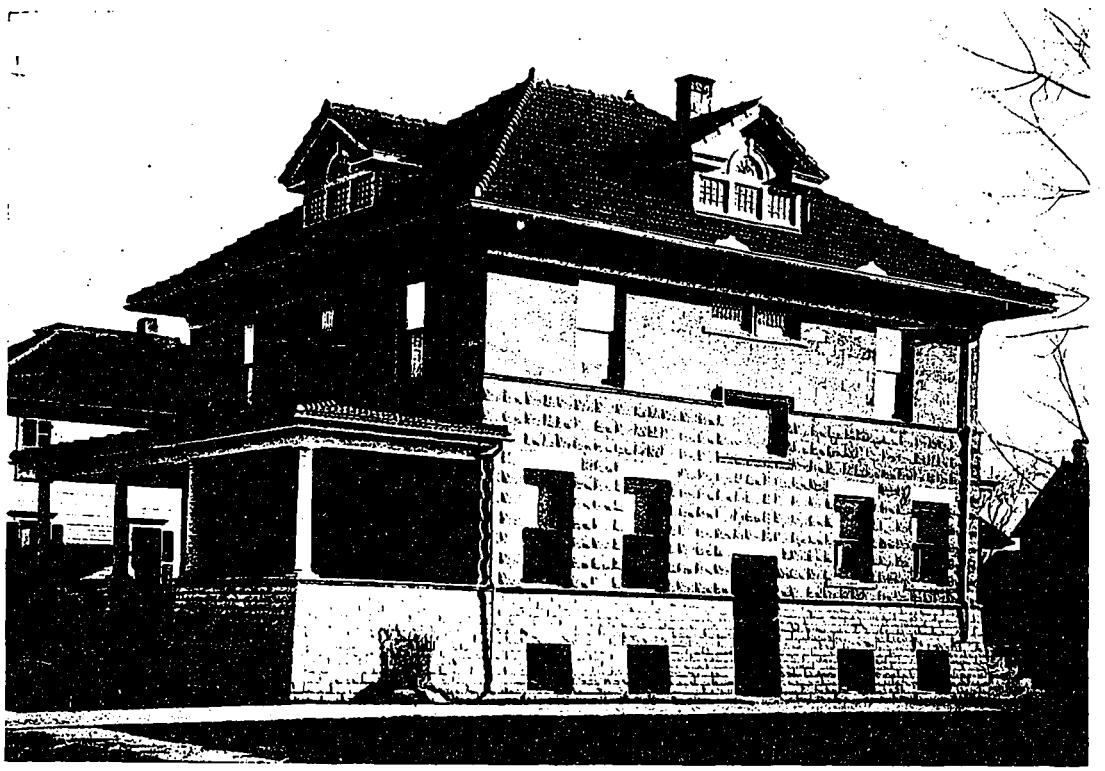
The initial number of your publication has reached our desk, and it cannot be regarded other than as a splendid specimen of trade journalism—one that can scarcely fail to win the appreciation of the class of readers for whom it is intended. It makes a creditable addition to the building and engineering interests of Canada, and we can safely predict for CONSTRUCTION a cordial welcome from the same class of interests in the United States as well.

"Waterproofing" herewith extends its cordial good wishes to the new publication, and hopes that its auspicious beginning may be the prelude to a long career of usefulness.

Concrete Building Blocks

By S. B. Newberry

A Thorough Treatise on the Manufacture of Concrete Blocks, the Inexpensive Modern Building Material—Proper Proportioning of Aggregates and Necessity of Intelligent Workmanship Set Forth



A FAIR EXAMPLE OF CONCRETE BLOCKS IN RESIDENCE CONSTRUCTION IN WHICH THE DESIGNER HAS SHOWN AN ATTEMPT TO STUDY HIS MATERIAL.

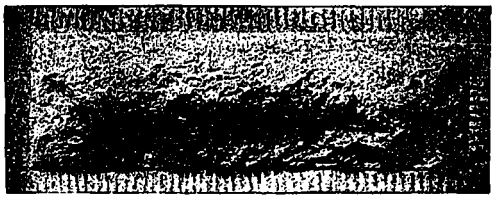
MR. S. B. NEWBERRY

FOUNDATIONS, walls and complete buildings of solid concrete have been erected in great numbers since the days of the Romans, and in modern times the use of reinforced or armored concrete has adapted this type of construction to a great variety of uses. In this class of work, walls, cornices and ornamental details of buildings are molded in place, by the use of special forms held in position by various mechanical devices. This is necessarily somewhat expensive, and requires a high degree of skill on the part of the builder; it can be successfully done only by contractors who make a specialty of the process and are provided with all necessary appliances.

For smaller and less costly buildings, separate blocks, made at the factory and build up into the walls in the same manner as brick or blocks of stone, are simpler, less expensive and much more rapid in construction than monolithic work. They also avoid some of the faults to which solid concrete work, unless skillfully done, is subject, such as the formation of shrinkage cracks.

Having gained full recognition as a building material of the first rank in engineering and monumental architecture, Portland cement is now invading the field of dwelling construction. All but the more costly dwellings have, until recently, been built of wood, a material that has only the qualities of cheapness and convenience to recommend it, since frame structures are admittedly perishable, un-

comfortable, and unsafe against fire. Lately, however, wood has lost even the quality of cheapness, and owing to the exhaustion of our forests has advanced fully fifty



ROCK FACED BLOCKS WITH TOOLED EDGES, SHOWING VARIETY OF EFFECTS TO OVERCOME MONOTONY IN THE FACE OF A WALL.

per cent. in price. This has been a great hardship to home seekers, and has forced builders to look for some other material for dwelling construction. Happily, Portland cement comes to the front, as usual, to fill the want. The hollow concrete building block, *properly made and used,* forms an ideal material for the exterior walls of buildings, and this replaces the part which, in wood, most rapidly deteriorates from exposure to weather. Buildings constructed of hollow concrete blocks are no higher in first cost than those built of frame, and are far less expensive in repairs. They have all the advantages of stone and brick in point of comfort, coolness in summer and warmth in winter, and in respect of beauty may at small cost be made fully equal to those of any other material.

Unfortunately, owing to poor workmanship and lack of artistic design, a large part of the hollow block buildings hitherto erected have fallen far short of the excellence above described. A multitude of men without capital and inexperienced in the use of cement have embarked in the business of block making, attracted by the glowing prospects of profits held out by the army of block machine agents. As a result, great quantities of inferior blocks, weak, porous and unsound, have been and are being turned out, and have been erected by careless and unskilled builders into defective and ugly structures. This state of affairs is an injury to competent and conscientious block manufacturers, and an obstacle to the adoption of a most excellent and promising building material. Blocks of first-rate quality can easily and cheaply be made, with small outlay for machinery, provided certain simple rules are intelligently followed. It is the purpose of this paper to state briefly the causes of faults in concrete blocks, and the precautions by which good and reliable work may be assured.

The strength of concrete depends greatly upon its density, and this is secured by using coarse material which contains the smallest amount of voids or empty spaces. Different kinds of sand, gravel and stone vary greatly in the amount of voids they contain, and by judiciously mixing coarse and fine material the voids may be much reduced and the density increased. The density and percentage of voids in concrete material may be determined by filling a box of one cubic foot capacity and weighing it. One cubic foot of solid quartz or limestone, entirely free from voids, would weigh 165 lbs., and the amount by which a cubic foot of any loose material falls short of this weight represents the proportion of voids contained in it. For example, if a cubic foot of sand weighs 115½ lbs., the void would be 49½-165ths of the total volume, or 30 per cent.

The following table gives the per cent. of voids and weight per cubic foot of some common concrete materials:

	p.c. Voids.	Wt. per cu. ft.
Sandusky Bay sand	32.3	111.7 lbs.
Same through 20-mesh screen	38.5	101.5 "
Gravel, ¼ to ½ inch	42.4	95.0 "
Broken limestone, egg-size	47.0	87.4 "
Limestone screenings, dust to ½ in.	26.0	122.2 "

It will be noted that screening the sand through a 20-mesh sieve, and thus taking out the coarse grains, considerably increased the voids and reduced the weight; thus decidedly injuring the sand for making concrete.

The following figures show how weight can be increased and voids reduced by mixing fine and coarse material:

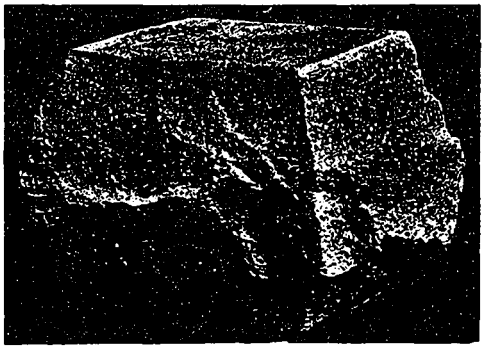
	p.c. Voids.	Wt. per cu. ft.
Pebbles, about 1 inch	38.7	101.2 lbs.
Sand, 30 to 40 mesh	35.9	105.8 "
Pebbles, plus 38.7 p.c. sand, by vol.	19.2	133.5 "

Experiments have shown that the strength of concrete increases greatly with its density; in fact, a slight increase in weight per cubic foot adds very decidedly to the strength.

The gain in strength obtained by adding coarse material to mixtures of cement and sand is shown in the following table of results of experiments made in Germany by R. Dykerhoff. The blocks tested were 2½ inch cubes, 1 day in air and 27 days in water:

Proportions by measure. Cement.	Sand.	Gravel.	Per cent. cement. by volume.	Compression strength. lbs. per sq. in.
1	2	—	33	2,125
1	2	5	12.5	2,387
1	3	—	25	1,383
1	3	6½	9.5	1,515
1	4	—	20	1,053
1	4	8½	7.4	1,204

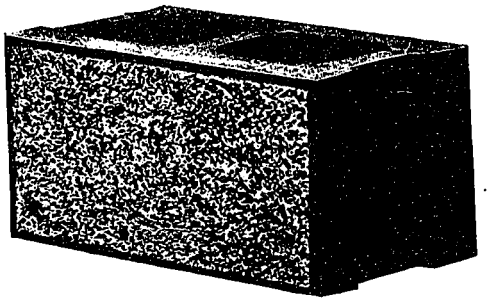
These figures show how greatly the strength is improved by adding coarse material, even though the proportion of cement is thereby reduced. A mixture of 1 to 12½ of properly proportioned sand and gravel is, in fact, stronger



CONCRETE IN IMITATION OF GRANITE.

than 1 to 4, and nearly as strong as 1 to 3, of cement and sand only.

In selecting materials for concrete, those should be chosen which give the greatest density. If it is practicable to mix two materials, as sand and gravel, the proportion



BLOCK WITH CRUSHED GRANITE FACE.

which gives the greatest density should be determined by experiment, and rigidly adhered to in making concrete, whatever proportion of cement it is decided to use. Well proportioned dry sand and gravel or sand and broken stone, well shaken down, should weigh at least 125 lbs. per cubic foot. Limestone screenings, owing to minute pores in the stone itself, are somewhat lighter, though giving equally strong concrete. They should weigh at least 120 lbs. per cubic foot. If the weight is less, there is probably too much fine dust in the mixture.

The density and strength of concrete are also greatly improved by use of a liberal amount of water. Enough water must be used to make the concrete thoroughly soft and plastic, so as to quake strongly when rammed. If mixed too dry it will never harden properly, and will be light, porous and crumbling.

Thorough mixing of concrete materials is essential, to increase the density and give the cement used a chance to produce its full strength. The cement, sand and gravel should be intimately mixed, dry, then the water added and the mixing continued. If stone or coarse gravel is added, this should be well wetted and thoroughly mixed with the mortar.

MATERIALS FOR CONCRETE BUILDING BLOCKS

In the making of building blocks the spaces to be filled with concrete are generally too narrow to permit the use of very coarse material, and the block-maker is limited to gravel or stone not exceeding ½ to ¾ inch in size. A considerable proportion of coarse material is, however, just as necessary as in other kinds of concrete work, and gravel or screenings should be chosen which will give the greatest possible density. For good results, at least one-third of the material, by weight, should be coarser than ⅛ inch. Blocks made from such gravel or screenings, 1 to 5, will be found as good as 1 to 3 with sand only. It is a mistake to suppose that the coarse fragments will show on the surface; if the mixing is thorough this will not be the case. A moderate degree of roughness or variety in the surface of blocks is, in fact, desirable, and would go far to overcome the prejudice which many architects hold against the smooth, lifeless surface of cement work.

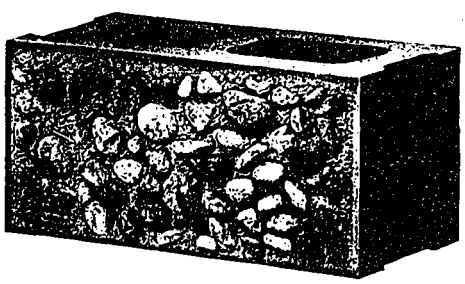
SAND AND GRAVEL are, in most cases, the cheapest material to use for block work. The presence of a few per cent. of clay or loam is not harmful provided the mixing is thorough.

STONE SCREENINGS, if of good quality, give fully as strong concrete as sand and gravel, and usually yield blocks of somewhat lighter color. Screenings from soft stone should be avoided, also such as contain too much dust. This can be determined from the weight per cubic foot, and by a sifting test. If more than two-thirds pass ¼-inch, and the weight (well jarred down) is less than 120 lbs., the material is not the best.

CINDERS are sometimes used for block work; they vary greatly in quality, but if clean and of medium coarseness will give fair results. Cinder concrete never develops great strength, owing to the porous character and crushability of the cinders themselves. Cinder blocks may, however, be strong enough for many purposes, and suitable for work in which great strength is not required.

LIME.—It is well known that slaked lime is a valuable addition to cement mortar, especially for use in air. In sand mixtures, 1 to 4 or 1 to 5, at least one-third of the cement may be replaced by slaked lime without loss of strength. The most convenient form of lime for use in block-making is the dry-slaked or hydrate lime, now a common article of commerce. This is, however, about as expensive as Portland cement, and there is no great saving in its use. Added to block concrete, in the proportion of ¼ to ½ the cement used, it will be found to make the blocks lighter in color, denser, and decidedly less permeable by water.

