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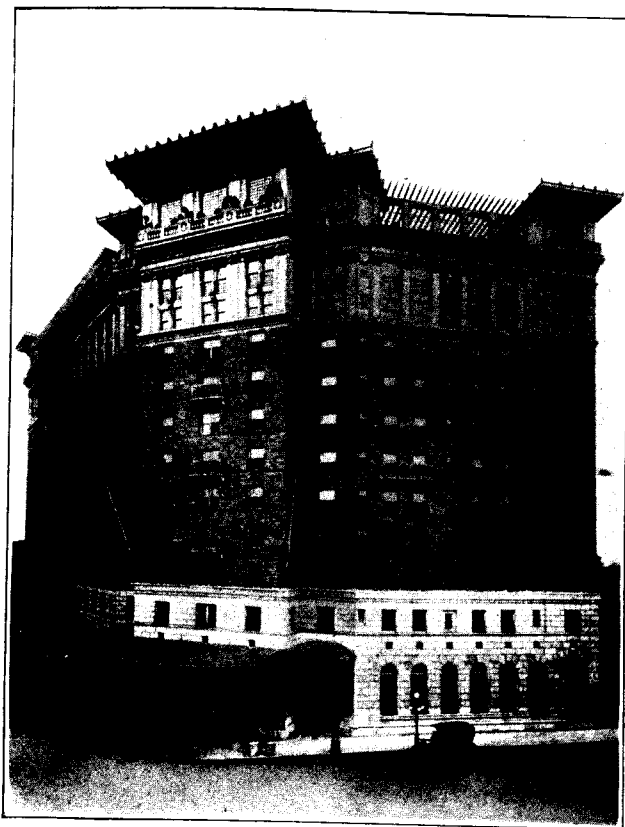
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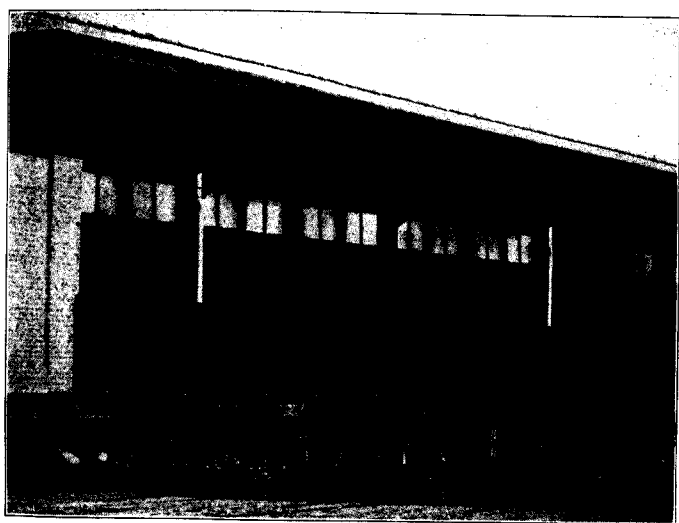
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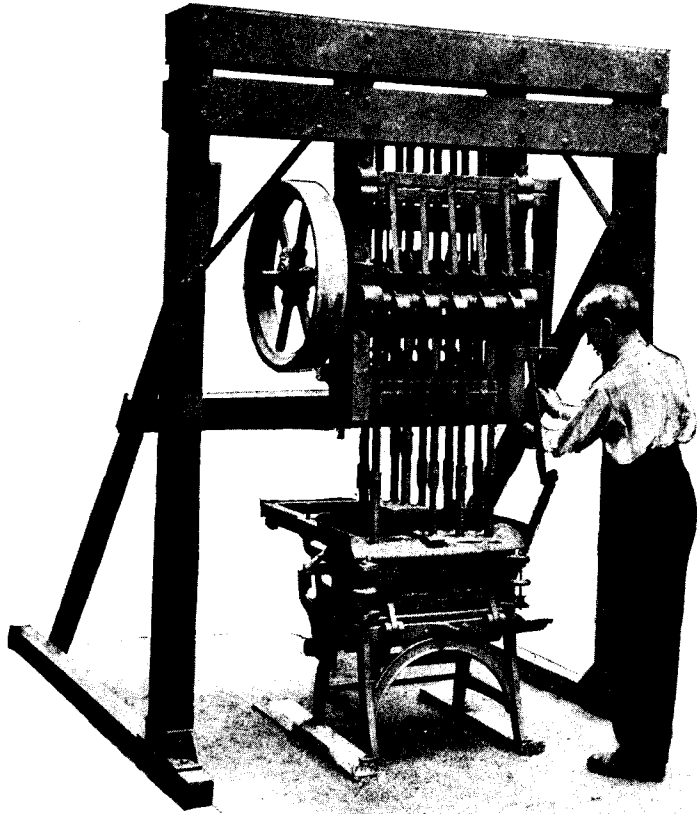
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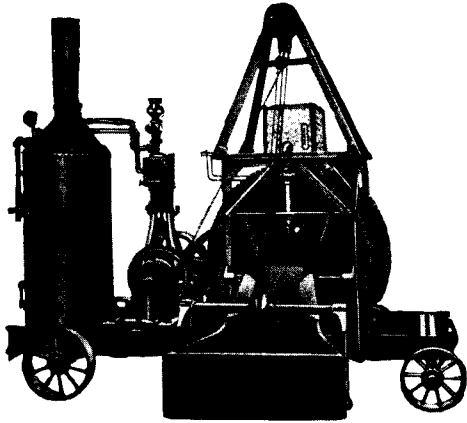
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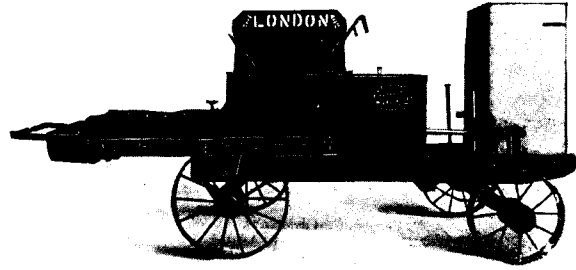
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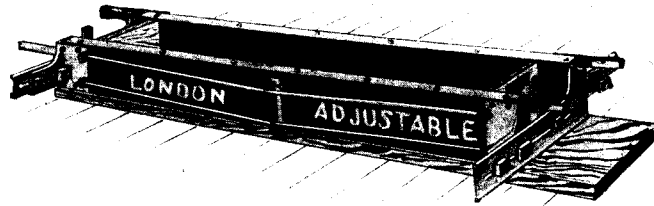
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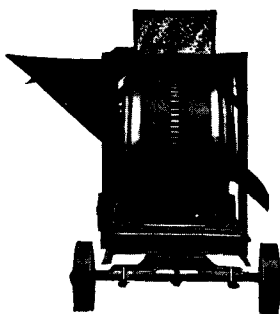
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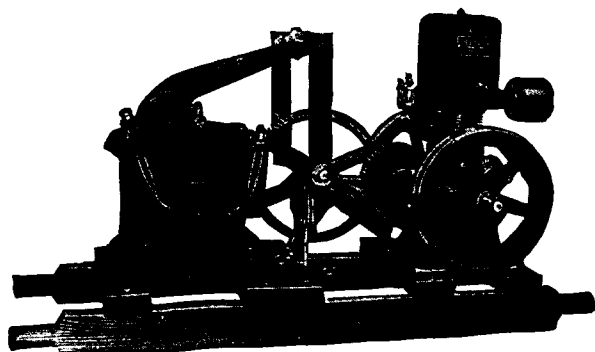
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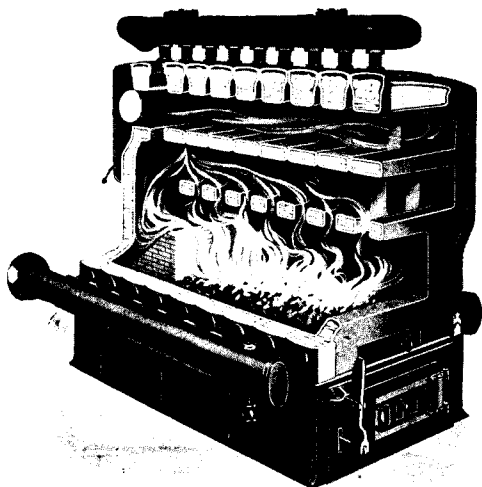
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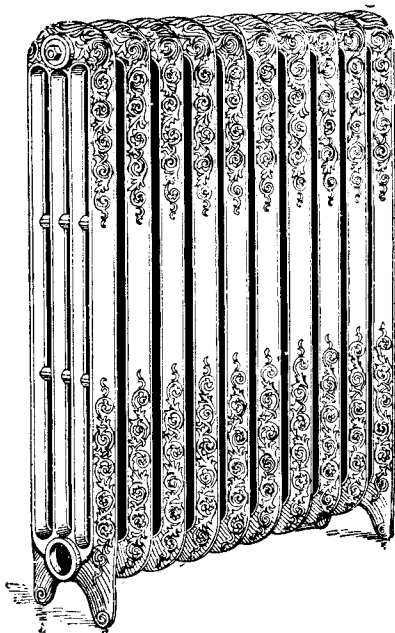


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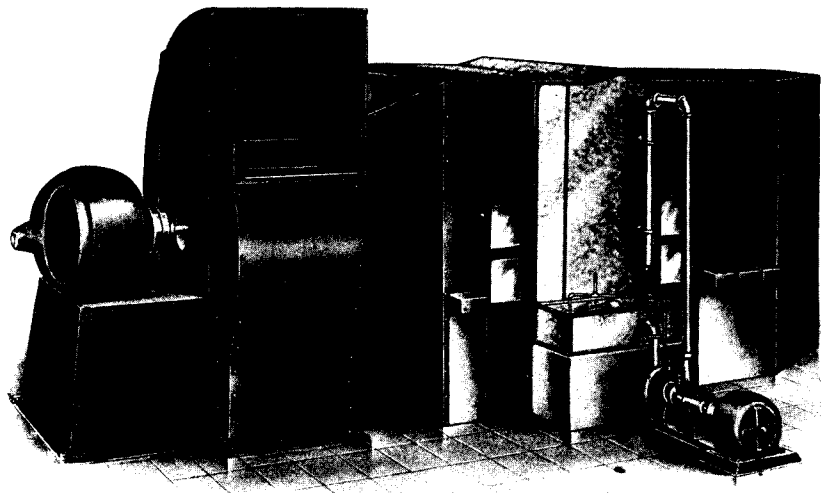
A ten-foot partition of wood studs and metal lath, one half plastered with cement and the other with hard wall, was built as one side of an oil furnace. A fire varying from 1600° to 2000° F. was kept in the furnace two hours. A two-inch hose stream was then played on the hot side of the partition for two and a half minutes. The wood studs were somewhat charred. The hard wall plaster washed out of the lath on the side toward the fire, but no fire or water came through the partition and it could still carry loads. This is a more severe test than most actual fires.