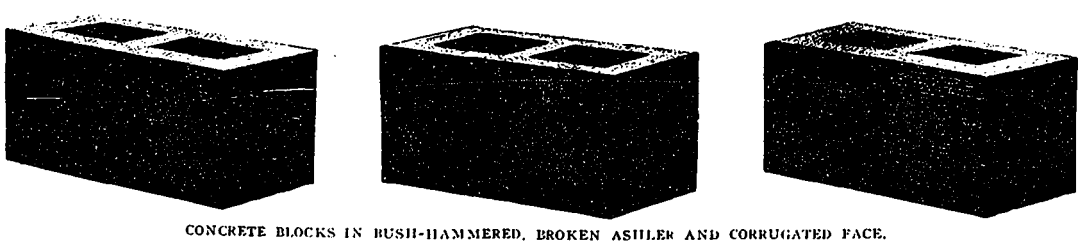
CEMENT.—Portland cement, to-day, is the only hydraulic material to be seriously considerd by the block-maker, and at present prices there is nothing gained by attempting the use of any of the cheaper substitutes. Natural and slag cements and hydraulic lime are useful for work which remains constantly wet, but greatly inferior



BLOCK WITH PEBBLE FACE.

in strength and durability, when exposed to dry air. A further advantage of Portland cement is the promptness with which it hardens and develops its full strength; this quality alone is sufficient to put all other cements out of consideration for block work.

[Owing to lack of space we find it impossible to give Mr. Newberry's article in full, in this issue. The continuation in our December number will be profusely illustrated with high-class half tones.—ED.]



CONCRETE BLOCKS IN RUSH-HAMMERED, BROKEN ASHLER AND CORRUGATED FACE.

Water Supply for Suburban Residences

By Martin J. Quinn, Consulting Engineer

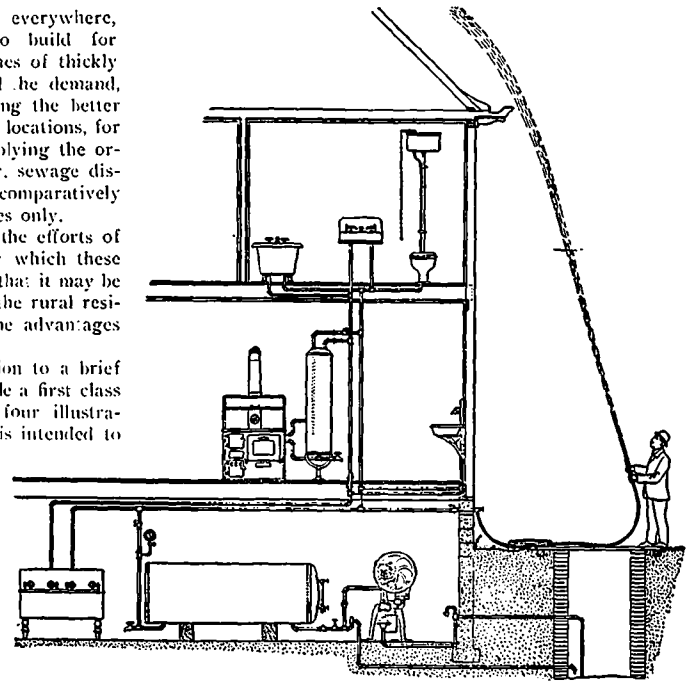
Economic Advantages of Pneumatic Waterworks System Over the Expensive and Primitive Tank Reservoir Principle

THE tendency found nowadays nearly everywhere, among a certain class of people, to build for themselves homes beyond the confines of thickly populated districts, has accentuated the demand, which was already rapidly developing among the better class of farmers and other dwellers in rural locations, for simple and not too expensive means of supplying the ordinary comforts, such as good water supply, sewage disposal, artificial lighting, e.c., which, until comparatively recent years, were to be found in large cities only.

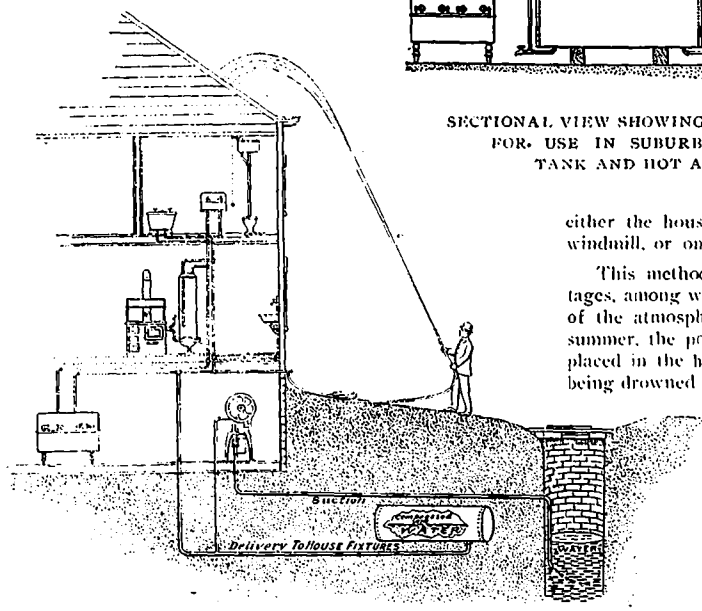
To such an extent has success crowned the efforts of those who set about devising a method by which these very reasonable demands might be satisfied, that it may be safely stated that, in these respects at least the rural resident may enjoy, at no great cost, all of the advantages possessed by his city cousin.

We will confine ourselves on this occasion to a brief description of the means employed to provide a first class waterworks system, and present herewith four illustrations which will clearly demonstrate what is intended to be conveyed.

Until very recent years, where any attempt at all was made to introduce waterworks in a building, where a regular water service was not available, it was the practice to erect a reservoir in the top of either the house or the barn, or else in the tower of a windmill, or one built for the purpose.



SECTIONAL VIEW SHOWING PNEUMATIC SYSTEM AS ADAPTED FOR USE IN SUBURBAN RESIDENCES—PNEUMATIC TANK AND HOT AIR ENGINE IN BASEMENT



SECTIONAL VIEW SHOWING PNEUMATIC TANK BURIED IN THE GROUND, THUS SAVING BASEMENT ROOM AND SUPPLYING WATER AT A LOW TEMPERATURE

This method, however, has many inherent disadvantages, among which are the absence of pressure, the effect of the atmospheric temperature during both winter and summer, the possibility—particularly where the tank was placed in the house or barn—of birds, bats, vermin, etc., being drowned and contaminating the supply, not to speak of the constant contact with dust, bacteria and odors.

Another important drawback was the liability to leakage, and the consequent damage to plaster and decorations below.

Then, again, special provision had to be made for carrying the sometimes enormous weight of water stored in large tanks.

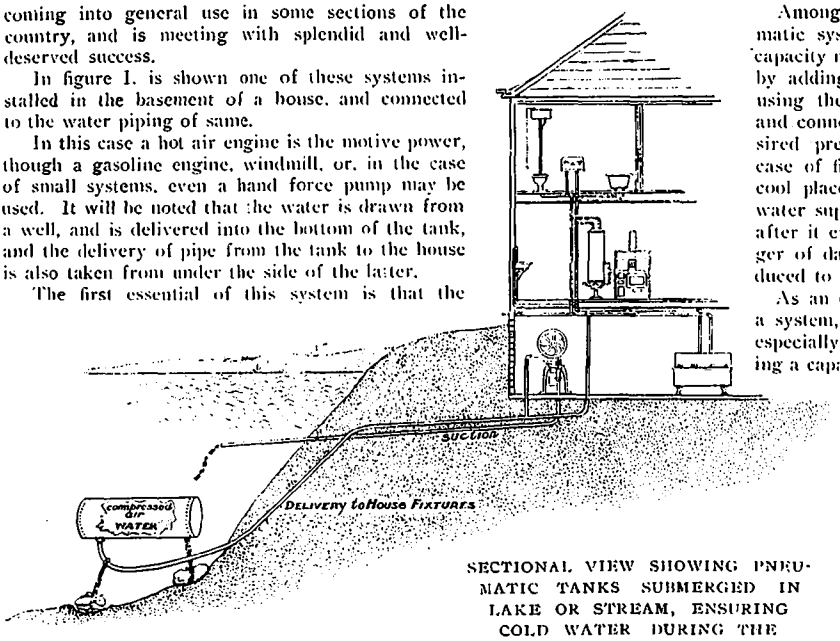
All of these difficulties and disadvantages have been overcome by the use of what is known as the pneumatic water supply system, which is already

coming into general use in some sections of the country, and is meeting with splendid and well-deserved success.

In figure I. is shown one of these systems installed in the basement of a house, and connected to the water piping of same.

In this case a hot air engine is the motive power, though a gasoline engine, windmill, or, in the case of small systems, even a hand force pump may be used. It will be noted that the water is drawn from a well, and is delivered into the bottom of the tank, and the delivery of pipe from the tank to the house is also taken from under the side of the latter.

The first essential of this system is that the tank shall be absolutely air-tight, and to that end, tanks of all capacities, ranging from two hundred gallons to seven thousand gallons, made especially for the purpose, are procurable.



SECTIONAL VIEW SHOWING PNEUMATIC TANKS SUBMERGED IN LAKE OR STREAM, ENSURING COLD WATER DURING THE WARM SEASON

The operation of the system is as follows, viz.: After the various connections are made, along the same general lines as indicated, air, to a pressure of eight or ten pounds, should be pumped into the tank through a pet cock left for the purpose in either the suction or delivery pipe, first taking care that the valve on the letter, near the ceiling, is closed tight.

After this is done, start the pump going, and keep it in operation until the required pressure, be it fifty, sixty or seventy five pounds, is obtained.

After the bottom of the tank is covered with water, the main delivery valve should be opened, and may be left in that position permanently, as it is extremely unlikely that any addition of air will be required for a very long time. After obtaining the desired pressure on the gauge, it will be apparent that all of the air originally contained in the tank, including the amount pumped in to make the initial pressure of ten pounds, will be at the top of the tank, and all the water pumped in will be at the bottom, so that when a faucet is opened at any of the plumbing fixtures, or to supply the hose outside as illustrated, the compressed air will cause the expulsion of the water at a velocity depending upon the pressure registered on the gauge.

Among the advantages of the pneumatic system, are the facts that its capacity may at any time be increased by adding one or more tanks, while using the same pumping apparatus, and connections; it provides any desired pressure, especially useful in case of fire; it may be placed in a cool place, insuring cool water; the water supply cannot be contaminated after it enters the tank, and the danger of damage due to leakage is reduced to a minimum.

As an example of the cost of such a system, it may be said that a tank especially built for the purpose, having a capacity of five hundred gallons, can be bought by the consumer for less than one hundred dollars, while the cost of the pumping apparatus ranges in price from the cheap hand pump to the more expensive windmill, gasoline engine and hot air engine, or electric pump.

In figure II. is shown a system in which the tank is buried in the earth, with the object of keeping the water cooler than would be possible were it kept in the basement, but such an arrangement in some soils, results in the gradual deterioration of the metal, unless special care is taken to protect it.

It sometimes happens, more particularly in the case of summer resorts, that on account of rock formation or otherwise, it is impossible to locate the tank in a cool place on land.

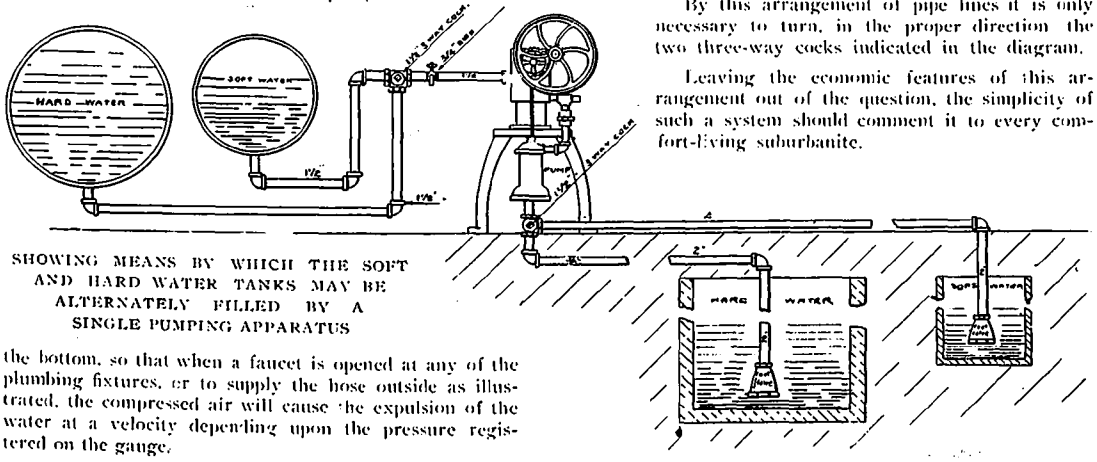
In such a contingency, a scheme such as is indicated in figure III. may be adopted, care being taken to properly anchor the tank in its correct position, so that the delivery pipe will enter it at the bottom.

In figures II. and III. it will be noted that one pipe serves both to deliver the water to the tank and to return it to the house, and as will be obvious this will do equally as well as two pipes, as shown in figure I.

In figure IV. is shown an arrangement by means of which a soft water and a hard water tank may be filled, alternately, with one plumbing apparatus.

By this arrangement of pipe lines it is only necessary to turn, in the proper direction the two three-way cocks indicated in the diagram.

Leaving the economic features of this arrangement out of the question, the simplicity of such a system should comment it to every comfort-living suburbanite.



SHOWING MEANS BY WHICH THE SOFT AND HARD WATER TANKS MAY BE ALTERNATELY FILLED BY A SINGLE PUMPING APPARATUS

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 its daily service.

Mills and Factories

Toronto, Ont.—Frank H. Fleer, Limited, 40 Lombard street, Toronto have taken out a permit for the erection of a two storey factory of reinforced concrete to be erected on Sterling road. Cost $65,000.

Toronto, Ont.—Fire in the warehouse owned by the Josephs Estate and leased by the firm of Anderson, Macbeth & Co., Bay street, Toronto, caused damage of about $60,000 to the building. It will be rebuilt immediately.

Toronto, Ont.—Messrs. M. & L. Samuel, Benjamin & Co., Ltd., Toronto, have purchased from the Traders Bank the property at the southwest corner of King and Spadina, on which they will erect a warehouse and office building. The property is 75x112 feet. Burke & Horwood are preparing plans for this building.

Toronto, Ont.—Hanks & Son, of this city, have been granted permission to rebuild their factory on Paton road, which was destroyed by fire. The outside walls will be covered with metal, and either felt and gravel or metal roof.

Toronto, Ont.—Architects Symons & Rae, Toronto, received tenders up to November 9, for the erection of a $50,000 factory for the James Morrison Brass Mfg. Co., of Toronto. Building to have concrete foundation, be of mill construction, four storeys and basement high, steam heating, electric lighting, plumbing, freight elevator and composition roof are called for in the specifications. Machinery will be purchased by owners. Fire escapes, and considerable structural iron will be required.

Toronto, Ont.—The Toronto Iron Works Limited, has been incorporated with a capital of $400,000. They purpose erecting a large rolling mills here.

Toronto, Ont.—The Toronto Brass Mills, Limited, have been incorporated with a capital of $500,000. It is expected that they will erect a factory in the near future here.

Toronto, Ont.—B. Bell & Sons Co., of Toronto, have been incorporated with a capital of $200,000. Directors are S. H. Chapman, H. W. Fleury, A. C. Morris, H. Hurd and N. Sinclair.

Ashbridge's Marsh, Toronto, Ont.—The Canadian Smelters, Limited, with headquarters on Lombard street, here, have put before the Board of Control of this city a proposition to build a smelter on Ashbridge's Marsh to 'smelt' silver and gold from Cobalt.

Toronto, Ont.—The Bredin Bread Co., through Mr. W. Bredin have purchased a lot on West Bloor street of 400 ft. frontage about two acres, on which they propose to erect a bread factory next summer.

Ashbridge's Bay, Toronto, Ont.—Mr. D. D. Mann, of Mackenzie, Mann & Co., who proposed to build a $1,000,000 smelter on Ashbridge's marsh here, states that his firm will not do anything in regard to this project for a year, owing to the stringency of the money market.

Alliston, Ont.—The Mercer Manufacturing Co., of this city, will add to their present factory this fall.

Toronto, Ont.—The William Davies Co., packers and canners, have increased their capital from $750,000 to $1,000,000.

Toronto, Ont.—Architects Simpson & Young, Toronto street, Toronto, closed tenders on October 30 for an extension to the plant of the Toronto Hat Works Co., of this city. Specifications call for brick work, painting and a tar paper roof.

Aylmer, Ont.—The Canadian Condensed Milk Co., have been granted free water by the town of Aylmer and the company intend shortly to commence active operations on the work of building

Toronto, Ont.—The Standard Contracting Co., Ltd., of this city, have purchased the factory on the corner of Stafford and Defoe streets and will erect an additional two storeys on the present structure.

Toronto, Ont.—Mr. F. Anderson, manager of the Dominion Garment Co., Guelph, states that his company will shortly move to Toronto, where they will build a large factory.

Hamilton, Ont.—The Hamilton Cotton Co. propose making a large addition to their plant in this city. Work will be commenced in the near future.

Hamilton, Ont.—The Dominion Power and Transmission Co., of Hamilton, propose to erect here early next spring, large car shops, freight shed and car shed.

Hamilton, Ont.—The Automatic Grain Shocker Co., of this city, has been incorporated with a capital of $100,000 and it is expected they will shortly commence the erection of a factory for the manufacture of same. Directors are: A. E. Osler, Toronto; C. T. Grantham, Adam Zimmerman, M. P., John Alexander Turner, T. A. Woolley and Herbert Fox, all of Hamilton.

Guelph, Ont.—The committee appointed by the council of Guelph, have entered into negotiations with John Louden, of Tillsonburg, with a view to the establishment of a pork packing plant in Guelph.

Guelph, Ont.—The Guelph Carpet Mills Co., will shortly erect a new dye house 70x180 feet.

Guelph, Ont.—Mr. Smith, of the Hawes Hat Co., New York, is considering the advisability of locating the branch of this company which it is proposed to build in Canada, at Guelph. Work will not be commenced until early next spring.

Glen Williams, Ont.—Mr. Sykes, Jr., of Glen Williams, proposes to erect a woollen mill here.

Goderich, Ont.—Mr. F. C. Heunicke, of Buffalo, N. Y., will in all probability erect a factory here for the manufacture of brass and iron bedsteads. Mr. H. W. Thompson, of Goderich, is also interested. Work will not commence until next spring.

Goderich, Ont.—The Jackson Manufacturing Co. will soon commence operations on a new factory for the manufacture of clothing. The structure will be two storeys in height, 35x125 feet, with stone foundation and brick superstructure.

Goderich, Ont.—A by-law will be voted on by the ratepayers of this place on December 2, to loan Alfred Sykes $5,000 toward the establishment of a woollen mill at this place.

Walkerton, Ont.—The Canada Furniture Mfg. Co., have purchased a site here and will erect a three storey factory thereon early next spring.

Kincardine, Ont.—A company has been formed with Hon. A. G. McKay as president, to put a snow plow, invented by E. Bowman, of Elmwood, on the market. It is expected they will shortly erect a factory in Kincardine for its manufacture.

Haileybury, Ont.—J. S. Crawford, of Ottawa, Ont., proposes to erect a large foundry here on a five-acre site donated by Mrs. Lawlor, of Haileybury.

Guelph, Ont.—Mr. Lowden, representing English capitalists, is considering the erection of an abattoir in this city, to cost $35,000.

Chatham, Ont.—Mr. Keough & Trotter will at once erect a machine shop addition to their present works. The structure will be 100x40 feet.

Chatham, N. B.—H. J. Chisholm, director, and Mr. Underwood, manager of the International Paper Co., state that their company may soon commence the erection of a large paper mill for the purpose of "rossing" paper. They have also purchased limits near Douglastown, N. B.

Chatham, Ont.—The ratepayers of this city will vote on a by-law in January for the loaning of $20,000 to the Canadian Pin Co., in which George E. Morton, of Toronto, is one of the principal shareholders. An agreement has been drawn up by the city and if the by-law passes, this concern will erect a factory. They are capitalized at $40,000.

Carleton Place, Ont.—Mr. John McDonald, of this place, has let the contract for the erection of a new woollen mill to be erected here for him. Work will be rushed forward at once.

Chatham, Ont.—W. M. Drader, whose mill was recently burned down, intends to erect two new mills on the old site, one a planing mill, the other a stave mill.

Clinton, Ont.—The Clinton Knitting Co. will shortly erect an addition 30x60 to their present factory here.

Tillsonburg, Ont.—The Borden Condensed Milk Co., have finally made arrangements with the town council of Tillsonburg to locate their plant there. This company has paid $5,000 for a site and will commence the erection of their factory in the near future.

Brockville, Ont.—The James Smart Mfg. Co., Brockville, propose to erect an addition to their plant to cost not less than $20,000 providing the council passes a by-law, which will be considered on December 9, to sell the company certain tracts of land adjoining their property

St. Thomas, Ont.—The Canada Brick Fields, Limited, have been incorporated with a capital of $100,000, to conduct the St. Thomas brick yards, and extend same. The head office will be in London, Ont., with provisional directors: J. D. Wilson, S. F. Glass, C. B. Edwards, P. W. D. Broderick, J. L. Thomas, F. P. Drake, and C. H. Ivey.

Brantford, Ont.—The Slingsby Woollen Mills Co., of this place, are considering the advisability of making extensive additions to their present premises early next spring.

Niagara Falls, Ont.—Mr. Clark, of Longview, Texas, is considering the location of a wire screen factory here.

Niagara Falls, Ont.—Contracts for the proposed factory for C. S. Peaslee & Son, of this city, have been awarded as follows: T. E. Ferris, stone foundation, and W. S. Homan, superstructure. Work will be proceeded with at once.

Niagara Falls, Ont.—Architect Nichols, of this city, has been instructed to prepare plans for a factory for the Niagara Falls Brass Mfg. Co., of this city.

Niagara Falls, Ont.—Mr. Lockhart, of this place, has been awarded the contract for the erection of the proposed boiler house for the Bissell Carpet Sweeper factory. The building will be 30x42 ft. one storey high, of brick and a 30 ft. brick smoke stack.

Niagara Falls, Ont.—The erection of the factory of C. S. Peaslee & Son for the purpose of manufacturing boots and shoes, will be commenced at once. Work of clearing the ground is now under way.

Niagara Falls, Ont.—The Sanitary Can Company, capital $100,000, F. Boulter, F. W. Griffith and W. H. McGuire, directors, will erect a can factory here to be in operation by February next. They will also erect in close proximity a canning factory equipped with all the latest sanitary and labor saving devices. Mr. Boulter's address is 190 St. Catherine street, S., Hamilton, Ont.

Berlin, Ont.—The Kimmell Felt Co., capital $200,000, have been incorporated here; provisional directors, T. H. Rieder, A. J. Kimmell, A. H. Kimmell, A. C. Kimmell and A. D. Vice. It is expected they will erect a factory here in the near future.

Berlin, Ont.—The Kaufman Rubber co.—President, J. Kaufman; vice-pres., Geo. Rumpel; manager, A. A. Voelker; sec.-treas., A. R. Kaufman—will commence the erection of a factory early next spring, to be the largest and most modern in Canada, according to the company's plans.

Berlin, Ont.—The Berlin Clock Co. will shortly erect a new factory here, their present plant being too small.

Berlin, Ont.—The offer of Frank M. Hoffman, Horace S. LeGrange and Norman Roos, of South Bend, Ind., to build a go-cart factory, a washing machine factory, and a cement mixer factory in Berlin, if the town would grant them certain concessions, has been accepted. The factories will cost $30,000, $30,000 and $15,000 respectively. The contract for the erection of the go-cart plant was lately awarded to D. Christner.

Berlin, Ont.—The Star Whitewear Co., Berlin, intend to make additions to their plant in this place. Work will be commenced in the near future.

Owen Sound, Ont.—The Wm. Kennedy & Sons, Limited, of Owen Sound, are erecting a large addition to their present plant, and next spring they will erect a similar addition to be of steel and brick construction, 70x57 feet.

Owen Sound, Ont.—Mr. Wm. Meade, of the Waterloo furniture factory, states that his company contemplates the erection of a factory in this city.

Ottawa, Ont.—Mr. D. T. Hughes, of Buffalo, is looking over the Pontiac district near here and as soon as a suitable location is obtained he will at once commence the erection of a planing mill. He estimates the cost at $50,000.

Owen Sound, Ont.—Mr. J. A. Tedd, of the Tedd Shoe and Leather Co., asks the town council for a loan of $12,000 and if this is granted he will erect a factory two storeys in height 35x100 ft. The by-law will be submitted to the ratepayers at the next election in January.

Sault Ste. Marie, Ont.—T. D. Warren and Charles Penman, representing the Canadian Refining & Smelting Co., of Toronto, states that the work on the new smelter to be erected here by them will commence on December 1st.

Sudbury, Ont.—The Evans Co., Limited, planing mill was destroyed by fire recently, involving a loss of $50,000. Insurance $25,000. They will rebuild at once.

St. Mary's, Ont.—Mr. Doolittle, of Montreal, proposes to erect a factory here for the manufacture of hockey sticks, axe handles, etc. He proposes to spend $10,000 on the works and asks a loan of $6,000 from the town. A by-law will be submitted soon.

Port Arthur, Ont.—Mackenzie, Mann & Co., will if the town of Port Arthur sees fit to give them an eastern outlet from the city, and 500 acres of land on which to build, erect a large car factory here to employ 1,000 men. This firm have also stated to Mayor J. J. Carrick, that they will double the capacity of their present blast furnace here and also erect new docks in the course of the next few months.

Ingersoll, Ont.—The Ingersoll Foundry Co., A. McCollach, manager, are considering plans for the enlargement of their foundry to employ 100 additional men.

Hamburg, Ont.—The Hamburg Felt Boot Co., have purchased land on which they propose to erect an addition to their present factory.

Kincardine, Ont.—The Industrial Financial Co. propose to erect a factory here for the manufacture of a patent interlocking pile, the invention of Mr. Wm. Hunter, of the Hunter Bridge & Boiler Co., of Kincardine.

London, Ont.—Ex-Ald. Armstrong, will erect a brass foundry in the eastern part of this city.

London, Ont.—The London Tool Machine Co., intend to erect a $25,000 addition to its factory in the London Annex. Tenders will be called in the near future.

London, Ont.—The Canadian Packing Co., of this city, are considering the enlargement of their plant in the near future.

Exeter, Ont.—Thos. Jackson, of the firm of Jackson & Co., clothing manufacturers, of Clinton, Ont., is conferring with the authorities here with a view to securing a loan, which, if granted, will be applied towards the erection of a clothing factory here.

Hanover, Ont.—The Knechtel Furniture Co., of Berlin, intend erecting a saw and veneer mill here.

Clinton, Ont.—The Clinton Knitting Co., of this place, intends shortly to commence the erection of a spinning and underwear plant, they having increased their capital, paid up $35,000 for this purpose.

New Hamburg, Ont.—Mr. J. J. Berger, is preparing to build a large addition to his planing mill here.

Port Essington, Ont.—T. S. Ives, Cullenberg, Iowa; H. T. Hunter, Chicago; G. E. Corlett, Alcader, Iowa, will at once erect a large saw mill on Cumshewa Inlet, Q. C. I.

Stratford, Ont.—Messrs. Boyer & Swartz, of Indiana, will at once commence the erection of a factory 100x68 for the manufacture of garden swings, and tools and step ladders in this place.

Welland, Ont.—The Page-Hearsey Iron Tube & Lead Pipe Co., of Guelph, are constructing a large plant here. The proposed structure will have concrete foundations, brick superstructure, steel roof. The contract has been awarded to the Berlin Construction Co., of Newark, N. J., and the brick and concrete work to Contractor George Patton, of Welland, Ont. Mr. Near, of Toronto, is the manager.

Ontario.—The Ontario Cabinet has decided to ask for tenders for the cutting of pulpwood which must be manufactured into paper in this province, on the Nipegon and Rainy Lake concessions each five miles square. The factory for making this paper from pulp must cost not less than $500,000; $100,000 must be expended the first, $200,000 the second year and the balance the following year. Tenders received until Dec. 15.

New Liskeard, Ont.—S. McChesney, of this place, has been awarded the contract for the erection of a laundry building for the Steam Laundry Co., of New Liskeard.

Brandon, Man.—The North Star Lumber Co., have been granted a charter with a capital of $500,000 for the purpose of erecting a lumber mill here.

Brandon, Man.—The Imperial Wire & Nail Co. will at once commence construction of a large wire and nail plant here, capable of turning out 200 tons of drawn steel wire.

Asquith, Sask.—The Francis Implement Co., Geo. Frank and John Francis, principals, will shortly erect a factory at this place, for the manufacture of agricultural implements.

Regina, Sask.—The Western Fire Clay Producers Co., of this place, intend in the near future to erect a large plant for the manufacture of fire brick, and all kinds of fire clay product, as they have discovered a rich bed of clay suitable for their purpose.

Vermilion, Alta.—Alexander Easson, of this place, has organized a company with a $25,000 capital, and he proposes to erect a large brick-making place on his property.

Ucluclesut Harbor, B. C.—The Southern Cross Mining Co. propose to expend $140,000 in the erection of a copper smelter to be operated in connection with their mines at the above place. Mr. H. Croll, of Victoria, is interested in the enterprise.

Chilliwack, B. C.—Muirhead Bros., who are at present erecting a saw mill at Rosedale, near here, will, as soon as it is finished, commence the erection of a box factory in addition.

Nelson, B. C.—The Hewitt Mining Co., of this place have decided to put in an electro-cyanide reduction plant in connection with the new mill they are building.

Bella Coola, B. C.—Mr. Field, of Regina, is authority for the statement that a party of capitalists whom he represents, will build a large lumber mill here next spring.