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[MAILED UPON REQUEST]

This handbook of practical information on modern fireproof construction was compiled to fill a real want, to supply reliable data on a subject in which every architect, engineer, contractor or prospective builder is keenly interested.

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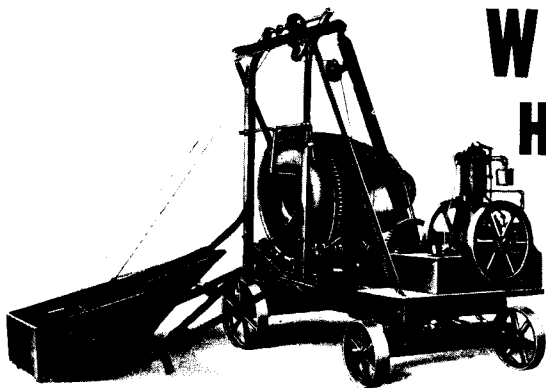
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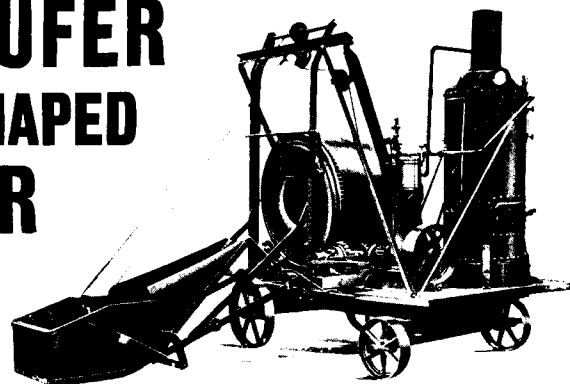
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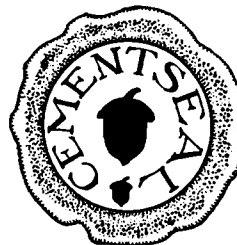
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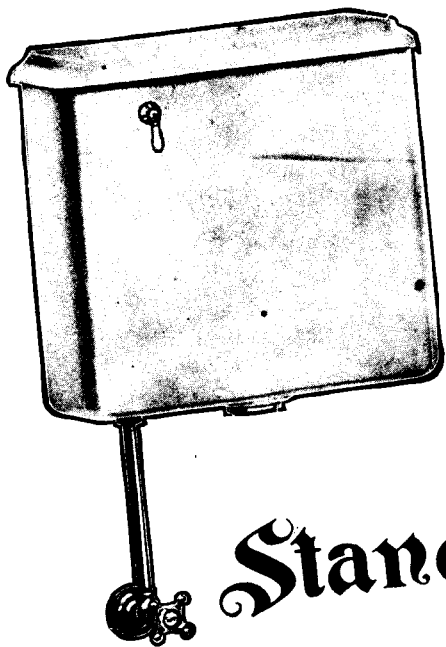
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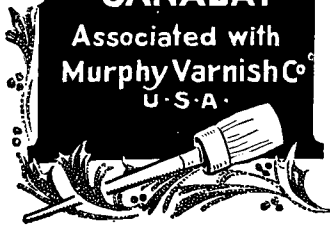


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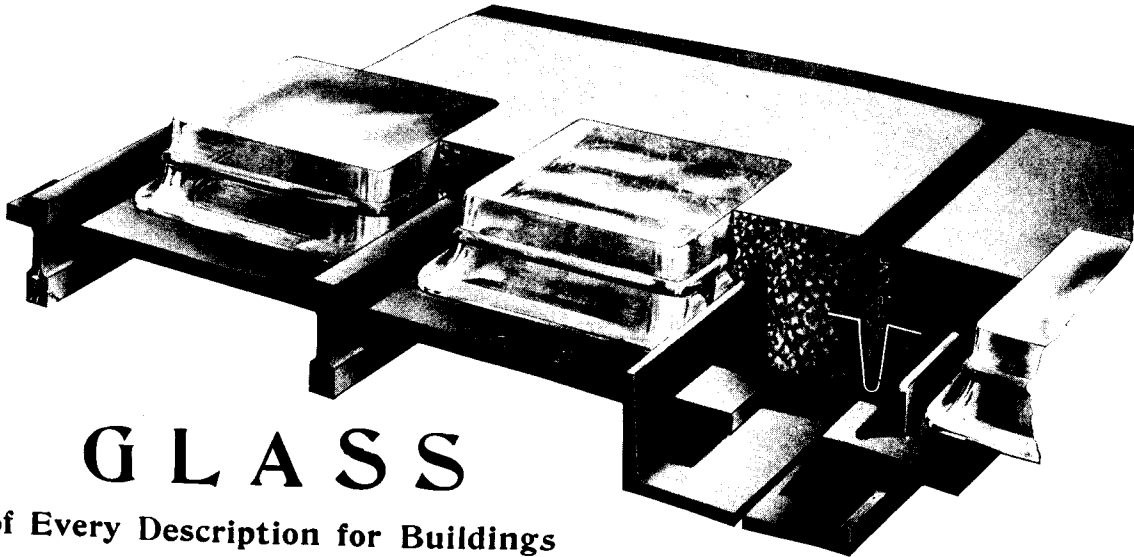
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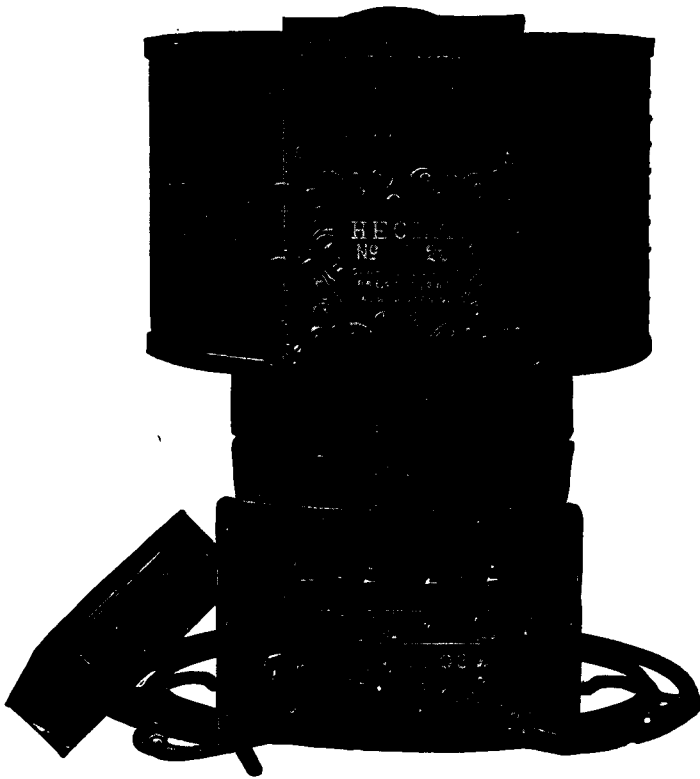
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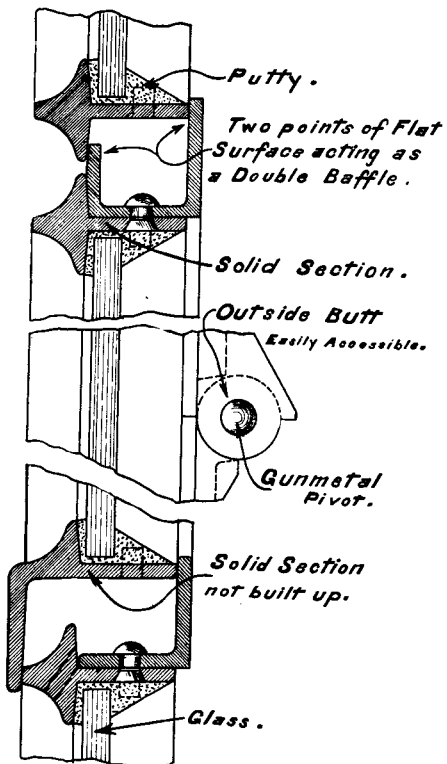
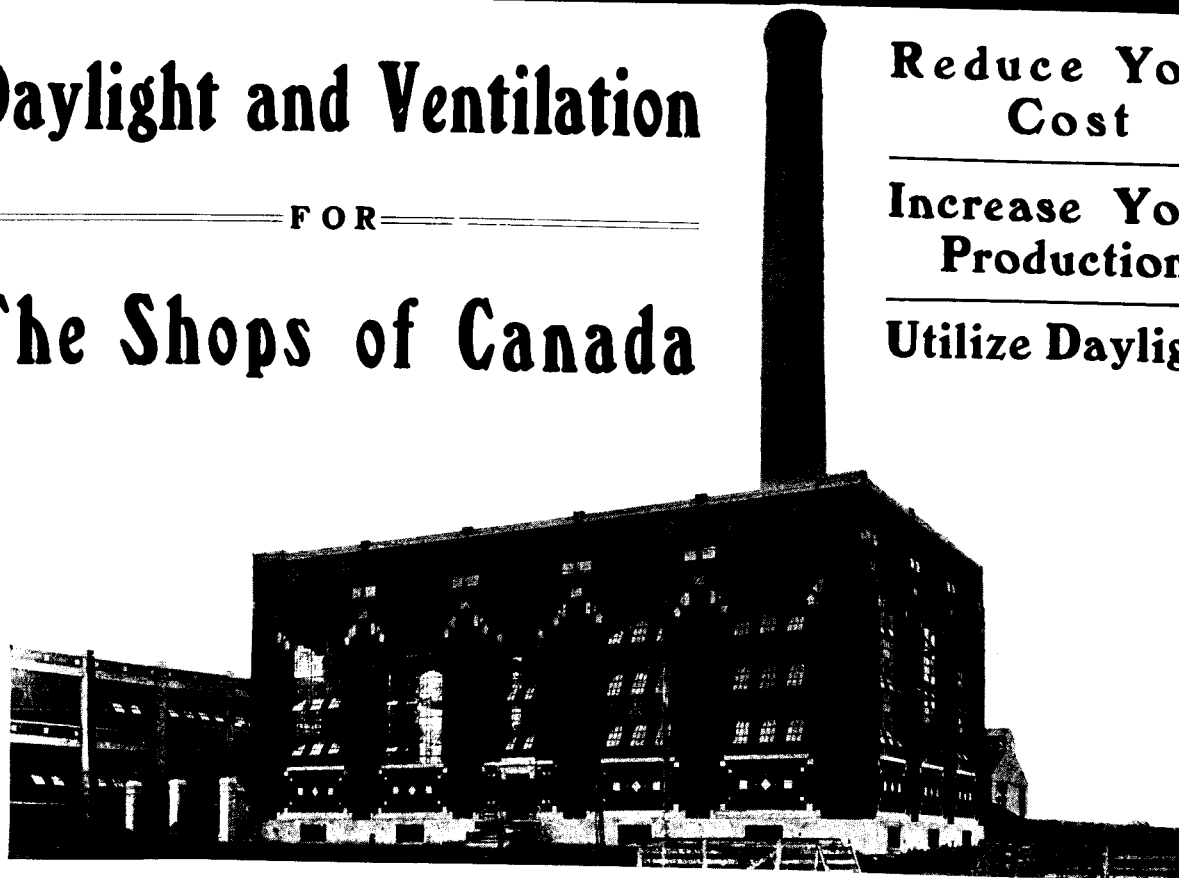
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Utilize Daylight