New Westminster, B. C.—The Fraser River Saw Mills Co. here will close their plant for four months for the purpose of installing new engines and machinery at a cost of $100,000.

Burrard Inlet, B. C.—The North Pacific Lumber Co., propose to erect a large lumber mill on Burrard Inlet. The work of reclaiming the proposed site has already commenced and next spring the mill will be built.

Victoria, B. C.—Bond & Clark, of this city, are forming a company to be known as the Canadian Mitchellite Co., for the manufacture of a new explosive. J. F. Bending, C. H. McKay, A. C. McCallum, A. W. McCurdy and T. H. Webster, of this city, are also interested.

Grand Forks, B. C.—F. A. Heinze, millionaire, of Butte, Montana, is considering the erection of a smelter here. He has experts now on the field looking up copper claims with a view to bonding enough claims together to keep the smelter going, should it be erected.

St. Lambert, P. Q.—The Waterman Ideal Fountain Pen Co., will shortly erect a factory for the manufacture of their product here, to be five storeys high of brick and stone.

Limoilou, P. Q.—The tannery of Edmond Julien at this place was burned recently. Loss $25,000. Insurance $6,500. It is expected Mr. Julien will rebuild at once.

Quebec, P. Q.—Hon. Senator Edwards, and A. McLean, of Buffalo, will erect four mills at the mouth of the Bonaventure river, Quebec, consisting of a saw mill, a shingle mill, a pulp mill and a paper mill.

Lachine, P. Q.—The town of Lachine has offered the Imperial Locomotive Co., a bonus of $50,000 and other privileges if the company will carry out their proposition and erect a $2,000,000 locomotive plant here, to be in operation by 1909.

Hull, P. Q.—The council of Hull, P. Q., has granted a tax exemption for ten years on all buildings and machinery to the Industrial Development Co., of Canada, President, A. Gobeil, Deputy Minister of Public Works; vice-president, A. St. Laurent, Chief Engineer Public Work Department. The company propose to erect a $60,000 plant to contain machinery of $120,000 value, for the manufacture of wood alcohol.

Montreal, P. Q.—Chas. Desjardins & Co. have purchased property here of 27,000 square feet on which they propose to erect a large store and factory in the rear for the manufacture of furs, building to be completed by May next.

New Glasgow, N. S.—The Standard Drain & Pipe Works, were recently burned out. Major Trotter, of St. John, P. Q., managing director of the company, states that work of reconstruction will be commenced at once.

Gas Plants, Warehouses and Elevators

Toronto, Ont.—The F. T. James Co., Mr. Fred. T. James, manager, Colborne st., Toronto, have purchased the southeast corner of Church and Colborne streets. They propose to spend $10,000 on the improvement of the building, which cost $15,000 and install cold storage plant to cost about $15,000.

London, Ont.—The Lamb Fence Co., of this city, intend installing a producer gas plant in their factory in the near future.

Waterloo, Ont.—The council of the town of Waterloo will submit a by-law at the next municipal elections to authorize the expenditure of $10,000 for the purpose of installing a new gas holder and extending gas mains.

St. Thomas, Ont.—E. H. Thomas, of this place, has purchased from Henry Roe, a lot on Talbot street, here on which he proposes to erect a warehouse next summer.

Guelph, Ont.—The J. & A. McHardy Co., of this city, propose to erect a cold storage plant here, with artificial refrigeration. The cost of the building will be about $7,000, and in consideration of this the city is not to interfere in any way. This may put a stop to the movement on foot to erect a public abattoir here.

Toronto, Ont.—The Gendron Mfg. Co. have secured a permit for the installation of a gas producer plant for the generating power to drive gas engines, in lieu of steam engines, to operate their works.

Toronto, Ont.—The Diamond Flint Glass Co., of Toronto, have applied for and received permission to erect a storehouse on the north side of Armour street here.

Toronto, Ont.—Architect J. W. Siddall states that Wm. Hales & Son, Toronto, were awarded the masonry contract, and John Tait, 136 McPherson avenue, Toronto, the carpentering contract for alterations and additions to 99-101 West Adelaide street, which will be converted into a warehouse and office building for F. D. Allen. All other tenders are in, but contracts have not been let.

Quebec, P. Q.—The following contracts have been awarded in connection with the erection of a $25,000 warehouse for Dechine & Poulin, of this place: F. Parent, masonry; Louis Boivin, wood and iron; Falardeau, roof; Vezina, Chas., heating and plumbing. T. Drolet, Warehouse will be of mill construction, stone foundation, gravel and tar roof, steam heating, electric lighting, vaults, elevator. Rene P. LeMay, Quebec, architect.

Quebec, P. Q.—The warehouse of F. T. Thomas & Co., of this city, was destroyed by fire. Insurance $45,000 on stock, $11,000 on building.

New Aberdeen, C. B.—The Dominion Coal Co. have had plans prepared for a powder house situated near the mouth of their mines. This will be a large building entirely fireproof. A new haulage system, by electricity, will also be installed.

Dominion, C. B.—The Dominion Cold Storage Co., of this place, have appointed Mr. Kenneth McDonald as manager, and they have decided to call for tenders for the erection of a cold storage plant 25x35 ft., two storeys high, probable cost $5,000 for the building, in which artificial refrigerating plant is to be placed.

Winnipeg, Man.—The Winnipeg Paint and Glass Co., of this city, are having plans prepared and excavations made for their proposed new warehouse 100 ft. square to take the place of the one destroyed by fire recently. Mr. Paterson is manager.

Edmonton, Alta.—The American Canadian Oil Co., who are now developing their wells at Morinville, Alta., have made application to the city councils of Edmonton and Strathcona for franchises to lay gas mains in these cities. The main pipe will be 25 miles long, to withstand a pressure of 400 lbs. to the square inch.

Electrical Construction

Woodstock, Ont.—Chief Engineer Richards, of the Hydro-Electric Power Commission, has presented his report on the cost of distribution of electric power in this place, the cost being $18,000. The council and Mr. Richards will meet soon to finally decide matters, after which a by-law will be submitted to the ratepayers next election.

Hamburg, Ont.—The council of this place is having plans and estimates prepared for an installation of a system of mains and lamps for the purpose of using the power to be supplied by the Hydro-Electric Power Commission. As soon as this is prepared a by-law will be framed and submitted to the people at the next elections in January.

Toronto, Ont. Engineers Smith, Kerry & Chase, of this city, have submitted plans and estimates of a partly underground, and partly overhead distribution system. Two alternatives have been submitted, one costing $1,000,000 and the other $5,000,000. The by-law will be submitted Jan. 1st.

Hamilton, Ont.—The city council has passed a by-law voting $50,000 for the purpose of installing electric pumps at Hamilton Beach.

Hamilton, Ont.—The Board of Works of the city of Hamilton, have approved of the plans of T. W. Southman, chief engineer of the Hydro-Electric Power Commission for a partly underground system for street lighting, and they propose to submit a by-law to the ratepayers at the next elections to authorize the expenditure of $175,000 for same.

St. Thomas, Ont.—The Michigan Central Railway, here have asked Mr. Odell, manager of this city's light, heat and power department, to furnish estimates of the cost of furnishing 175 h. p. If the city and the M. C. R. come to an agreement the city will enlarge their plant to supply this power, and if not, the company propose installing a plant of their own. Mr. C. E. Taylor is the M. C. R. electrician.

Toronto, Ont.—The directors of the Industrial Exhibition will ask the city for an appropriation to install an electric light and power system for the grounds. Dr. Orr, Toronto, is manager.

Cornwall, Ont.—The St. Lawrence Power Co.'s plant and all interests have been bought by a syndicate formed of George G. Foster, president and managing director; Samuel Willard Foster, Gardner Stevens, C. Gordon Mackinnon, and T. J. Cooman, all of Montreal. Plans for additions to this plant at a cost of considerably over $3,000,000 are now before the International Waterways Commission.

Ottawa, Ont.—The Canadian General Electric Co., of Toronto, have been awarded the contract for supplying certain lights and electrical accessories for the Ottawa street lighting system, at a cost of $21,672.

London, Ont.—A by-law will be submitted by the council to the ratepayers of this city at the next elections, to authorize the expenditure of $235,000, for the erection and installation of suitable distributing plant for this city. An additional sum of $135,000 will be required for a lighting system. Mr. Richards is city engineer.

Port Arthur, Ont. The council of this place have engaged Cecil B. Smith, engineer, to prepare preliminary plans and estimates of a power plant at Dog Lake near here to cost $5,000.

Mille Roches, Ont.—The International Waterways Commission will consider the proposal of the St. Lawrence Power Co., to establish a $20,000,000 hydro-electric power plant at this place, near Cornwall.

Ottawa, Ont.—The city engineer of Ottawa has been instructed to confer with C. H. Keefer, C. E., of this city, to prepare plans for the developing of 30,000 h. p. by the construction of a dam and power house on the Ottawa river. As soon as this report is obtained a by-law will be submitted to the ratepayers.

Campbellford, Ont.—The ratepayers of Campbellford have passed a by-law authorizing the town to build a $60,000 hydro-electric power plant at Middle Falls in connection with the dam built by the Dominion Government at this point.

Markham, Ont.—The property owners of this village have passed a by-law authorizing the expenditure of $3,000 for improvements to the town electric light plant.

Havelock, Ont.—Work has commenced on the Healey Falls power plant. Jos. Knox, of this place, has been awarded the contract.

Thorold, Ont.—W. S. Homas, of St. Catharines, has been awarded the contract for the erection of the electric power plant at Thorold for the municipality.

Wingham, Ont.—The town council of Wingham, intend in the near future to spend about $25,000 in repairs to the hydro-electric power plant here. Mr. Ferguson is town clerk.

Toronto, Ont.—Mr. Frank, of the Boston Shoe Store, here, is at present conducting negotiations with a New York firm for the installation of an electric light plant in the rear of his store, the purpose being to supply the block of business houses from Adelaide to King street on Yonge street, with electric light, as well as the nearby opera houses, at a cost of about 2 cents per kilowat.

Rainy River.—The International Waterways Commission is now in session considering the best plans for the damming of the Rainy River. The Government intends to spend at least $500,000 in the construction of locks and dams, and in view of this improvement Mr. Mathews, of Minneapolis, representing the Western Power Co., asked that the dams be made so that his company could erect a power plant in connection with it.

Winnipeg, Man.—The contract which was awarded to the Anglo-Canadian Engineering Co., of London, Eng., with offices in Winnipeg, will likely be vetoed by the mayor, as it was passed in his absence. The whole matter will be decided finally when the by-law is put to the people at the municipal elections next January. The contract price was $2,500,000, to be paid in debentures at 92.

Winnipeg, Man.—The city council here have decided to hold over the various by-laws they proposed submitting to the ratepayers at the next elections until money becomes easier. The only by-law to be submitted is one for $200,000 for a conduit system for electric cables.

Battleford, Sask.—W. J. Broley, of this place, has been awarded the contract for the erection of the proposed power house for this place. He will commence work at once.

Fort Saskatchewan, Sask.—The electric light plant of the Fort Saskatchewan Electric Co., was destroyed by fire, loss $1,000. They will rebuild at once.

Moose Jaw, Alta.—The ratepayers of Moose Jaw have passed the by-law authorizing the raising of $90,000 for extensions to the electric power plant here. Tenders will be called in the near future.

Okotoks, Alta.—The city council here propose to submit a by-law at the next elections, authorizing the expenditure of $10,000 for the purpose of installing a 200 h.p. light plant in this place.

Edmonton, Alta.—The city council and the city engineer of this place are considering the location and plans of the new electric power and light station which the city proposes to build early next year. Nothing definite has been decided on as to the cost of the plant, but the property has been secured for a site.

High River, Alta.—On November 15 the ratepayers will vote on a by-law to authorize the expenditure of $8,000 for the purpose of extending the electric light plant at this place.

Lake Buntzen, B. C.—Mr. Gifford, director of the British Columbia Electric Ry. Co., Victoria and Vancouver, is authority for the statement that as soon as the 10,000 h. p. hydro-electric unit is installed at Lake Buntzen, that his company will at once order the installation of another hydro-electric unit of 10,000 h. p.

Vancouver, B. C.—The British Columbia Electric & Power Co., of Vancouver, will commence operations next spring toward the development of 100,000 h. p. on the Cheakamus river near here.

Sherbrooke, P. Q.—The Sherbrooke Power Co., has refused the offer of the city to purchase its electric light and power plant, consequently the city council of this place have entered into a contract with Messrs. Ross & Holgate, electrical engineers of Montreal, to prepare plans and specifications of an hydro-electric plant at Westbury Basin near here, where they propose to erect a municipal plant.

Montreal, P. Q.—Although no tenders have been advertised for as yet, the Colonial Engineering Co., of 222 St. James street, of this city, have written to the city council offering to install an electric plant with a capacity of 2,000 lights cost not to exceed $400,000, and a yearly maintenance cost of $60,000. No action has been taken by the council.

Montreal, P. Q.—The city council of Montreal will very shortly advertise for tenders to be received until December 16th for the supply of gas and electricity to this city. All tenders will require to be accompanied by an accepted cheque for $50,000.

Bridges and Wharves

Galt, Ont.—The Hamilton Bridge Co., Hamilton, have been awarded the contract at a price of $13,500, for the erection of the proposed Glen bridge to be built of steel with concrete abutments, for the Brant County Council.

Brantford, Ont.—The city council here will make application to the railway commission for a 50 ft. subway under the Brantford and Hamilton radial railway. The Radial Company will grant the opening, but desires the city to pay for the retaining walls, which will cost $7,000, which the city objects to.

Toronto, Ont.—The Canadian Northern Railway are willing to erect a bridge over the Don roadway at the end of Winchester street at a cost of $55,000. Mr. Mountain, engineer of the railway commission, will report on the matter.

Meaford, Ont.—Fred Gelinas, Secretary Public Works Department, Ottawa, will receive tenders until December 2 for the extension of breakwater, removal of part of landing pier, construction of a pile and concrete revetment wall and a line of longued and groved piling at the harbor of the town of Meaford, Ont. Plans, specifications, forms of tender with the department and postmaster, Meaford.

White Cloud Island, Ont.—Fred Gelinas, Secretary Public Works Department, Ottawa, will receive tenders until November 29, for the erection of a wharf and stone approaches at White Cloud Island, Georgian Bay, Ont. Plans and specifications with the resident engineer, Toronto, with the postmaster at North Keppel, Ont., and at the department, Ottawa.

Rossport, Ont.—Fred. Gelinas, Secretary Public Works Department, Ottawa, will receive tenders until November 26 for the erection of a wharf at Rossport, Thunder Bay District, Ont. Plans, specifications, form of tender with J. G. Sing, resident engineer, Toronto, with postmaster at Rossport, Ont., and with the department at Ottawa.