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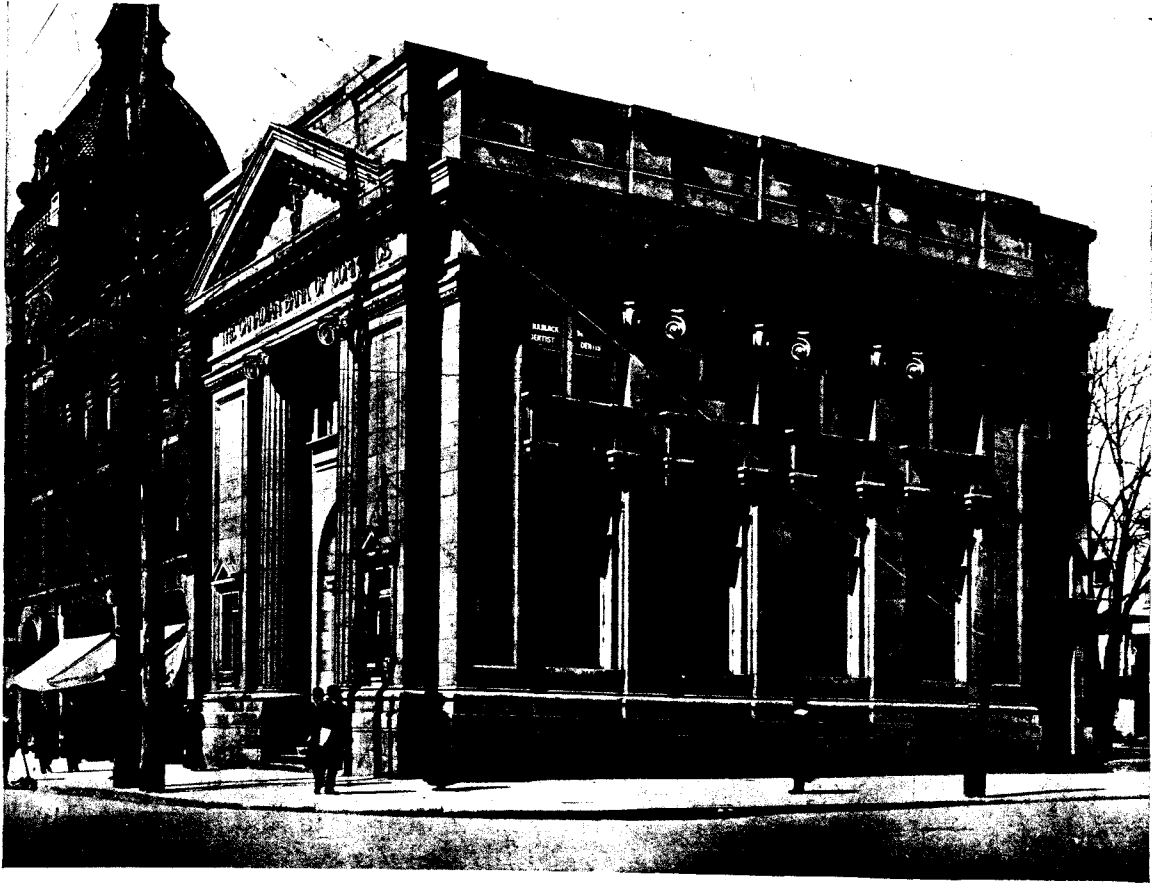
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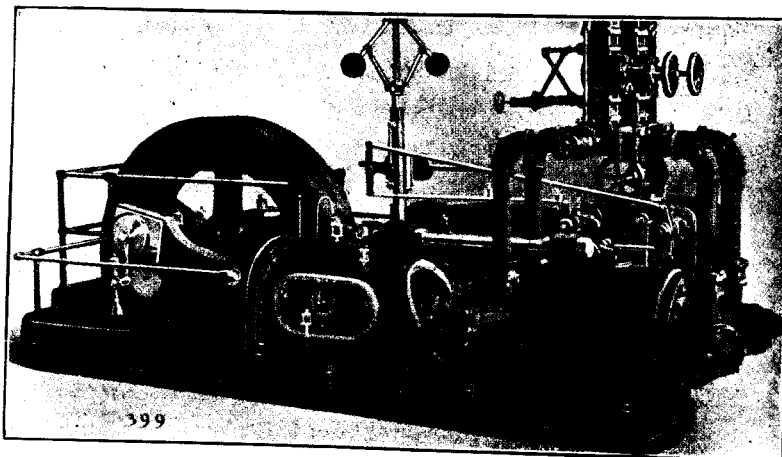
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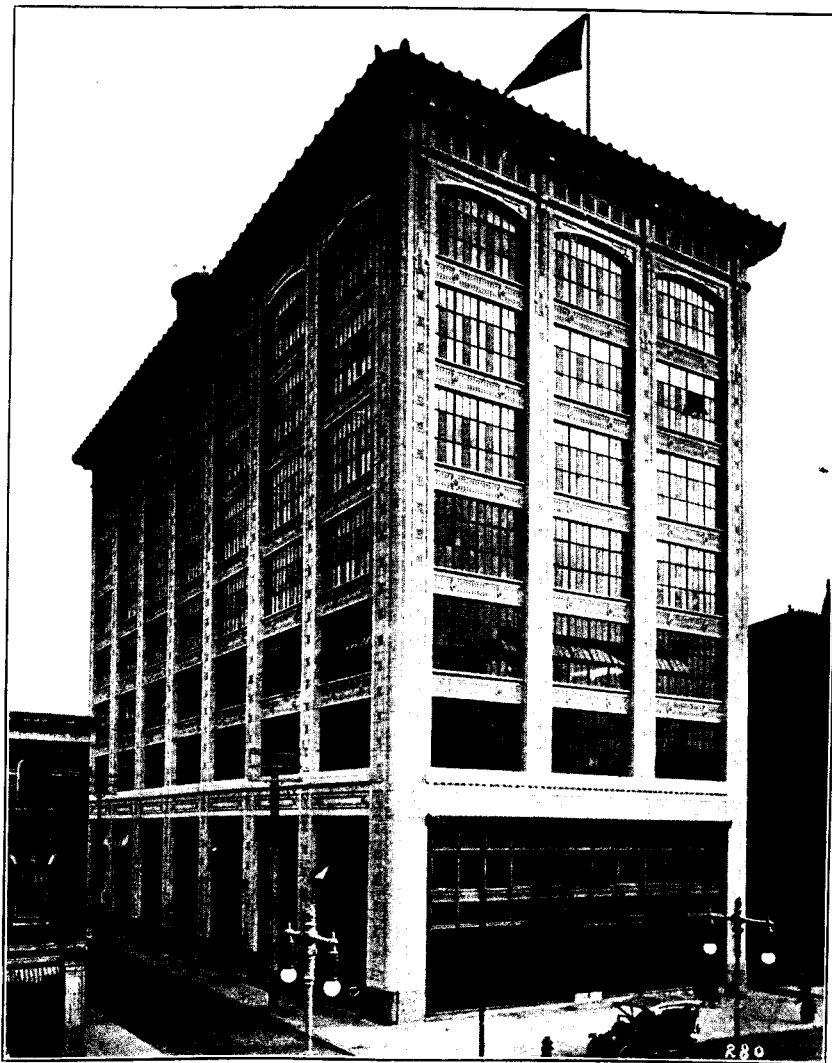
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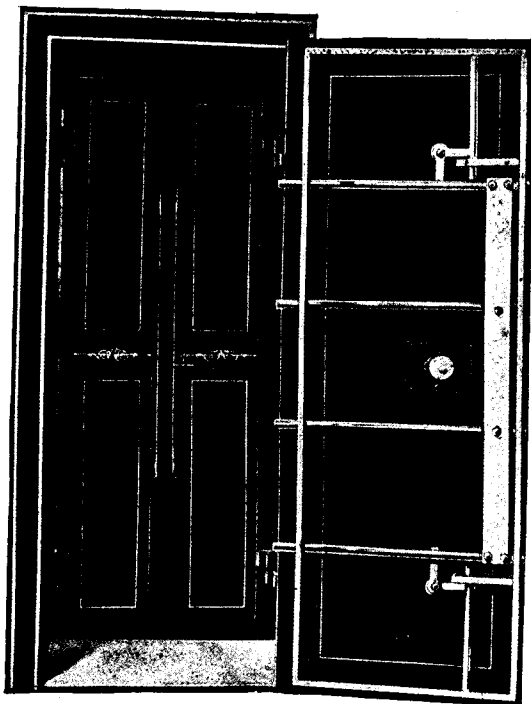
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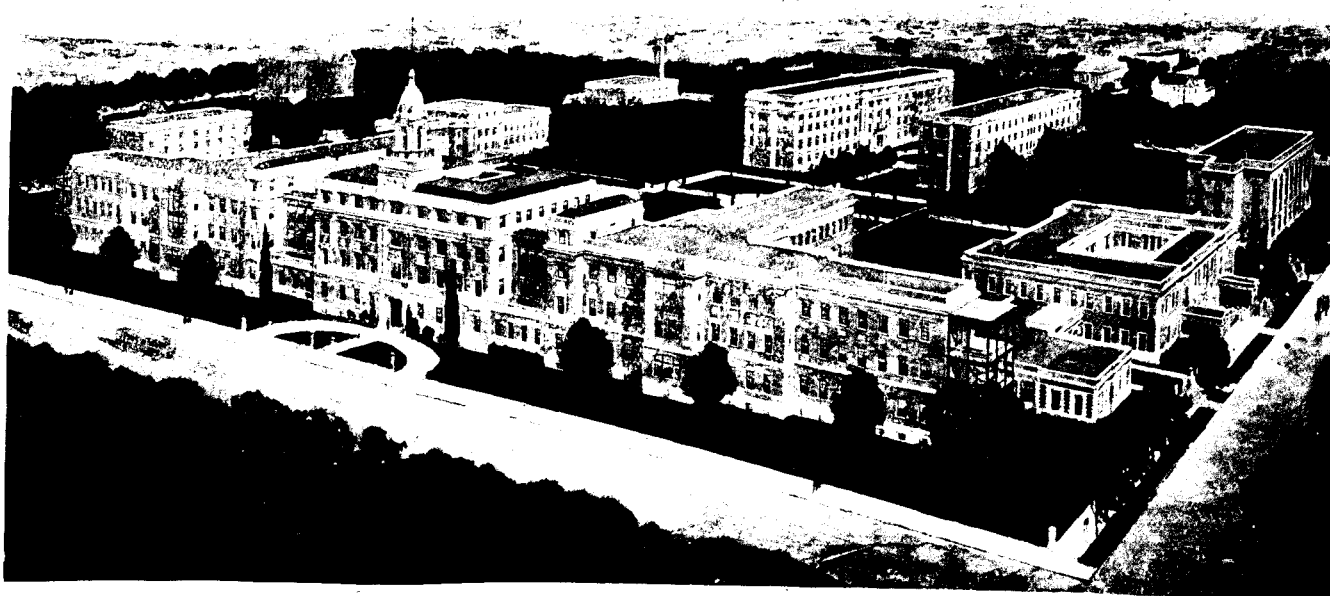
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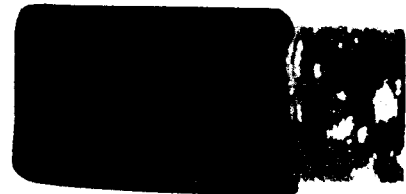
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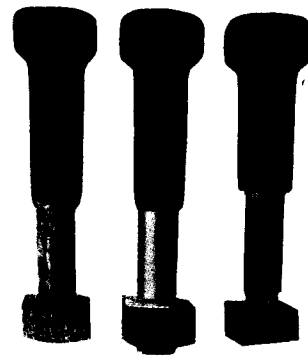
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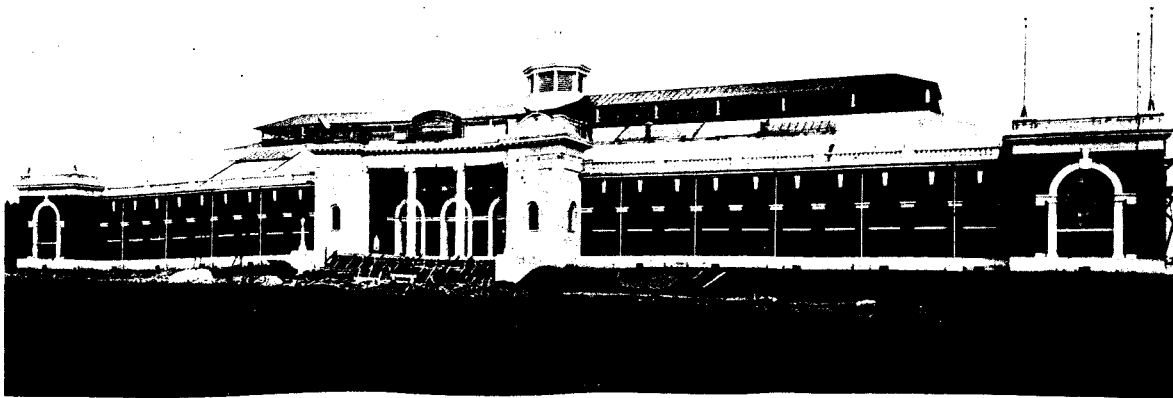
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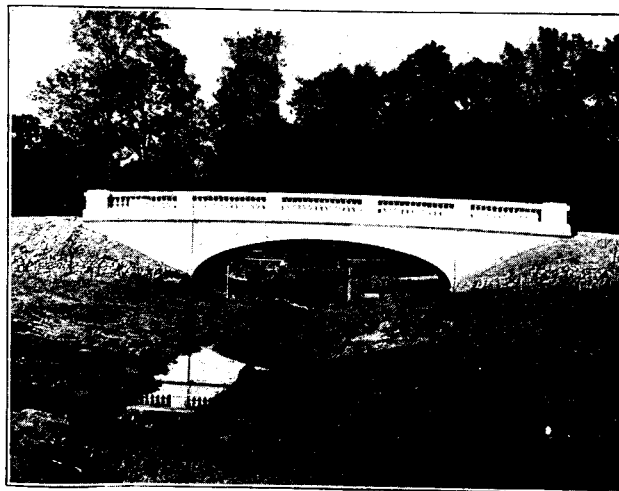
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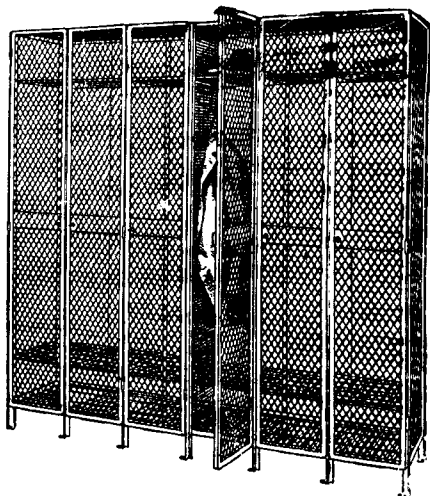