St. Thomas, Ont.—At the next municipal elections at the end of the year the ratepayers of this place will vote on a by-law to raise about $30,000 for the purpose of erecting a subway for the electric railway here under the M. C. R. tracks.

Hamilton, Ont.—The city council here decided to spend $2,900 on repairs to the dredge "Sucker" owned by the city.

Toronto, Ont.—Sealed tenders addressed to the chairman of the Board of Control, Emerson Coatsworth, were received until November 12, at the City Hall, Toronto, for the erection of a steel foot bridge in Riverdale Park.

Chatham, Ont.—The Chatham, Wallaceburg and Lake Erie railroad have decided to cross the Michigan Central railway here by building a subway.

Toronto, Ont.—The exhibition directors, here have made a proposal to the city of Toronto that they will advance the necessary $200,000 for the purpose of erecting an overhead bridge on Dufferin street over the railway tracks to the exhibition entrances. The proposal is being considered by the city council.

Peterborough, Ont.—Supt. J. H. McLellan, of the Public Works Department, will have some dredging done at McLaren's creek near here, for the purpose of building a bridge to shorten the distance between Lindsay and Peterboro by five miles. It is expected that tenders will be called in the near future.

Toronto, Ont.—Work on the proposed new gap south of the present western gap will be commenced immediately after tenders have been received, which will be called for by the Public Works Department, November 22. The cut will be 20 feet deep, 400 ft. and the southern pier will be about 2,600 feet long. Parliament has voted $50,000 for the work.

Toronto, Ont.—The Board of Works Committee has recommended to the city council that Harbord street be extended west without the building of a bridge across the ravine of the Bickford estate, by filling in the roadway. This would mean a saving of $50,000, with which it is proposed to purchase the Bickford estate as a park.

Markham, Ont.—A by-law has been passed authorizing the expenditure of $3,000 for the completion of approaches to the new bridge there.

Toronto, Ont.—The city council here will apply to the railway commissioners to order the Canadian Northern railway to build a bridge over the Winchester street crossing, at a probable cost of $55,000.

Chatham, Ont.—W. J. Shreeve, commissioner, Chatham, has received tenders for the erection of a 120 foot steel bridge with concrete abutments and floor, over Jeanette's creek here.

Toronto, Ont.—City Engineer Rust has submitted two plans for the proposed sea wall to extend from Bathurst street to the Humber along the lake shore. One plan to cost $830,000 would be to construct the wall a distance of 200 feet from the shore with small harbors of refuge for pleasure craft. For 990,000 a portion of the wall would be placed at a greater distance from the shore, forming an inland lake a mile long.

Colborne, Ont.—Fred Gelinas, Secretary Public Works, Ottawa, has received tenders for the erection of a wharf at Colborne, Northumberland County, Ont.

Chatham, Ont.—Fred Gelinas, Secretary Public Works Department, Ottawa, has received tenders for the construction of a concrete revetment wall at Tecumseh Park, Chatham.

Lac Du Bonnet, Man.—The Board of Control of Winnipeg has decided to call for tenders for the construction of a bridge 156 feet long across the Pinawa channel, in connection with the city of Winnipeg's power development scheme at this place.

Winnipeg, Man.—Kelly Bros., of Kenora, Ont., have been awarded the contract for the building of the proposed Redwood street bridge here.

Carman, Man.—Tenders have been received by A. Malcolmson, secretary-treasurer of Carman, Man., for the construction of a Pratt truss steel bridge with 18 foot roadway, 90 feet long, to be built across the Boyne river here.

Carman, Man. The municipality of Carman, Man., is calling tenders for the erection of a Howe truss bridge of steel over the Boyne river here.

Winnipeg, Man.—The city of Winnipeg intends to lay granolithic pavements to the extent of about $15,000 and asphalt pavements about $2,000. C. J. Brown is city clerk.

Battleford, Sask.—Mr. Champagne, M. P. P., has awarded the contract for the building of the traffic bridge across the Saskatchewan river here to Messrs. Newman & French. Work must be completed before August 1, 1908.

Edmonton, Alta.—Wm. Whyte, of the C. P. R., states that tenders will be at once called for the erection of the proposed bridge between Edmonton and Strathcona, to be 2,500 feet long to cost about $1,600,000 to be built of steel with concrete abutments.

Edmonton, Alta.—The Mays Coal Co., of this city, will shortly invite tenders for the erection of large coal docks and storage buildings here.

Vancouver, B. C.—The Vancouver Island & Eastern Ry. Co., will seek a charter at the next session of the Dominion Parliament to empower them to build a bridge from Victoria to Vancouver Island.

Vancouver, B. C.—The Government of British Columbia has decided to grant $10,000 towards the construction of a bridge from Vancouver to Lulu Island, plans to be approved by the government engineer. It will be built by the city of Vancouver.

Vancouver, B. C.—The Building and Industrial Committee of this city, has decided to call for tenders for the erection of two wharves to cost $500 each to be used in connection with the proposed market building.

Portneuf, P. Q.—The lighthouse here was destroyed recently by a storm. It will at once be rebuilt by the Department of Marine and Fisheries, Ottawa. F. Gourdeau is the deputy minister of the department.

St. Francois, P. Q.—Fred Gelinas, Secretary Department Public Works, Ottawa, will receive tenders until November 27, for the construction of approaches to the crib at St. Francois, Island of Orleans, P. Q. Plans with the department, Ottawa, and with A. Decary, resident engineer, post office, Quebec.

Montmagny, P. Q.—Fred Gelinas, Secretary Public Works Department, Ottawa, will receive tenders until November 30th for the construction of a wharf at Montmagny, P. Q. Plans and specifications with the department, Ottawa; clerk of works, Montreal; resident engineer, Quebec, P. Q.; and with the postmaster at Montmagny, P. Q. All tenders must be accompanied by a cheque for $1,500 accepted by a bank.

Delorimier, P. Q.—The ratepayers of this town have passed a by-law authorizing the raising of $50,000 for the improvements to the town.

St. Lawrence River.—The St. Lawrence Power Co., and the Long Sault Development Co., have asked permission of the International Waterways Commission to build a dam in the St. Lawrence river for the purpose of generating 75,000 electrical horse power. They propose to expend $20,000,000 on the project.

Prince Edward Island.—The Department of Marine and Fisheries, F. Gourdeau, Deputy Minister, expect to have plans completed in a short time for an ice breaker for use between the mainland and Prince Edward Island, to cost $600,000. Tenders will shortly be invited for this work by the department.

Campbellton, N. B.—The new bridge over the Bonaventure river between Restigouche, N. B., and Matapedia, will be erected as soon as the government engineers can decide on a site and make the necessary arrangements. The bridge is to be 3,300 ft. long and will cost about $600,000. It is to be built to accommodate pedestrians, an electric railway, the Atlantic, Quebec and Western railway and the International railway now being constructed.

St. Croix, N. B.—The New Brunswick Southern railway will apply at the next session of Parliament for permission to build a railway bridge over the St. Croix river near St. Stephen or Milltown, N. B.

Waterworks and Sewers

Toronto.—City Engineer Rust has reported that the sewer which it is proposed to project on Leslie street, Toronto, will cost $10,000. The work will probably be proceeded with on the local improvement basis.

Toronto.—Sealed tenders addressed to the chairman of the Board of Control were received until Nov. 19, for the construction of various sewers in the city of Toronto, to cost about $57,000, according to plans and specifications at the office of City Engineer Rust.

Toronto.—The Board of Control has authorized City Engineer Rust to expend $6,449 on water meters.

Toronto.—The City Engineer and the Medical Health Officer of this city have reached an agreement on a suitable sewage disposal system for this city, which will be situated at the foot of Greenwoods avenue and will cost $2,500,000 to instal, with an additional $800,000 for bacteria beds, if such are found necessary. This proposal will be put before the council soon.

Brantford, Ont.—The council of the city of Brantford intend to commence, shortly after November 19, the laying of certain pavements and storm sewers to cost about $20,000.

Niagara Falls, Ont.—The by-law to raise $15,800 for the installation of electric pumps and waterworks improvements for this place will be voted on on January 6.

Georgian Bay Canal.—The chief engineer, department public works, Ottawa, Mr. A. St. Laurent, will present his report on the above project, in the form of a book of 500 pages, to the Legislature this coming session, when it is expected they will take definite action looking to the commencement of this proposed canal.

Trent Canal, Peterborough, Ont.—The Department of Railways and Canals, Ottawa, have awarded the contract for section No. 1 of the Ontario Rice Lake division of the Trent Canal at Peterborough, to Lewis P. Nott, of Montreal.

Peterborough, Ont.—Sealed tenders addressed to Alex. J. Grant, Supt. Engineer, Trent Canal, Peterborough, Ont., were received until November 20, for the work connected with the construction of the Rosedale section of the canal. Plans, specifications, and forms of tender have been with Dept. of Railways & Canals, Ottawa, and the above.

Welland, Ont.—This town will put in sewers to the extent of $40,000 in the near future, according to plans by Willis Chipman, C.E., Toronto.

Hintonbrook, Ont.—The council here has decided to place before the ratepayers a by-law to raise $10,000 for a waterworks extension. The by-law was voted on November 18.

Chesley, Ont.—The town council here will submit a by-law to the ratepayers authorizing the raising of $38,000 for the installation of waterworks.

Carleton Place, Ont.—A proposed by-law to raise $200,000 for the installation of sewage and waterworks system for this town is being considered by the council.

Pembroke, Ont.—Col. Jones and Dr. Hodgetts, Provincial Health Officer, states that septic tanks will be installed in connection with the sewage system of the military camp at Petawawa, in charge of the public works department.

Guelph, Ont.—J. A. LeGrand, of this city, has been awarded the contract for the erection of septic tanks in connection with the sewage system of this city, at a cost of $4,435.

Guelph, Ont.—City Engineer Davis, of this city, is preparing plans to be considered by the council, for a new reservoir to be erected here.

Rainy River, Ont.—The International Waterways Commission have approved the plans of the Dominion Government to build locks around the Long Sault Rapids on Rainy River, and at an early date the Dominion Government will commence operations, involving an expenditure of $500,000.

London, Ont.—F. J. Darch, chairman London Waterworks Committee, received tenders until November 1 for the completion of a conduit 600 ft. in length.

Winnipeg, Man.—M. Peterson, Secretary Board of Control, Winnipeg, will receive tenders until December 2 for supplying and installing pumping and air compressing machinery, according to plans and specifications at the office of the engineer of the city of Winnipeg, from whom forms of tender can be obtained.

Winnipeg, Man.—M. Peterson, Secretary Board of Control, Winnipeg, received tenders until November 16 for sewer connections and installation of plumbing in certain properties in Winnipeg.

Winnipeg, Man.—The Board of Control, Winnipeg, Man., received tenders for the supplying of 15 miles of assorted sizes of water pipe, until November 15 delivery to be made about May 15, 1908.

Vonda, Sask.—The by-law to raise $15,000 in debentures for a waterworks system for this place has been passed by the council and ratepayers.

Regina, Sask.—The council here have decided to have constructed next summer a waterworks system to cost $200,000.

Strathcona, Alta.—The town of Strathcona, Alta., has passed the following by-laws: By-law granting the Strathcona Radial Company a franchise for thirty years; by-law authorizing the expenditure of $90,000 for sewers and waterworks.

Montreal.—The Board of Trade of the city of Montreal is agitating to have the citizens ask the council to vote money for the installation of a high pressure waterworks system for the business district of Montreal, similar to that being installed in Toronto.

Montreal, P. Q.—The Robb Engineering Company, of Montreal, were awarded the contract for the installation of three boilers for the waterworks here at a cost of $13,939; the brick chimney to the Eadie Douglas Co., of Montreal, at a cost of $3,995; boiler house to Mr. Savangeau, $1,173; carpentry, excavation and brick work to L. Arnot, $3,293, all of Montreal.

Notre Dame, P. Q.—Messrs. Madden & Son, of this city, have been awarded the contract for the new waterworks system for the parish of Notre Dame, at a price of $94,000.

New Glasgow, N.S.—The council of this place are considering the installing of electrically operated pumps for the town waterworks. Prof. Dabl, of the firm of Jennison & Dabl, New Glasgow, N. S., will report on the scheme.

Baddeck, C.B.—The town of Baddeck have voted for the expenditure of $25,000 for the installation of a waterworks and sewerage system.

Public Buildings

Toronto, Ont.—At the next meeting of the board of Victoria College a building committee will be appointed to select an architect to prepare plans for the proposed new library to be erected in connection with the college, for which the sum of $50,000 has been raised.

Toronto.—Architect F. H. Herbert, 65 east Adelaide street, Toronto, announces that contracts for new office and administrative building and meter house on Eastern avenue, for the Consumer's Gas Co., have been let: Brickwork, Wickett Bros.; carpenter work, Thos. Westlake, Toronto; steel and iron, the Dominion Bridge Company, Montreal. Total approximate cost will be $45,000, to be erected under the supervision of Mr. Herbert.

Toronto.—Architect Geo. W. Gouinlock, of this city, has prepared plans for the proposed transportation building to be of skeleton steel and brick, 325 x 130 ft. It will cost, it is estimated, about $95,000. Contracts will be let before Christmas, as the board has definitely decided to erect the building.

Toronto.—The Ogden Old Boy's Association, of the Phoebe street school here, has decided to build a gymnasium in connection with the school.

Toronto.—Sealed tenders addressed to Fred. Gelinas, secretary Public Works Department, Ottawa, will be received until November 21, for the erection of an astronomical observatory at Toronto. Plans and specifications and forms of tender with the department, and with the architects, Burke & Horwood, 28 Toronto street, Toronto.

Toronto, Ont.—Emerson Coatsworth, chairman Board of Control, has taken tenders for alterations to the public library, Toronto.

Toronto Junction, Ont.—The building committee of the present Y. M. C. A. are considering the erection of a Y. M. C. A. building here.

Toronto, Ont.—Fred Gelinas, Secretary Public Works Department, received tenders until November 5, for alterations and additions to the Toronto post office. Plans and specifications with Thos. A. Hastings, clerk of works, Customs House, Toronto.

Toronto, Ont.—City Architect McCallum has been instructed to prepare plans for additions to Agnes street police station here, to cost $25,000.

Hamilton, Ont.—The city council of Hamilton propose purchasing from the Bank of British North America a site in the east end of the city where the city will erect a branch library building in the near future.

Chatham, Ont.—The Department of Public Works, Ottawa, received tenders up to November 4 for the construction of pile protection works at McGregor's creek, Chatham.

Strathroy, Ont.—Messrs. Nagle & Mills, of Ingersoll, Ont., have been awarded the contract for the erection of the proposed armories at Strathroy for $13,000.

Kincardine, Ont.—William Nicholson, Wingham, has been awarded the contract for the erection of the proposed public building for Kincardine, at a price of $17,000.