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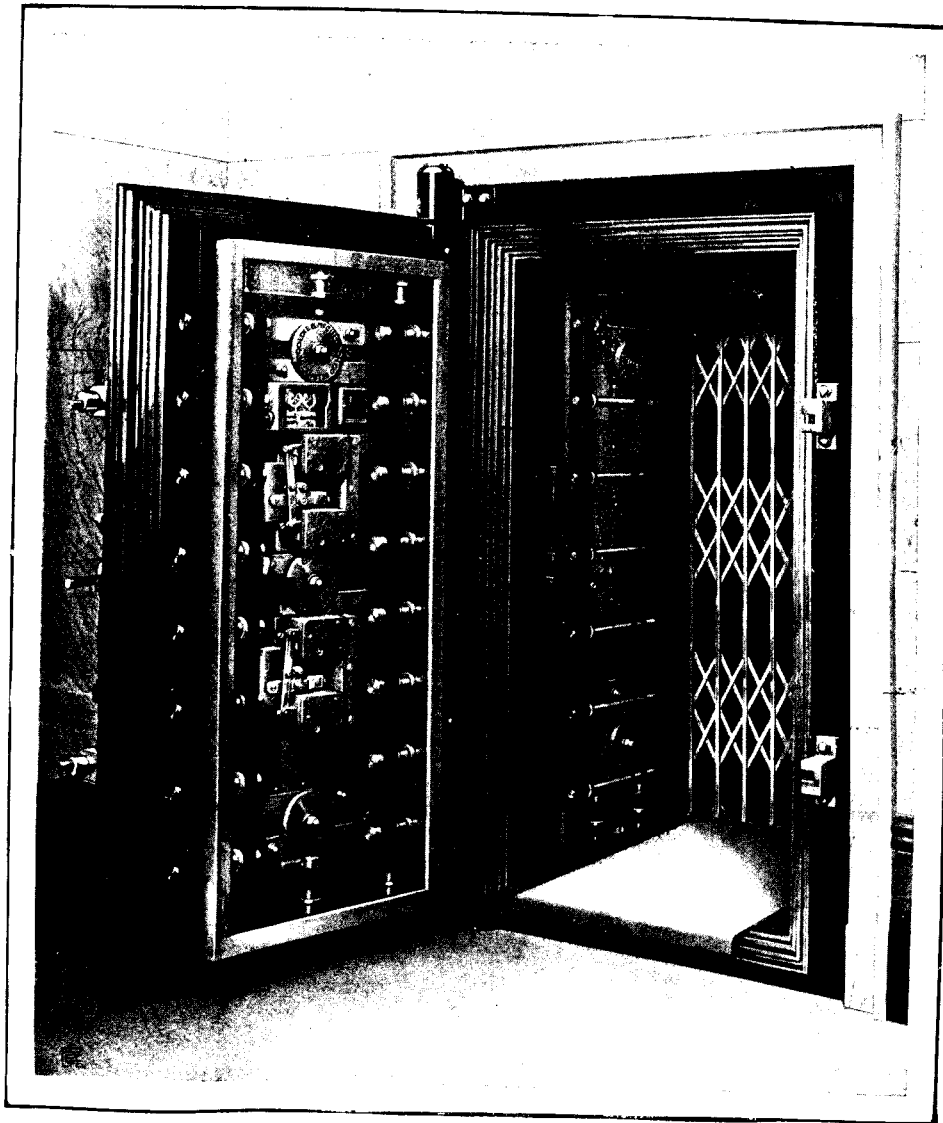


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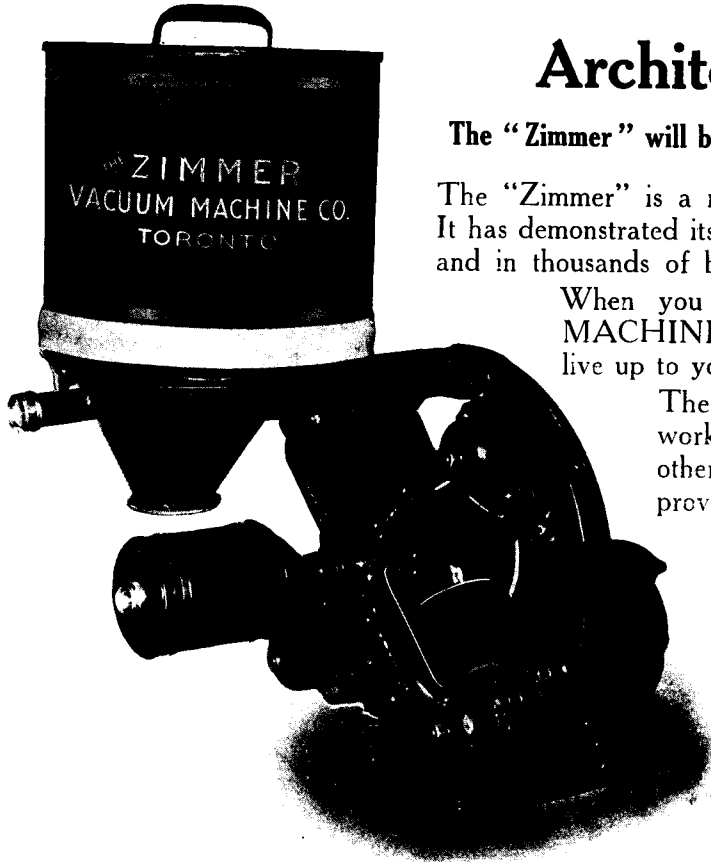
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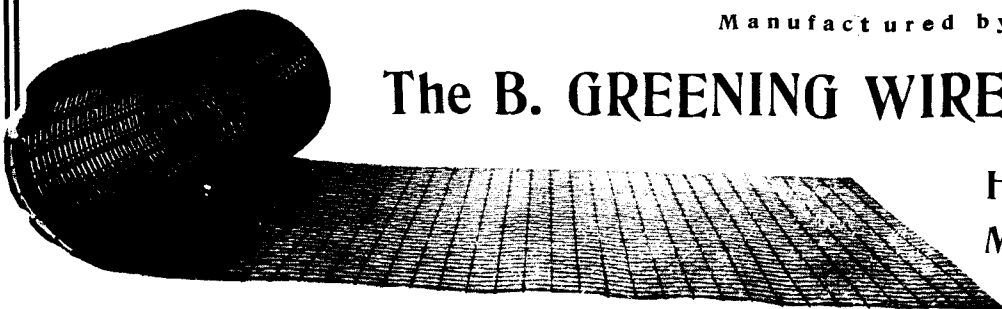
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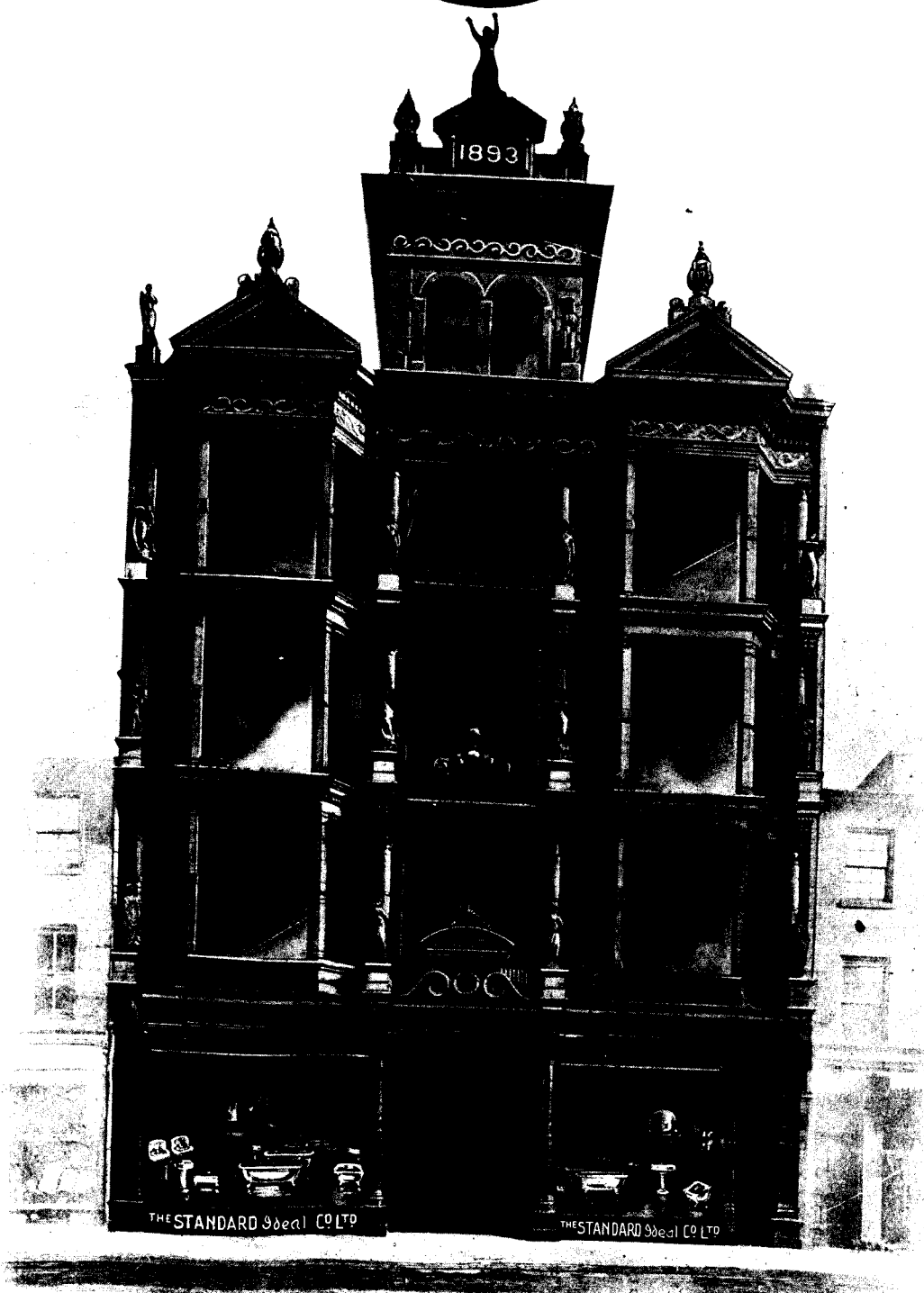
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R. H. Metcalfe's Residence, "Norwood," Winnipeg. William Fingland, Architect. Winder and Bowes, Plumbers. Bailey, Starr and Bird, Contractors.