Kingston, Ont.—At the next municipal elections in January the council of this city will submit a by-law to the people authorizing the raising of $15,000 for the purchase of a rock crushing plant, an engine and boiler to run it, and all accessories to be used for the purpose of roadway improvement.

St. Mary's, Ont.—The tenders for the lighting and heating of the post office will be called in a short time. The new structure will cost $30,000, and will not be completed for three or four months.

Renfrew, Ont.—The Department of Public Works, Ottawa, are now preparing plans for a new post office here to be built of Renfrew granite. It is expected tenders will shortly be called for this work.

Port Arthur, Ont.—Fred. Gelinas, secretary Department Public Works, Ottawa, called tenders until October 24 for alterations and additions to the post office building at Port Arthur.

Woodstock, Ont.—The by-law to raise $60,000 for a new city hall for Woodstock, which was to have been submitted to the ratepayers at the next general elections, will, in all probability, be held over for another year.

Whitby, Ont.—An order in council has been passed by the Dominion Government authorizing L. T. Barclay, of this place, to purchase a site for $5,000, on which the government intend erecting a public building similar to the one at Deseronto, with interior arrangement like the Belleville building, to be constructed of brick and stone. As soon as plans are prepared, tenders will be called for the work.

Guelph, Ont.—Stevenson & Malcolm, of this city, have been awarded the contract for steam heating and plumbing of the proposed armories here to be built by the Dominion Government.

Guelph, Ont.—Plans for the proposed alterations to the city hall here are ready and tenders will be called for in the near future. Alderman Thorp will supervise arrangements.

Guelph, Ont.—A committee of the Guelph Board of Health has been appointed to gather data regarding a suitable public abattoir and cold storage plant here which it is proposed to erect. Dr. H. W. Robinson, Medical Health Officer, is chairman.

Port Arthur, Ont.—The council of this city will shortly call for competitive plans from architects for the erection of a city hall to cost $150,000.

Fort William, Ont.—The board of directors of the new Y. M. C. A. here have secured the premises of the old Baptist church and intend to remodel same and build an addition in the rear for a gymnasium. The old building will be fitted up as a temporary home, until the new building is erected. Mr. Copp, is president, and Mr. Williamson, secretary.

Simcoe, Ont.—Contracts for the proposed government building here will in all probability be let this month. The structure will be 65x59 feet to be of buff pressed brick and grey stone.

London, Ont.—Mr. Gillean, chairman of the London council, will submit plans and estimates of the proposed public abattoir here, the probable cost of which will be $18,000.

Markham, Ont.—Peter S. Gibson, of this place, has been engaged in some preliminary surveying in reference to the proposed new post office. It is expected that plans will soon be prepared for same.

Strathroy, Ont.—Tenders for the armory were received by Fred. Gelinas, secretary Public Works Department, Ottawa, up to November 5.

Winnipeg, Man.—Controller Harvey has asked the council of the city of Winnipeg to submit a by-law at the December elections to raise $75,000 for a public bath house, the government has already granted power to submit this by-law.

Winnipeg, Man.—The city council will have an estimate prepared of the cost of adding two storeys to the city hall here.

Winnipeg, Man.—The city council has purchased from James P. Boland, of this city, land 243x140 ft. on which they propose erecting a market building. A by-law will be submitted at the next elections providing for this expenditure. The property cost $10,000.

Neepawa, Man.—Fred Gelinas, secretary Department Public Works, Ottawa, will receive tenders until November 27 for the construction of a public building at Neepawa, Man. Plans and specifications with the department, Ottawa, and with the postmaster, Neepawa.

Selkirk, Man.—Contractors Brown & Garson, of Winnipeg, have been awarded the contract for the erection of a new post office for the public works department, at a cost of $12,000.

Wetaskiwin, Man.—Mr. McLaughlin, of this place, has been awarded the contract for the erection of the proposed court house, of brick and stone, at a cost of $80,000.

High River, Alta.—The Dominion Government propose erecting a drill hall to cost $10,000 in this town.

Edmonton Alta.—Premier Rutherford, of Alberta, states that his government may unite with the Dominion and Saskatchewan governments for the establishment of a reformatory. $5,000 has already been set aside for the purchase of a site, but no definite decision has yet been reached.

Edmonton, Alta.—John Stocks, Deputy Minister Public Works, Edmonton, will receive tenders until December 1 for the erection of a building to be known as the "Land Titles Building." Plans, specifications and forms of tender at the office of the Department of Public Works, Armstrong Block, Calgary.

Edmonton, Alta.—The lower floor of the burned post office building, will be temporarily rebuilt, but it is Alderman Samuel Smith's intention to erect a building to cost from $75,000 to $150,000 in the near future.

Battleford, Sask.—J. H. Storer, of this place, has been awarded the contract for building the proposed telegraph office for the Dominion Government here, at a cost of $2,000. The proposed structure will be 26x30 ft., two storeys high.

Battleford, Sask.—The proposed court house to be erected here by the Dominion Government, for which tenders have been taken, will be a two storey brick building to cost in the neighborhood of $50,000.

Rosthern, Sask.—A by-law to raise $10,000 for the purpose of finishing and furnishing the new town hall here was passed on October 29. Tenders will be called for shortly.

Maple Creek, Sask.—Fred. Gelinas, secretary Public Works Department, will receive tenders until November 25 for the construction of a public building at Maple Creek, Sask. Plans with the postmaster, Maple Creek, Sask., and with the department, Ottawa.

Regina, Sask.—The city of Regina has passed a by-law granting $15,000 towards the erection of a Y. M. C. A. building here. $85,000 has already been subscribed and $10,000 more will be forthcoming before the end of the present year, and as soon as sufficient funds are obtained, work on the proposed structure will be commenced.

Medicine Hat, Alta.—P. Burns, of this city, has been awarded the contract at a price of $16,600 for the erection of an armory here, building to be 50 ft. square, two storeys high, of red pressed brick and Calgary sandstone.

Medicine Hat, Alta.—The contract for the quarters for non-commissioned officers and men here, tenders for which were called a short time ago, has been awarded to J. McDiarmid, of Winnipeg, at a price of $40,000.

Saskatoon, Sask.—Work on the proposed post office, after the foundations have been laid, will not be resumed until next spring.

Nanton, Alta.—If Nanton, Alta., will furnish a free site, the Dominion Government has promised to erect a $10,000 armory thereon for the town. The proposal has been accepted.

Victoria, B. C.—Fred Gelinas, secretary Public Works Department, Ottawa, will receive tenders until December 2 for the construction of a detention building at Victoria, B. C. Plans, specifications and forms of tender at the office of William Henderson, resident architect, Victoria, B. C.

Vancouver, B. C.—McPherson & Sinclair, of this city, have been awarded the contract for the erection of the monkey house in Stanley Park here, at a price of $4,900.

Vancouver, B. C.—The Market and Industrial Committee of the city of Vancouver has decided to call tenders for the new market building which it is proposed to erect here.

Montreal, P. Q.—The Public Works Department, of the Dominion Government, have purchased property from the Grey Nuns in this city, for which they paid $400,000. It is proposed to erect a new customs house and examining warehouse. Plans will shortly be prepared for this. Fred Gelinas, secretary Public Works Department, Ottawa, has particulars. Probable cost will be $2,000,000.

Montreal, P. Q.—The Dominion Government has purchased about fifteen thousand square feet of land in this city on which it proposes to erect a branch post office in the near future.

Quebec, P. Q.—Jinchereau & Lamonde, Quebec, have been awarded the contract for the erection of a $40,000 arsenal for the Dominion Government, to have concrete foundation, fireproof construction, concrete roof, steam heating, electric lighting. Specifications include armored concrete, metallic lath, vaults, freight elevator. Rene P. LeMay, architect, 17-19 D'Aiguillon street, Quebec City.

St. John, N. B.—John Floyd and Edward Bates, of this city, have been awarded the contract for erecting a 40 ft. addition to the present military stores building and alterations to same here.

Business Buildings

Toronto, Ont.—F. W. Matthews & Co., funeral directors, have purchased property of 50 ft. frontage at 235 Spadina avenue, and they will remodel the present building thereon into an up-to-date establishment, consisting of show rooms, private funeral chapel and mortuary, at a cost of $15,000.

Hamilton, Ont.—Architect Charles Mills, of this city, has prepared plans for the proposed Landed Banking & Loan Co., building to be erected here in the near future. The proposed structure will be of fireproof construction, with pillared stone front.

Ottawa, Ont.—The Iroquois Iron Works of Buffalo, N. Y., have been awarded the contract for the furnishing of the proposed Municipal Asphalt Plant at a price of $14,800.

Forest, Ont.—McCordick & Burns, of this place, have been awarded the contract for building the proposed skating rink 50x160. The foundations will be of concrete, superstructure of concrete and brick.

Havelock, Ont.—Mr. Thos. Curtis, of this place, will erect a large brick block here next spring.

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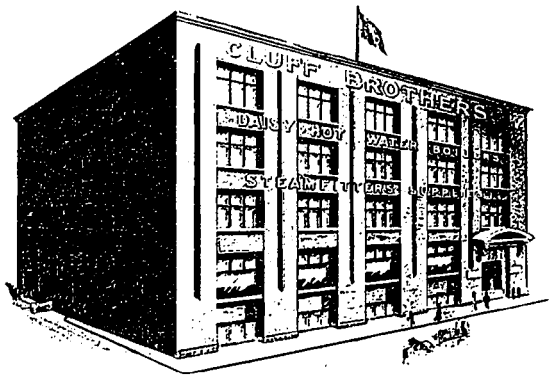

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WRITE FOR CATALOGUE

CLUFF BROTHERS, TORONTO

Chatham, Ont.—Architects J. L. Wilson & Son, of this city, are preparing drawings for a business block of stores for J. J. & J. Riggs, of Windsor. The building will be of pressed brick with cut stone trimmings.

Cobalt, Ont.—Architect W. R. Graham, Cobalt, has prepared plans and will receive tenders for a four storey business block $15,000, to be built in Cobalt for Graham & Hunter, to be constructed of wood, steel clad, cedar foundation, metal roof, oak grained interior finish, steam heating, electric lighting.

Brandon, Man.—The Salvation Army have taken out a permit for the erection of a new barracks, to cost $12,000.

Edmonton, Alta.—Senator James McMullen, of Mount Forest, Ont., (owner) has let the contract for the erection of a two storey brick block 30x50 ft., to R. J. Manson, of this place, at a price of $6,000. Plans were prepared by Architect H. Magoon, of this place.

Edmonton, Alta.—Architect H. A. Magoon, of this city, has prepared plans for two business blocks for Edwin Auld, of this place, one business block will be 24x60 ft., two storey frame construction, to cost $6,000, and the other will have 30 ft. frontage, four storeys high, to cost $25,000. Tenders will be called shortly.

Saskatoon, Sask.—Architect W. W. LaChance, Saskatoon, has prepared plans for a $19,000 office building for Hartley Chubb, of this place, to have stone foundation, brick superstructure, galvanized iron roof, steam heating, electric lighting, modern plumbing, cement work, tile, structural iron, metal ceilings, fireproof windows, prismatic glass.

Prince Albert, Sask.—The D. E. Patch Printing Co., with a capitalization of $50,000, is being formed here for the purpose of publishing a daily paper in this place. A new building will be erected.

Vancouver, B. C.—Mr. Gifford, manager of the British Columbia Electric Railway Co., Vancouver, B. C., states that he has engaged an architect to prepare plans for the erection of a new office building for the officers of the company in place of the present structure, to cost $100,000.

Vancouver, B. C.—Architects Hopper & Watkins, corner Homer and Hastings streets, Vancouver, B. C., received tenders up till November 12 for the erection and completion of a five storey brick and steel building at the corner of Hastings and Abbott streets, Vancouver. Plans at the office of the architects.

Montreal, P. Q.—Dominion Park was damaged to the extent of some $200,000 by fire on November 6. Insurance $170,000. Mr. W. G. Ross, Montreal, director, states the damaged portion will be rebuilt and added to.

Sydney, C. B.—A. H. Robb, contractor, has been awarded the contract for the erection of an addition to the premises of the Sydney Baking Co.

Banks

Toronto, Ont.—The Imperial Bank have taken out a permit for the erection of a branch bank on the northwest corner of King and Sherbourne streets, Darling & Pearson are the architects. The proposed structure will cost $22,000. Work has begun.

Toronto, Ont.—The Sovereign Bank have leased the premises of the old Molson's bank and will remodel same to suit their present needs as a branch bank, and as soon as the leases of the Nasmith Co., and other tenants expire on the southeast corner, they will erect a modern bank building thereon. Plans are now being prepared.

Guelph, Ont.—Mr. Rundle, of this city, has been awarded the contract for the proposed improvements and alterations to the Traders Bank building here, at a price of $15,000.

Brantford, Ont.—Architect Chas. Mills, of Hamilton, has been instructed to prepare plans for a branch of the Bank of Hamilton, in Brantford. The building at the corner of Market and Colborne street here, will be remodelled for the purpose. Work will not commence until April 1 next, on account of the lease of this property not expiring until then.

Wingham, Ont.—The Provincial Construction Co., 23 Jordan street, Toronto, have been awarded the contract for the erection of the branch for the Canadian Bank of Commerce here. The building will be ready by January 1.

Dalhousie Station, Ont.—The premises of the Union Bank here were destroyed by fire. It is the intention of the bank to rebuild.

St. Thomas, Ont.—Architect N. R. Darrach, of St. Thomas, is preparing plans for the remodelling of the second and third storeys of the Home Bank building here. Work will be commenced soon.

Edmonton, Alta.—Incorporation will be sought at the next session of Parliament for the Bank of Edmonton. As soon as this is obtained it is expected the directors will erect a handsome building in Edmonton.

Saskatoon, Sask.—M. E. Grey, local manager of the Northern Bank here, has let the contract for the cellar and foundation of the proposed branch to Moore & Camroux, of this city, who have relet the excavation to Mat Reid, here.

Vancouver, B. C.—James Mackinnon, general manager Eastern Townships Bank, of Sherbrooke, P. Q., states that the bank will erect a branch in Vancouver. The style of the structure has not yet been decided upon.

Railway Construction

Toronto, Ont.—The Board of Works Committee, of the city of Toronto, has decided to recommend to the city council that they build a spur line to Ashbridge's bay under the city's control.

Toronto, Ont.—The Board of Control of this city, proposes to build an electric spur line from Cherry to Leslie streets, to feed the industries at Ashbridge's marsh, to cost $90,000.

Hamilton, Ont.—The I. O. O. F. here are considering the advisability of expending $13,000 on the rebuilding of the present hall on North John street, and if this is not done they will likely spend $30,000 on a new building and sell the old one.