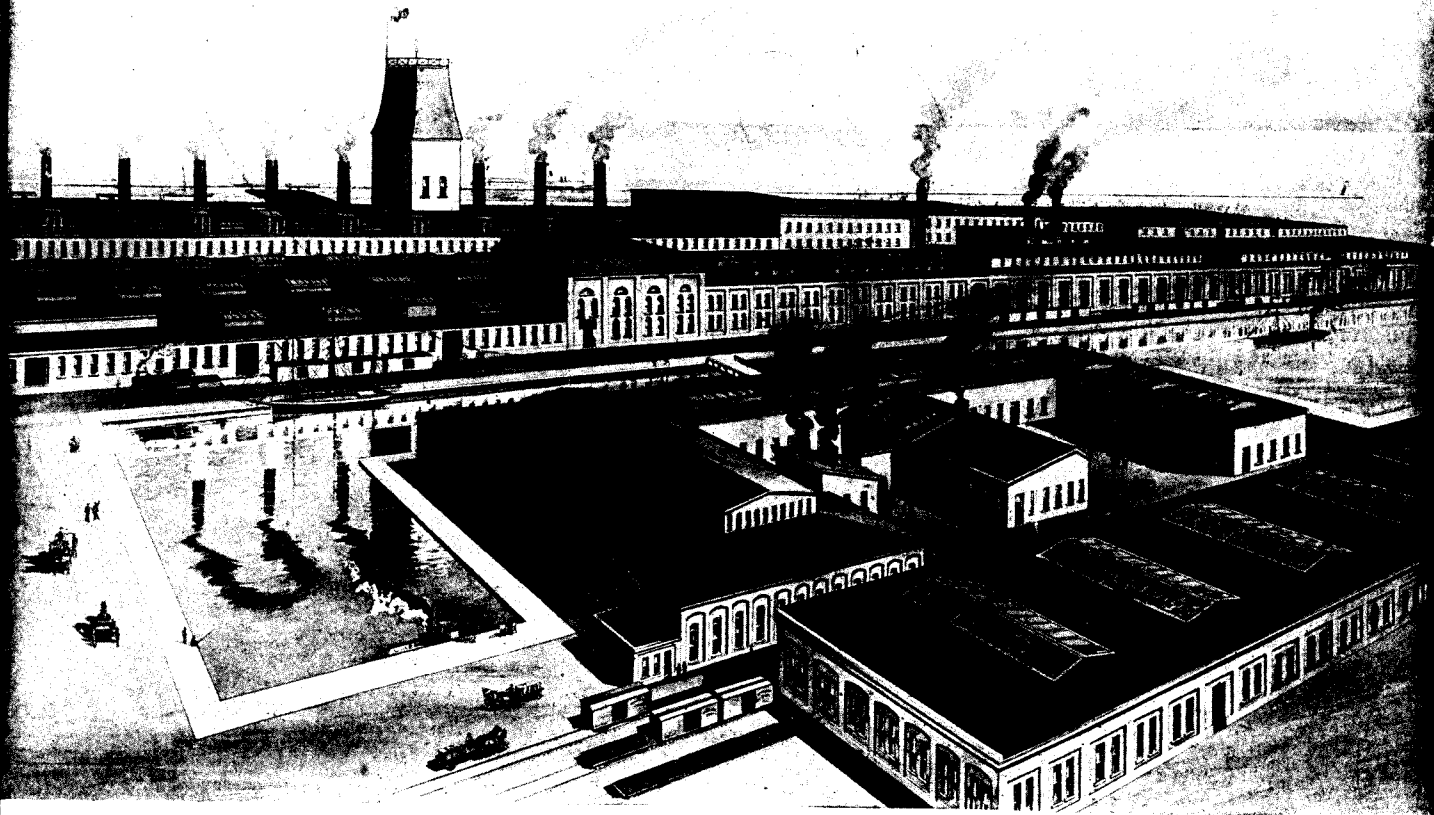
Duplex House, cor. Spence and Broadway, Winnipeg. Dolmer & Bonnette, Contractors. The John Plaxton Co., Limited, Plumbers. Chas. S. Bridgeman, 20 Canada Life Building, Winnipeg, Architect.

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St. Anne's College, Montreal. Messrs. Hutchinson and Wood, Architects.

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ALEXANDRA
WARE

CONSTRUCTION

VOL. V

No. 6

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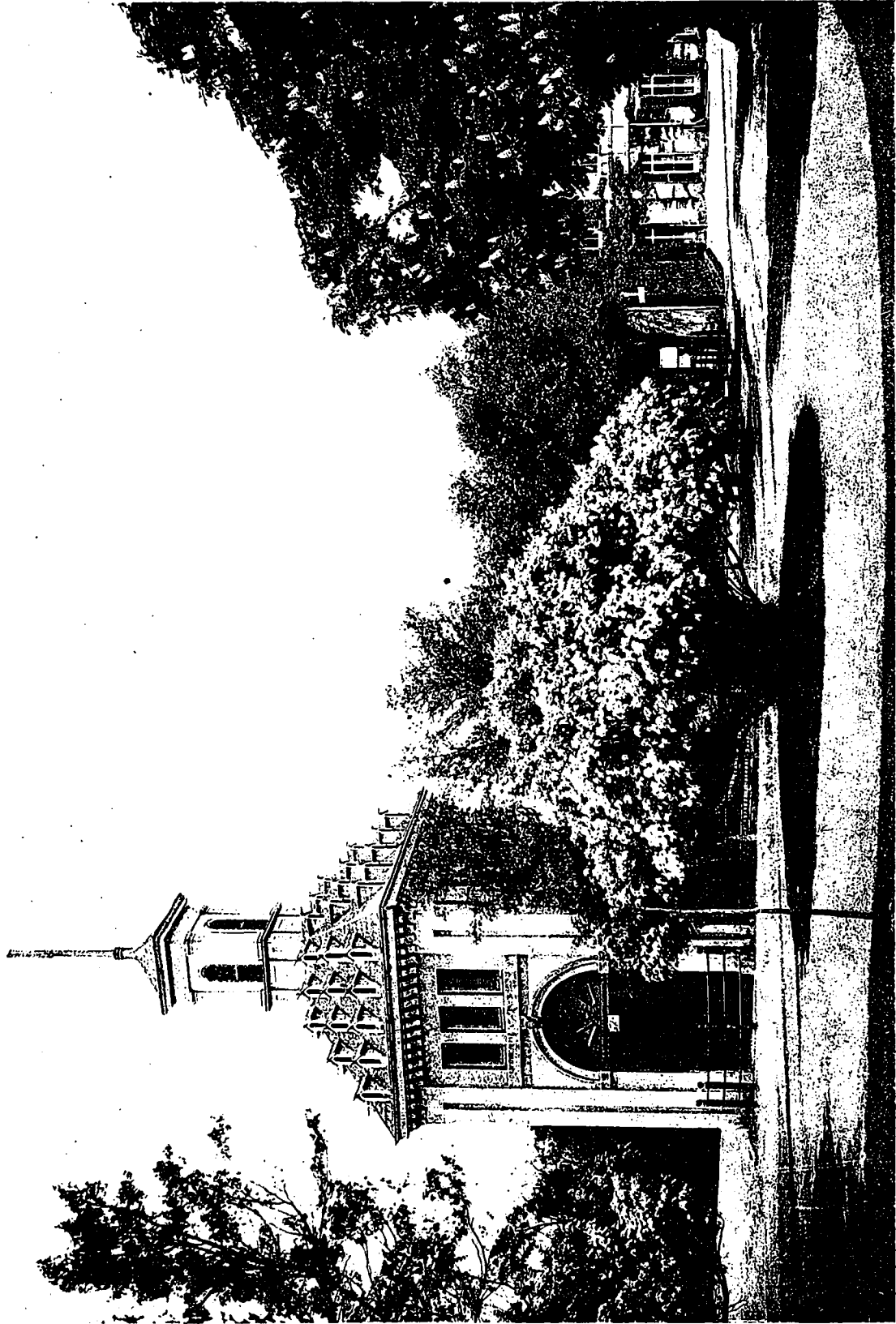
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The Dovecote, at the Dundur, former Residence of Sir Allan MacNabb, at Hamilton, Ontario.

A picturesque composition from the "Old Canadian Architecture" section of the sixth Architectural Exhibition at Toronto which opens in May under the auspices of the Toronto Society of Architects.



Q *Workmen's homes company inaugurated in Toronto with a board of directors headed by the Mayor—His Excellency is patron.*

A S BUSINESS sees the efficacy of imagination and sentiment in attracting the public to the scheme whether it be good or bad, it presents the gilded draperies of art to clothe the skeleton of the financial venture. Thus the "city beautiful" became the catchword for town planning (and well nigh killed it) and now the "garden suburb" becomes the shibboleth for those who would ameliorate the condition of the working man by providing him with a livable home and healthful surroundings. Of course a "garden city" is not a suburb, but an entity, having all the components of a town. The attractive word "garden" does no harm in the case of a suburb as it suggests an arrangement, which should be a law, that there will be space to admit air and what sunshine the climate is blessed with, around each habitation. Though in the guise of philanthropy the garden suburb or city is a business proposition. To the investor who does not need the investment it will relieve the city in which he lives from congestion, which brings in its train every evil that grows out of the close packing of humanity in cities, from disease to crime, and which make his class its peculiar prey. To the real investor it presents a safe, continuous and, though not large, a permanent source of income. Toronto is the latest city in Canada to take up the civic housing scheme and organize a company for carrying it out. It starts with a provisional directory that gives it standing socially and this will attract financially. But no matter what may be the motive, the garden suburb must solve the congestion problem in cities, and the movement in Toronto will solve many other problems, among which a restricted area of street car service is probably the most serious. It cannot expropriate the lands around the city already acquired by real estate speculators, but that condition always adjusts itself through the bubble of speculation bursting and the "man that holds the bag" being a loser through his gambling spirit, and a redistribution taking place upon actual and not speculative values. The garden suburb is not a speculation, but an investment, and as such may attract some of those who believe the fairy tales of

the real estate boom promoter and draw them away from the gambling table of the mile from nowhere croupier to the more reasonable substantiality of a civic suburb that is not backed by an illusion but by a real want filled by a company promoted by the highest and best in the public service.

Q *The universal need for industrial training in schools a demand for an advanced model of high school to meet these requirements.*

A SIDE from design, which in itself should be educational and the best expression of our architectural attainment, as the text-book should rank in literary composition, the high school of the future should contain features that none in Canada, as far as we know, and few in the United States, have attained, to meet the future needs of the youth which represents the next generation. At least one high school of a city that contains three or four hundred thousand inhabitants should be planned on broad lines of practical utility in a mechanical way and in other respects depart from the purely class-room type. As we have said in these columns, the school board should have plenary powers and this "central high school" might properly contain the administrative offices. The best practice would also make an integral part of the school an auditorium that would seat two thousand or over, and a stage, which might also be the gymnasium, that would seat four or five hundred, for group chorus work. This modern school should also contain a lunch room, not in a corner or in a basement, but where upwards of a thousand pupils can find adequate and convenient room for refreshment. As industrial is becoming more necessary than a purely literary education, this school should provide a number of woodworking and other mechanical shops, with adjacent mechanical drafting rooms, for the use of a fair proportion of the pupils, and a like provision for departments for the teaching of domestic science, domestic arts, and applied arts. A complete school would also contain freehand drawing rooms with studio light; a commercial department, a music and lecture room, a library, administration and emergency rooms and the usual laboratory rooms, including one for botany, with an exterior greenhouse laboratory. In all forty

to fifty class rooms and from thirty to one hundred capacity. It will be noted that such a school offers broad opportunities for industrial education, and such must be the school of the future, and any foresighted public policy combined with experienced educators and skilled architects will produce them. The cities that contain such schools, conducted by instructors each selected for his knowledge of the thing as well as the theory, and engaged with a view of obtaining the best, rather than he who will work for the lowest salary, will be more attractive than those that boast of the greatest universities. One or two purely technical schools, like that at Hamilton or Quebec and that proposed for Toronto, excellent as they are or may be, will not fill the requirements of the entire school population of the cities in the line of broader and less theoretical and too often purely literary training.

Vancouver educational officials a retarding factor in city and province in their estimate of architectural service.

THE PROGRESSIVE spirit which is so marked among the people of Vancouver is certainly receiving a setback along educational lines, if the estimate placed upon the value of an architect's services by those in charge of the building of educational institutions is any criterion of the general intelligence of the average citizen. Following the specious programme issued by the Provincial Minister of Education, inviting competition plans for the University, which no architect of standing should enter, the School Board of Vancouver states that by using the plans furnished by the competitors of the city, through the intelligent selection of its members, the necessity of employing an architect will be avoided. All this is the forced conclusion reached in reading the report; that the terms upon which plans are called for cannot be recognized by the architects of the province. As in the case of the Minister of Education, it is probably not ignorance but a desire to give some particular favorite the work which led the board to call for competition plans in eleven days, and refuse to appoint an expert committee to judge of their respective merits. This bumptious position taken by the Vancouver School Board suggests the Siwash Indians' claim to ability in totem pole designing, but it is hoped that the citizens will recognize that a higher grade of intellect should have charge of the designing of educational institutions, and that the time is past when the methods of the Siwash can be pursued in the designing of public buildings, especially when they are for educational purposes, and therefore should represent the art advancement of the people. This Victoria incident shows that too many school boards and like officials in charge of school building construction are as ignorant as some other people in their estimate of architectural design and plan. This, however, is no reason why architects should aid them in perpetuating their ignorance in brick and stone, or even concrete, so that their ignorance may be continued into another generation. The

fixed habit of trying to get something for nothing, which, when obtained, is held at exactly the value placed upon it, is aided by the architect who gratuitously submits plans to be pawed over by the clumsy thumbs of a school board that knows no more about the design than of the art that produced it. Architects have it in their own hands to change the school board or church committee's carpenter—contractor's view of the architect, to the one in which he is a professional man whose advice as expressed in a plan is worth something, and it is not given gratis to be taken or left at the whim of laymen.

The unreliability of figures, when used to exploit a project by interested parties, indicated in the Georgian Bay Canal project.

OF COURSE, CONSTRUCTION has a large and abiding respect for estimates of cost, a scientific appraisal of probable conditions, and belief in the approximate accuracy of the engineer's report upon the probable cost of a projected work. But CONSTRUCTION knows that the estimate of an engineer is but an estimate of unknown conditions in which changes in method and circumstances usually continue to augment the cost, even when no extras enter into the computation. Then the estimator, who wishes to see the work taken up, will often make his estimate as low as possible, ignoring the "factor of safety," which he is careful to include in all actual construction. This refers directly to the contention of the Canadian Federation of Boards of Trade and Municipalities, which takes exception to CONSTRUCTION'S remark made some time since that "the Georgian Bay canal would ultimately cost as much as that at Panama." CONSTRUCTION has no engineer's estimate, but knows the hundred and fifty odd miles of granite that must be ploughed through; the difficulty of securing the necessary depth over the height of land beyond Lake Nipissing; that the only canal that would be worth while, that would be adequate for the largest freighters on the Great Lakes, must have a greater depth than the twenty-two feet, mentioned in this engineer's report. The average freighter draws that now. The report is entirely misleading in almost every other particular. The French River is not a river except for canoes above the first dam twelve miles from its mouth. Lake Nipissing, the only real lake on the proposed route, is not "navigable" in the sense of being free from obstructions for large lake freighters its entire length; and the mere depth of water in the smaller lakes, which is assumed to be adequate, does not mean that no canal work would be there required. In fact, nothing can lie-like figures, and the casual reader sees in the report so evident an intention to make as good a case as possible, relying on the attitude assumed that "these are figures, and we defy anyone to object to them who cannot produce a rival report through an equally accurate system of measurement, survey and calculation, from equally competent engineers," to carry off the assertion that one hundred million dollars will more than cover the expenses of an adequate canal of four hundred and forty miles in length, the first half of which will

be largely through or skirting granite ridges. The Panama Canal was estimated by engineers before the work was commenced. In a year or so the final cost will be known. The reliability of such figures and facts as presented in that report will then become operative, though in the one case, the figures were for actual operation, while in the other the computation was for the purpose of urging the Dominion Government into an immense expenditure. The people urging the construction of the Georgian Bay Canal are in the neighborhood of the route. The people that would be legitimately benefited are in Alberta, Saskatchewan, and the Peace River Valley. It is strange that they, however, are interested in the Panama Canal, which gives an all the year round outlet. CONSTRUCTION, however, does not take up the economic side of the question, except to indicate that the "figures and facts" of the report in question is no more reliable than the off-hand estimates of cost which was made only as an indication of the folly of agitating the question of entering into so expensive a project when the whole Dominion is crying out for relief in harbors, roads and other physical needs that are as immediate as they are vitally necessary. When adequate public buildings and wharfs are built in the cities, macadamized roads and electric road connections are built in the provinces it will be time enough for Canada to think of such expenditures as are contemplated in the Georgian Bay Canal project which is urged as a

ship canal, but in reality aims at developing of water power.

Q *The refusal of the Government to give cities rights to control its physical affairs a move in the direction of municipal home rule.*

WHILE the Ontario Government helped on the propaganda in favor of home rule for cities by denying the right of the city to expropriate property under certain conditions, to compel the burying of wires, and other requests of a purely civic nature, it granted one request that is potentially more valuable than any of the others. This was that hereafter the prevention and control of the location and erection of garages and apartment houses lies within the hands of the corporation, enabling the city to prevent their indiscriminate construction in residential districts. It is a step in the direction of that control that must exist before any city can make those physical improvements that must exist before any city can begin to call itself livable. It is a long way from the appointment of an expert commission in whose hands design will receive the same close scrutiny as the city architect is supposed to give to the constructive plans that the building ordinances place before him. But this is the other end of the road that this restriction of the assertive and too often incongruous constructions of the speculative or selfish builder, leads to.

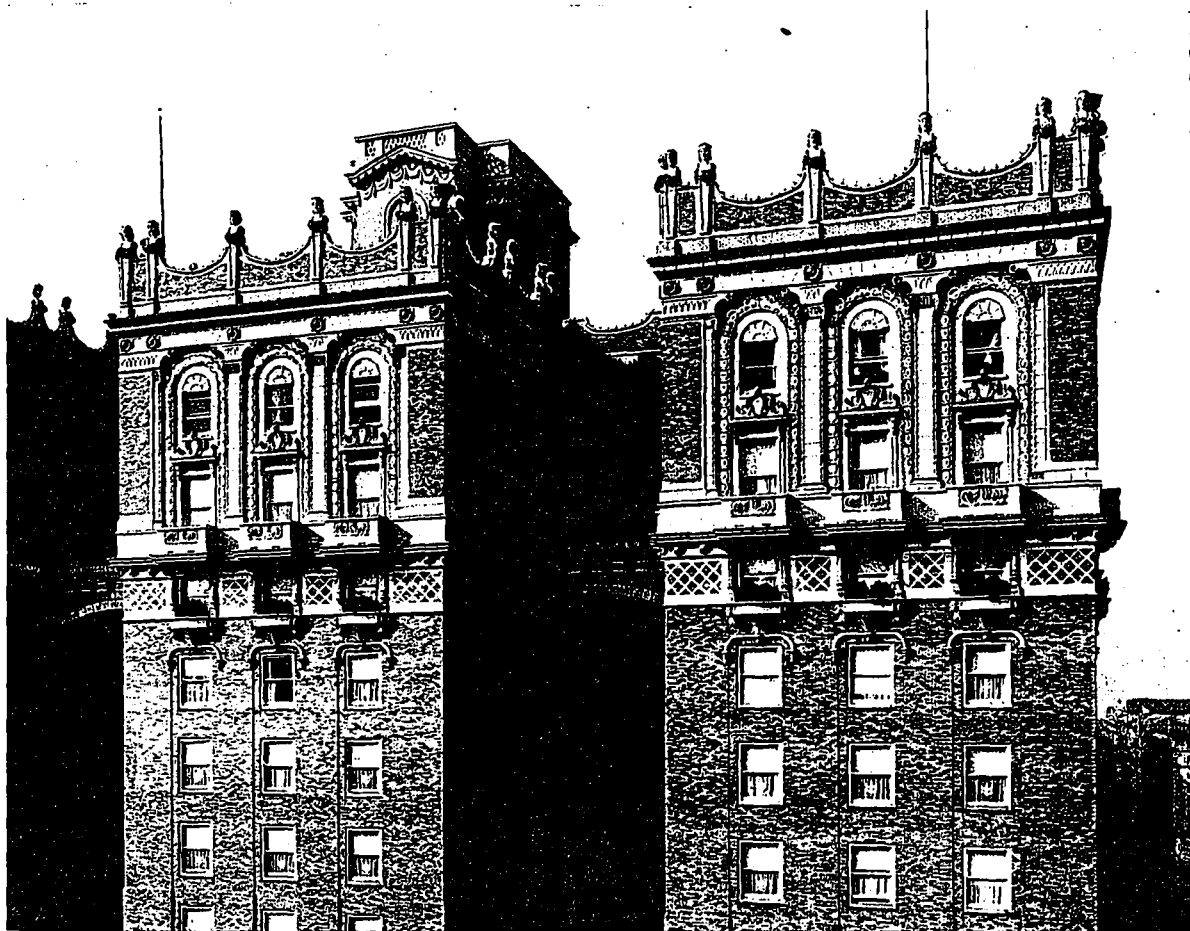


Ivan Sinclair Macdonald.