Hamilton-Toronto.—The Hamilton Electric Radial Railway Co., will ask power at the next session of the Dominion Parliament to extend their lines into Toronto, and to extend their road in other directions.

Ottawa, Ont.—The council have finally approved of the plans of the proposed Grand Trunk station and hotel and it is expected that the work will be commenced at once, after footings for the foundations, which have been laid, have been allowed to set.

Londesboro, Ont.—The freight sheds and depot here belonging to the Grand Trunk railway were burned recently. They will be rebuilt at once.

St. Thomas, Ont.—The Pere Marquette railway will shortly build a large roundhouse to accommodate the larger type of engines they are now using.

Brantford, Ont.—The city council of Brantford, Ont., has granted the Brantford Street Railway Co. a franchise for forty-five years longer, on condition that the company reconstruct all local tracks and complete all outlined extensions.

London-Stratford—A. E. Welch, of London, Ont., is authority for the statement that a firm of English capitalists are about to construct a road from London to Stratford, Ont. Mr. Welch is at present making enquiries in reference to same.

Goderich-Owen Sound.—The Ontario and West Shore Railway, of Goderich, propose to erect an electric road between Goderich and Owen Sound. The various townships along the line will submit by-laws in the near future, guaranteeing their share of the bonds of the road, to be voted on soon. The road will cost $20,000 a mile.

Hudson Bay, Ont.—Murphy & Fisher, 46 Elgin street, Ottawa, give notice that they will apply for incorporation on behalf of the North-western Pacific Railway Co., to construct a line from Fort Churchill on the Hudson Bay, to the Pacific coast.

Winnipeg, Man.—R. Brown, of Winnipeg, has been awarded the contract for the erection of the proposed G. T. R. and C. N. R. depot here, at a cost of $500,000.

Brandon, Man.—Superintendent Maharg, of the C. P. R., here, has been instructed to have plans prepared for the enlargement of the railway depot here, and as soon as they are prepared the work will be pushed forward.

Morden, Man.—The Winnipeg Northern Construction Co., of Winnipeg, have been awarded the contract for the erection of buildings and water tanks on the Midland railway.

Victoria, B. C.—The contract for the additions to the car sheds of the British Columbia Electric Railway Co., has been awarded to Alderman W. A. Gleason, of Victoria, to be 80x200 ft., one storey in height, constructed of red brick. The contract price is $10,000.

Vancouver, B. C.—R. C. Lowe, of the Vancouver Island and Eastern Railway Co., have published notice that they intend to apply to the next Dominion Parliament for power to construct a road from the city of Vancouver to Seymour Narrows.

Grand Forks, B. C.—The C. P. R. will commence the erection at once, of a large roundhouse and machine shop.

Prince Edward Island.—D. Pottinger, general manager, Prince Edward Island Railways of the Intercolonial system, has received tenders for the supplying and constructing of various buildings, tanks, bridge masonry and pipe line for this railway.

Clubs and Societies

Toronto, Ont.—Plans are being prepared by Architects Simpson & Young, of Toronto, for an extensive boat house and pavilion situated on the Humber river, for I. N. Devins, of this city. The proposed structure will be of frame construction, supported on piles, and will have a metal roof. Piling will be driven by the owner.

Kingston, Ont.—Architect H. P. Smith, Kingston, has prepared plans for eighteen yacht houses for the Kingston Yacht Club, to be of wood construction on pile foundation, composition roof, wood interior finish.

Niagara Falls, Ont.—The Independent Order of Oddfellows have purchased the corner of Ontario avenue and Queen street, on which they intend to erect a society building at a proposed cost of $20,000 in the near future.

Eglinton, Ont.—Tenders for a Masonic hall in Eglinton, Ont., have been received from J. W. Siddall, architect, Janes Building, Toronto, to be erected according to plans prepared by the architect.

Macleod, Alta.—Architects Dowler & Michie, 14 Alexander Corner, Calgary, Alta., have prepared plans for the erection of a lodge room and block of stores for the Oddfellows society, to cost $12,000, to have concrete foundation, frame superstructure, paroid roof, electric light, modern plumbing, steam heating, interior finish wood fibre plaster.

Saskatoon, Sask.—Mr. R. H. Chubb, of this place, has purchased the land and foundations which were laid last year by the I. O. O. F. and he will at once complete the structure, which will be solid brick, three storeys in height.

Medicine Hat, Alta.—Architect W. T. Williams, of Medicine Hat, has awarded the contract to Oakes & Everard for the general work, and R. E. Walton, for the plumbing, all of Medicine Hat, for a club building, two storeys high, to cost $15,000 for the Cypress Club here. Specifications include mantels, tile, dumb-waiter, oak interior finish, hot air heating, gas lighting and modern plumbing.

Medicine Hat, Alta.—Architect Wm. T. Williams, Medicine Hat, will receive tenders after February 1, 1908, for the construction of a Masonic Lodge building to cost $15,000, to be of brick and stone superstructure, concrete foundation, gravel-tar roof, hot air heating, gas lighting, plumbing, fir interior finish, two storeys high, to have mantels, dumb waiter, sheet metal work, art glass.

Asylums and Hospitals

Toronto, Ont.—The city council here has decided to build an hospital under the city's direct control in the near future, for which over $100,000 has been secured previously, when it was proposed to erect a hospital under the Board of Trustees of the Toronto General Hospital here.

Toronto, Ont.—The city council is considering the granting of $5,000 for the building of a wing to the present House of Refuge on Belmont street, to accommodate forty more persons.

Peterboro, Ont.—The council of this city are considering the advisability of erecting a House of Refuge here.

St. Thomas, Ont.—The city council here will submit a by-law to the ratepayers at the next election in January, providing for the expenditure of $10,000 for a new isolation hospital here.

Macleod, Alta.—Hicks & Weakly, of this city, have been awarded the contract for the installation of hot water heating in the Macleod general hospital.

Calgary, Alta.—Architects Lawson & O'Gara, of this city, have had their plans accepted by the city council for the proposed city hospital, to cost $140,000.

Nivette, Man.—The Manitoba Government intend next spring to erect here a sanitarium, consisting of main building, and cottages, at a cost of $50,000, for treatment of consumptives.

Winnipeg, Man.—George F. Galt, honorary secretary of the Winnipeg general hospital, is asking the city of Winnipeg to erect a new isolation hospital at a cost of $150,000. This matter will come before the city council in the near future.

Yarmouth, N. S.—It is the purpose of this town to erect an hospital to cost $20,000, and to contain not less than thirty beds. Subscriptions are now being taken up to cover this amount, and as soon as sufficient funds are collected plans will be prepared and the work commenced.

Vancouver, B. C.—The general hospital here has decided that they will expend $75,000, besides extensive furnishings, on a new wing to the present hospital building. Plans will shortly be drawn up, but the work will not be proceeded with until next year.

Churches

Hamilton, Ont.—All Saints' Church congregation here are contemplating additions to the present structure to accommodate 200 additional seats, at a proposed cost of $10,000. The work will be begun early next spring.

Peterboro, Ont.—The congregation of Charlotte Street Methodist church, pastor Rev. H. M. Manning, decided to have plans prepared for the erection of a new church, to cost $30,000, capable of seating 1,000 people.

Peterboro, Ont.—The proposed Catholic church to be built on Romaine street, will be erected by Langford & Sheehy at a price of $44,311. This does not include heating, electric lighting, pews, figured windows and altars, as the contracts for these will be let at a later date.

Ottawa, Ont.—Architect Z. N. Gauthier, of Montreal, has prepared plans for the proposed Sacred Heart church here. These plans will be sent to Rome for approval, and after their return tenders will be called for the work, probably in six or eight weeks.

Chatham, Ont.—The Central Baptist church congregation have purchased a lot here 94x94 ft., on which they intend to build a church in the near future.

Dashwood, Ont.—The Lutheran church congregation here propose to erect a new church to be built mainly of concrete. The committee is composed of G. Thum, C. Walper, G. Koch, H. Willert, O. Miller and H. Kraft, all of Dashwood.

Merrickville, Ont.—The contract for the stone work for the proposed church to be erected here by the Trinity church congregation, was awarded to J. S. Wilson, of Merrickville.

Fort William, Ont.—The new Catholic church here, which was nearing completion, was burned to the ground recently, entailing a loss of $10,000. The church will be rebuilt.

St. Thomas, Ont.—The trustees of Grace Methodist church here, are considering the advisability of erecting a new church on the site of the present one.

Winnipeg, Man.—The Anglican church here have had plans prepared, and have secured a site on which they propose to erect a church.

Nelson, B. C.—The contract for the erection of the proposed Methodist church here, has been awarded to T. Hooper, contractor, Vancouver, B. C.

Vancouver, B. C.—Architect Archer, of this city, has prepared plans for the construction of a Sikh Temple, and it is expected work will commence in the near future.

Montreal, P. Q.—Architects Wright & Son, 204 St. James street, Montreal, have prepared plans for a synagogue for the chartered congregation of the Temple of Solomon, this city, to cost $52,000. Specifications include Cleveland sandstone and pressed brick front, brick superstructure, cement foundation, interior hardwood finish. Tenders have not yet been called.

St. Paul, P. Q.—The Presbyterian congregation propose erecting a new church to take the place of the one recently destroyed by fire. Mr. A. J. Aubrey, 165 Church avenue, of this place, is interested in the movement. The probable cost is placed at $165,000.

Cote St. Paul, Montreal, P. Q.—The Catholic church at Cote St. Paul was destroyed by fire recently, entailing a loss of $75,000; insurance $30,000. Father Brisel, of this church, states that it will be rebuilt.

Longue Pointe, Montreal, P. Q.—The Catholic church here was burned to the ground recently, entailing a loss of $75,000; insurance $16,000.

Halifax, N. S.—At a meeting of the congregation of the West End Baptist church, which was recently destroyed by fire, Mr. A. J. Davis was appointed chairman of the building committee and Mr. Archibald Graham chairman of a committee to secure plans for the proposed structure. $1,000 was subscribed at the meeting, and it is expected work will commence in the near future.

Residences and Flats

Toronto, Ont.—Architects Chadwick & Beckett, Toronto, have awarded the following contracts in connection with the erection of a residence for T. G. Bright, on Bernard avenue, here, to cost $7,800: Masonwork, Moore & Stewart; carpentering, A. M. Ackerracket; painting, Faircloth & Co.; hot water heating, Taylor & Reid; plumbing, A. F. Passmore; roofing, Larkin & Son; plastering, Beaver & Co.; electrical work, A. W. Kerman; metal weather strip, Chamberlain Metal Weather Strip Co.

Toronto, Ont.—Architect W. Fletcher Shepherd, of London, has prepared plans for a $7,500 semi-detached residence for R. Locke, Toronto, on Avenue road, to have stone foundation, pressed brick superstructure, slate roof. Specifications include hot water heating, electric lighting, two bathrooms, and modern plumbing, hardwood interior finish, cement work, cut stone, mantels, art glass.

Toronto, Ont.—Architect W. Fletcher Shepherd, of this city, has prepared plans for a block of residences to be erected here for R. Locke, at a cost of $40,000, to have stone foundation, brick superstructure. Specifications include cement work, cut stone, tile, mantels, sheet metal work, hot water heating, gas lighting.

Toronto, Ont.—Architect F. W. Wagner, Toronto street, Toronto, has awarded the following contracts for the construction of a frame house on Berkeley avenue for Wm. Hackett: Mason work, John Hall; carpenter work, A. R. Bright. The proposed building will cost $4,000.

Toronto, Ont.—Architects Ellis & Connery have prepared plans for the erection of a brick residence for Mr. Henderson, of Toronto, to cost $3,500, to be built at Toronto Junction, to have slate roof, hot air heating, electric lighting, modern plumbing, cement basement and pine interior finish.

Toronto, Ont.—Jas. Mackenzie, of this city, has been awarded the contract for the carpenter work on the proposed Strand Hotel, on Victoria street, Toronto. Mason work to Claxton & Sons, also of this city. Tenders for other work have been received. Simpson & Young, Toronto, are the architects.

Ottawa, Ont.—Architect A. Tracy, of Ottawa, has prepared plans for the erection of a $5,000 dwelling for W. Fraser, Catherine street, here. Proposed structure will be of brick veneer, stone foundation, shingle roof. Specifications call for warm air heating, electric lighting, enamelware plumbing, cement work, cut stone, mantels, interior finish soft wood, two and a half storeys high.

Credit River, Ont.—Architects Simpson & Young, of Toronto, will supervise the building of a summer residence in bungalow style on the Credit river, for Mr. John Hall, of Toronto, for whom they have prepared the plans. Specifications call for frame construction, field stone pillars, stained shingles, mantels included in mason contract, panel and stucco finish.

Chatham, Ont.—Architects J. L. Wilson, Son & Arnold, of this place, are preparing plans for a residence for A. D. Westman, on King street, Chatham, and as soon as plans are completed it is expected tenders will be called for the work.

Chatham, Ont.—A. D. Westman, of Chatham, will build a brick residence here on King street west, next spring.

London, Ont.—Architects J. L. Wilson & Son, of Chatham, Ont., are preparing plans for a residence for Mr. George Bruce, of London, Ont.

Dundas, Ont.—Col. J. J. Grafton has awarded the contract for his new house to be built here, to J. Ford, who has sublet the mason contract to George James, all of this place.

Welland, Ont.—H. J. Griffiths, of this place, has been awarded the contract for the installation of a steam heating system in the residence of W. E. Hardison, East Main street, Welland.

Alexandria Bay, Ont.—J. R. Reid, of Alexandria Bay, has been awarded the contract to build a summer home for W. H. Post, of Ogdensburg, N. Y., on Scow Island, Chippewa Bay, Ont., to cost $25,000.

Westboro, Ont.—Architect W. E. Noffke, 26 Central Chambers, Ottawa, has prepared plans for a $2,000 cottage for Chas Ogilvie, Westboro, Ont., to be of brick and frame construction, electric lighting, plumbing, and to have a shingle roof. The type of heating has not yet been decided upon.

Ottawa, Ont.—Architect W. E. Noffke, 26 Central Chambers, Ottawa, has prepared plans for Jas. C. Hope, Rockliffe Park, near Ottawa, for a $5,000 residence to have cement foundation, stone and stucco superstructure, shingle roof, hot water heating, electric lighting, plumbing, hardwood interior finish.

Macleod, Alta.—Architect Jas. A. Macdonald, of this place, has prepared plans for a stone and brick residence for Mrs. Edith L. C. Anderton, here, to have concrete foundation, stone front, brick superstructure, asbestos roof, hot water heating, electric light, modern plumbing, plastered asbestos interior finish. Contract for superstructure let to Mackaughlin & Lambert; concrete work to Linhoff & Stephenson.

Victoria, B. C.—The Victoria Transfer Co., of this city, purpose erecting in the near future a brick stable 140x73, three storeys high, faced with pressed brick, concrete foundation, with accommodation for 222 horses, in addition to which will be space for the offices of the company and a waiting room. The horses and waggons will be housed on the second floor for which an electric elevator will be provided.

Vancouver, B. C.—D. Williams has secured a permit for the erection of a two storey apartment house at the corner of Nelson and Cardero streets, Vancouver, to cost $12,000.

Montreal, P. Q.—S. H. McDowell, of Montreal, has taken out a permit for the erection of a $11,000 residence on City Councillor street here.

Hull, P. Q.—Architect W. E. Noffke, 26 Central Chambers, Ottawa, has prepared plans for Mr. George Mathews, Hull, P. Q., for a $6,000 residence of brick construction, to have hot water heating, electric lighting, modern plumbing. Contract has been awarded to F. McCullough, of Hull, P. Q.

Fredericton, N. B.—Architect G. Ernest Fairweather, of St. John, has prepared plans for alterations and additions to Bottreaux House here, on behalf of Bishop Richardson.

Moncton, N. B.—Architect W. C. Barnes, of Moncton, N. B., has prepared plans and awarded the contract for a $3,000 residence for Wm. Cowling, of this place, to Contractor S. R. Gaudet, Memramcook, N. B., to be of stone foundation, frame construction, cedar shingled roof, to have hot air heating, electric lighting, modern plumbing, birch, hemlock and spruce interior finish.

Sussex, N. B.—Architect W. C. Barnes, Moncton, N. B., has prepared plans for a $5,500 residence for Percy P. Gunn, Milltown Mannie. The proposed structure will have stone foundations, wood frame superstructure, shingle roof, hot air heating, acetylene gas lighting, modern plumbing, and birch, whitewood and spruce interior finish, tile, brick mantels, dumb waiter, ornamental columns and art glass. Contract awarded to Abner Cripps, Sussex, N. B.

Hotels

Toronto, Ont.—The following contracts for a brick and stone hotel at the corner of Bloor and Brunswick avenue for E. Jackson, Toronto, have been awarded: Masonry, Hall & Son; carpenter work, T. B. Gearing; steel work, Dominion Bridge Co.; plaster, F. Golding; plumbing, heating, electric wiring, Fred Armstrong Co.; roofing and sheet metal work, Douglas Bros. Building will cost $25,000.

Toronto, Ont.—The contracts for the reconstruction of Berck's Hotel, corner King and Parliament streets, Toronto, have been awarded as follows: Carpentering, Jas. Mackenzie; mason work, Wickett Bros., of this city. Tenders for the other work are all in. Architects Simpson & Young have prepared the plans.

Ottawa, Ont.—Quilan & Co., of Montreal, have been awarded the contract for the excavation and cement footing for the proposed Grand Trunk hotel and station here. Work will commence at once.

Ottawa, Ont.—The Hotel Du Canada, owned by Mr. Renaud here, was damaged by fire to the extent of $4,000, covered by insurance. The damage will be at once repaired.

Toronto.—The New Carlton Hotel here, under the management of E. B. Clancy, was damaged by fire to the extent of $7,000, covered by insurance. The barroom was completely burned out and considerable upstairs woodwork. The hotel will be repaired at once.

Peterborough, Ont.—Mr. W. Young Kinleyside, general manager of the North American Investment Co., Toronto, states that his company intends to buy the National Hotel here and make additions to it. A company with a capital of $200,000 will be formed for this purpose.

Woodsera, Ont.—David Dagneau, of this place, whose hotel was recently destroyed by fire, states that he will rebuild at once, at a proposed cost of $8,000.

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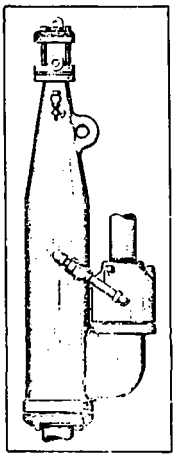

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Sudbury, Ont.—The Sudbury Opera House Company, of this place, has been incorporated with a capital of $50,000, for the purpose of building an opera house in Sudbury.

Vancouver, B. C.—Alderman W. J. Cavanagh, of this city, has had plans prepared for a hotel to cost $100,000, to be located on Granville street, to be six storeys high, fireproof construction, 130 rooms, 40 bathrooms. Work will be started in the near future.

Opera Houses, Rinks, Etc.

Berlin, Ont.—Myer Cohen, manager of the present opera house here, has been agitating for the erection of a new opera house with a false floor, so that the auditorium could be used for balls, etc. The council are considering the matter.

Edmonton, Alta.—McKinnon & Murphy have purchased the Orpheum and Lyric Theatres here, and they propose to make extensive additions to both these buildings in the near future.

Elmira, Ont.—J. S. Weichel, D. D. Ratz and Peter Mattusch are a committee appointed by the citizens of this place to collect data re the building of a rink, which will be commenced in the near future.

Stratford, Ont.—J. N. Billow, contractor here, is pushing to a successful issue the proposal to construct a skating rink to have concrete foundations and steel superstructure, with an ice surface of 170 x 85 ft., and to be fitted with shower baths and sanitary conveniences for hockeyists. It will probably be completed by the new year.

Forest, Ont.—A movement is on foot here and subscription lists have been opened looking to the erection of a large skating rink in this place, and is receiving hearty support.

Roland, Man.—The Park Co., of this place, propose to erect at once a rink to cost about $5,000.

Fernie, B. C.—Mr. G. G. Moffat, of this city, has been appointed secretary of a company which will erect a rink here. $2,000 has already been raised. Architect Gray, of this city, will prepare the plans.

Huntingdon, P. Q.—Gilmour & Shearer, of this place, have been awarded the contract for the erection of a skating rink 170 x 70 ft., to cost $3,500.

Schools and Colleges

Toronto.—The trustees of St. Margaret's College, 144 east Bloor street, Toronto, will erect a three storey brick addition to their present premises, at a cost of $6,000.

Toronto.—At the last meeting of the school board, here, tenders were awarded for the erection of the proposed Kent school, to cost $33,000.

Toronto.—The plans for the proposed Knox College on University Lawn, and Rev. Dr. John Gray was appointed financial agent to oversee the building of same. It is expected tenders will be called for in the near future.

East Toronto, Ont.—Tenders will be called by the school board of East Toronto, for the repairs necessary to render the old school building, formerly used as a school before the present school was built, suitable for the accommodation of pupils. It contains four rooms.

London, Ont.—The trustees of the Western Medical school here, propose to erect a large medical school on property which they have purchased near Victoria hospital.

Toronto Junction.—Architect Ellis has prepared plans for additions and improvements to the collegiate institute here, to cost $16,000. The Property Committee, of the Toronto Junction Council will report on the matter.

Hamilton, Stratford, Peterborough, North Bay, Ont. Purdy Mansell & Co., of Toronto, have been awarded the contracts for the plumbing and heating of the formal schools in the above places. Fred. Armstrong & Co., Toronto, the contracts for the wiring and electric lighting of the same. The aggregate of the contracts amounts to about $62,000.

Guelph, Ont.—The board of education here, at a meeting held recently, decided to ask the city council to issue debentures for the $13,000 for the purpose of erecting a new school, and additions to the present structures.

Whitby, Ont.—The trustees of the Ontario Ladies' College, Whitby, are having plans prepared for the new library, gymnasium, and swimming tank, and additional dormitory buildings, which it is proposed to have erected in connection with the college in the near future.

Guelph, Ont.—The council here will submit a by-law, at the next elections, for the expenditure of $15,000, for the erection of a school in St. Patrick's ward.

Norway, Ont.—Contracts have been awarded for a brick Sunday school building for St. John's church, Norway, to cost $15,000, as follows: Mason work, Moses & Co., Todmorden; carpenter work, A. R. Bright, Toronto. Tenders for balance of work are in and awards are to be made this week, by C. F. Wagner, architect, Toronto street, Toronto.

Hamilton, Ont.—The Government of Ontario has promised a deputation from Hamilton that they would, in the near future, erect a technical college in Hamilton. The deputation was headed by J. S. Hendrie, of Hamilton.

London, Ont.—Chairman Fitzgerald, of the Board of Education, has, at the meeting of the board the second Tuesday in November, brought in a recommendation that the board ask the city council to provide debentures in the next year's estimates for the purpose of erecting a technical school here.

Islington, Ont.—The council of Islington, known as school section No. 14, lately created, has passed a by-law authorizing the expenditure of $7,000 for the purpose of building a school for the district. Work will commence as soon as tenders have been called, which will be in the near future.

Niagara Falls, Ont.—The Public School Board, of this place, have asked the city council to submit a by-law to the people at the next elections, on January 6, for the raising of $23,000, to build a four-roomed school in the centre of the city, and a school at the north end of the city, at a cost of $12,000 and $7,000 respectively, both buildings to be constructed so as to admit of extensions.

Kingston, Ont.—The Berlin Interior Hardwood Co., of Berlin, Ont, have been awarded the contract, at a price of $3,100, for the interior woodwork of the new laboratories of Queen's College. The total cost of the building will be $50,000.

Mimico, Ont.—The by-law to raise $7,000 for the erection of a new school for S.S. 14, Ontario, has been passed by the Mimico Council, and it is expected work will be commenced in the near future.

Milverton, Ont.—A by-law to raise $3,000 for the purpose of purchasing a site and erecting a school house in Union school section No. 11, has been passed by the municipal council.

Paris, Ont.—Tenders have been received by Architects Simpson & Young, Toronto street, Toronto, for an eleven roomed brick and cut stone school house two stories high, to cost $30,000. Specifications include maple floors, tar and gravel roof (flat) and steam heating system.

Alert Bay, B. C.—The Dominion Government propose to have erected this winter a school for the accommodation of at least fifty girls. Mr. Halliday, the Indian agent, will have charge of the erection of same.

Winnipeg.—The Board of Missions of the Methodist church has voted $5,000 for the erection of a kindergarten in the northern part of Winnipeg.

Victoria, B. C.—The contract for the Victoria West school has been awarded to Luney Bros., of this city. Plans for same were prepared by architect W. Ridgeway Wilson, of this city. Contract price $29,200.

East Kildonan, Man.—Architect V. W. Horwood, of Winnipeg, Man., has been asked to prepare plans for a four roomed school building for this place, to cost $18,000, two storeys in height, of brick and stone. Tenders will be called for shortly.

Moose Jaw, Sask.—The collegiate board here, composed of A. W. Irwin, Jos. E. Hattell and Thos. Miller, have decided to secure a larger site than the one already chosen, for the erection of a collegiate institute. As soon as this matter can be arranged plans will be drawn up and the tenders called for.

Edmonton, Alta.—The Hon. Rutherford, Premier of the province of Alberta, states that his government intend establishing a university here.

Montreal, P. Q.—Architects Hutchinson & Wood, of Montreal, have been commissioned to prepare plans for alterations to the Savard street Protestant school here, to cost $21,000. Tenders will be called for shortly.

Montreal, P. Q.—Architects Gauthier & Daoust, of this city, have been instructed to prepare plans for the School for Higher Commercial Education, by the administrators of this proposed structure.

Quebec, P. Q.—Mr. Boivin, contractor, of this city, was awarded the contract for the erection and completion of the new fire station in St. John's ward, here, at a price of $20,985.

Quebec, P. Q.—W. D. Baillairge, city engineer, has received tenders for the erection of a fire hall here.

Chicoutimi, P. Q.—Adolphe Beaulieu, of this place, has been awarded the contract for the erection of the proposed $40,000 school, for which Architect Rene P. LeMay, 17-19 D'Aiguillon street, Quebec city, prepared the plans. The building will have concrete foundation, brick superstructure, asbestos lap seal roof, hot water heating, electric lighting, pressed steel interior finish, fire escapes.

Quebec, P. Q.—Architects Ouellette & Levesque, 117 St. John street, Quebec, have awarded contracts for a $6,500 school for the Catholic Schools Commission, Fraserville, P. Q., to George St. Pierre & Co., Quebec. The proposed structure will have stone foundation, wood superstructure, hot air heating, modern plumbing, galvanized iron roof, spruce interior finish.

St. John, N. B.—The Bishop of St. Hyacinthe is authority for the statement that the college of St. Marie de Monnoir, which was recently burned in Marieville, will be erected in St. John.

Halifax, N. S.—Architect Herbert E. Gates, of Halifax, has prepared plans for a technical school for the city of Halifax, to cost $60,000, to have stone foundation, brick superstructure, fireproof construction. Specifications include metallic lath, structural iron, electric lighting and modern plumbing.

Italy Clamoring for Wood Paving Blocks

REGARDING the opportunity the American wood and lumber manufacturer might have in disposing of his articles on the Italian market a correspondent in Milan writes that there is a particularly good opening for wooden paving blocks.

Asphalt has proved to be a very serviceable street paving in Milan and the municipality is using it whenever possible. In recent years this system has gained great headway in Italy, and at present some of the most important streets in the different cities are paved with it. The distinctly modern look of Milan is largely due to the increased area asphalted. A good future in Italy is predicted for this system of paving. The first asphalt was laid in Milan in one of the minor streets in 1897, taking the place of wood. The following figures show the great increase of this paving in Milan in recent years: 1901, 9,871 square feet; 1904, 82,302 square feet; 1906, 301,349 square feet. At first the Milan municipality thought it impossible to run car lines through asphalted streets, but two years ago trolley lines were run through five or six such streets as an experiment and they have since proved satisfactory. The asphalt used is of Italian preparation.

Trolley tracks on asphalted streets in Milan are supported on either side by small wooden blocks, measuring 2¾ by 3 15-16 by 5⅝ inches. These blocks save the asphalt greatly, and in the future when trolley tracks are laid on asphalted streets in Milan, or in fact in all Italy, these blocks will be used. They are now imported from one Australian firm. Their quality is very good, but the Milan authorities think they are paying rather high prices and are now looking for an opportunity to import from somewhere else. This is a good opportunity for the American wood and lumber manufacturer.

The blocks must be of the hardest and most durable wood and be able to stand all weathers without rotting or warping, or, in three words, be well seasoned. It is absolutely useless to try and place unseasoned stock. It is not wanted. The Milan municipality is said to be willing to pay even more to get good quality. The price now is $7.72 per 100. If the American manufacturer can supply blocks, as described, for this price or less, he may consider this an opportunity to sell carloads in Milan alone, and if they give good results here, there will be a demand for them in the whole of Italy. The wood that will be preferred must be in the first place of good quality, and in the second place be cheap in price. Quality is thought of the most. American manufacturers should correspond directly with the Milan municipality in Italian or French, preferably in Italian, stating prices and terms of payment. The terms should be as liberal as possible. A sample block should accompany the letter. If the price and quality of the American stock is considered satisfactory, the municipality would probably order one carload for a test. There is a place especially assigned for such experiments. All wood except ebony enters Italy duty free.