Ivan S. Macdonald, former Editor and Manager of Construction, died on April 9th, 1912, at Gravenhurst, Ontario. Although still a very young man, being only thirty at the time of his death, Mr. Macdonald had already won a reputation among the editors of Canadian trade journals as a man of unusual executive ability and business enterprise. The establishment of such a publication as Construction on a sound editorial and financial basis, is a task which demands unusual ability, inasmuch as the man who has charge of such a publication must possess a high measure of journalistic skill and experience in addition to a thorough knowledge of trade conditions, unusual administrative gifts, and especially the ability to "get business." The success of Construction is the best evidence of the degree in which the late Mr. Macdonald possessed these qualities. His journalistic experience was begun in Toronto, where he was engaged for some time on the local press. His interest in architecture and the building trades led to his going to Milwaukee to take charge of The Western Builder. It was from that paper that he returned to Toronto to the editorship of Construction. Almost immediately the new publication won the approval and patronage of architects and contractors, and the interest of the subjects dealt with and the beauty of the illustrations gave it a circulation and influence among the general public such as is seldom enjoyed by a trade publication. In attaining this happy result Mr. Macdonald's vigorous editorial policy and unremitting efforts for good architecture and good construction were important factors. Ill health caused Mr. Macdonald to withdraw from the management of Construction about six months ago. Tuberculosis developed following an attack of pneumonia, and though he went to the Rockies and also to the Highlands of Ontario, the disease developed rapidly. His death is a distinct personal loss to those who were associated with him in business, and Canadian trade journalism is deprived of one of its cleverest and most promising editors.



Dining Room in the Vanderbilt Hotel, New York. Warren & Wetmore, Architects.



Detail of Roof Treatment of the Vanderbilt Hotel, New York. Warren & Wetmore, Architects.

LATEST IN NEW YORK HOTEL DESIGN

The change from the ornate and sumptuous to harmonious simplicity the most marked characteristic in New York hotel design as illustrated by the Vanderbilt Hotel, by Warren & Wetmore, Architects.

EACH new hotel built in New York has tried to introduce some novel feature which should be characteristic of the building and which would act as a sort of trademark. In practically every one built up to the present time this endeavor has taken the form of added richness, and perhaps in no palace of the old world has been such profusion of costly marbles, such intricate and wonderful carving and such a wealth of gold leaf used as in some of the later hotels. The Vanderbilt Hotel, Warren and Wetmore, architects, has tried to present a novelty in really a novel way, not by terrific expense, but rather by using simple materials in an artistic manner and by combining them into color schemes of such attractiveness that the onlooker sees only the excellence of the scheme and does not for

a moment consider the cost. The style chosen, too, is a reversion to simplicity after the exuberant magnificence of the styles of Louis XIV. and XV., in which most of our big buildings have been treated, and to find the simple elegance of the late English Renaissance used comes as a refreshing surprise. Not less astonishing is to see the marbles and granites of the other hotels replaced by a material so simple and common as terra cotta. But the general public seems to be discovering what the architects knew long ago, that the materials used are secondary and that it is the intelligence with which they are used that counts.

The exterior has long been watched with curiosity and, it must be confessed, with some apprehension by the local profession. It did not seem possible



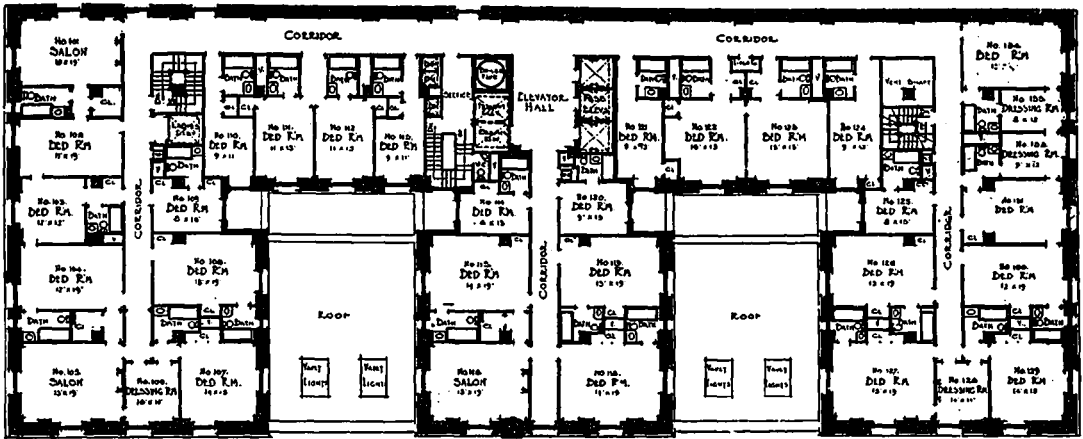
The Vanderbilt Hotel, New York. Warren & Wetmore, Architects. View from South.



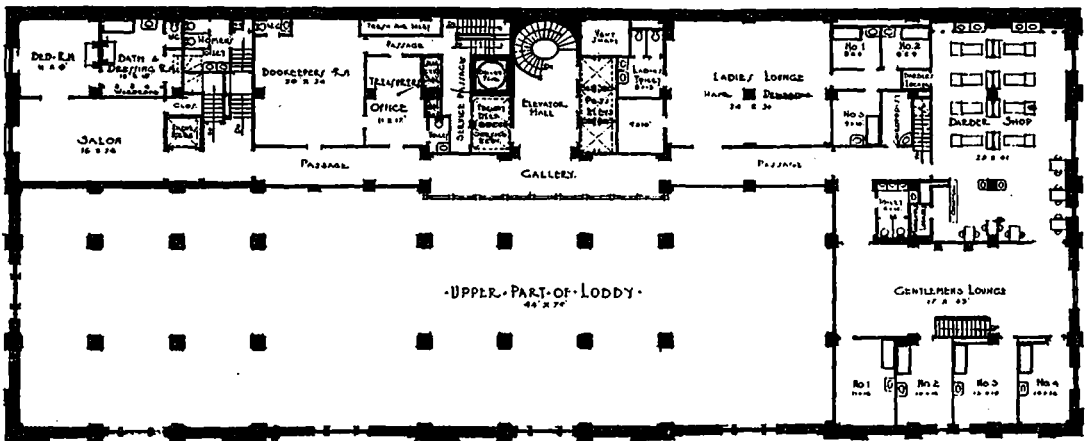
The Vanderbilt Hotel, New York. Warren & Wetmore, Architects. View from North.



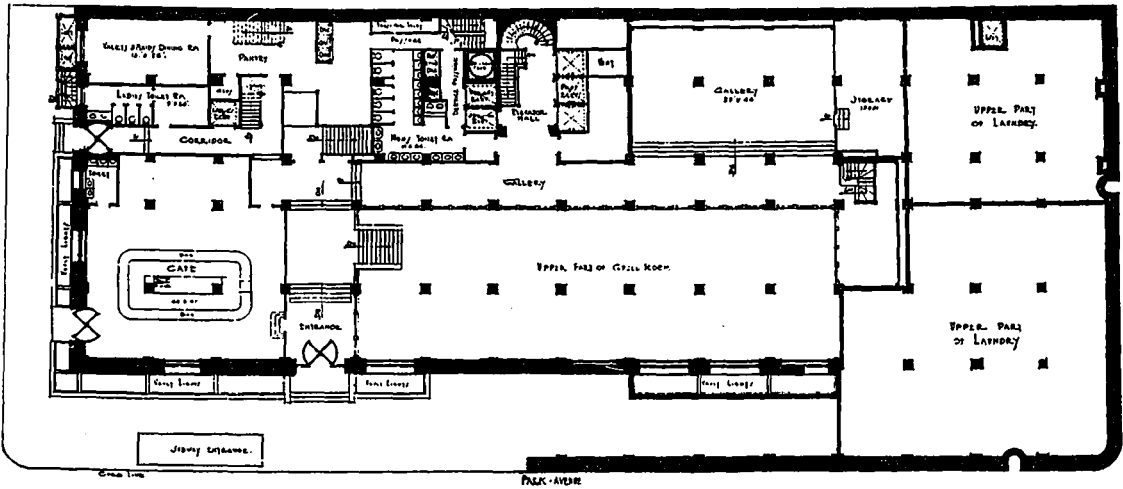
Lobby in Vanderbilt Hotel, New York. Warren & Wetmore, Architects.



Typical Floor Plan.



First Floor or Mezzanine.



Cafe and Grill Room Floor.

Plans of Vanderbilt Hotel, New York. Warren & Wetmore, Architects.

that the dull gray brick chosen for the main body of the building could ever appear sufficiently cheerful and comfortable for a hotel exterior. Now, however, the white window trim, the warm ivory of the terra cotta, and, best of all, the gold colored lanterns and other metal work, have made the exterior gay and bright without being gaudy or overdone; although with the darkening of the whole color scheme, inevitable under the action of the elements, the original objection will obtain.

The treatment of the architecture of the exterior is perhaps the most interesting of any hotel in that city, although whether it is universally admired or not is another question. The roof line is somewhat broken and uneasy, perhaps no more than is needed to differentiate it from the excessively dull silhouettes of the mansard roof style, such as Rector's and the Astor. But the superb treatment of the lower two stories more than atones for the roof. The scale is kept very small, as is essential in a building to be seen from the street, and a simple and well designed cornice of a neo-Adam style crowns the lower stories. The windows have wonderful terra cotta fan-shaped plaques above them and at the centre of the Park Avenue side an interesting marquise of unique pattern covers the entrance. The plan of the interior is as unique as is the exterior treatment. Across practically the whole front of the building is carried a single great room, the walls and columns covered with artificial Caen stone. The ceiling is carried on square piers from which spring elliptical arches, fitted in between with groined vaults.

But it is the wonderful color scheme which makes this room, architecturally not extraordinary, one of the most delightful and reposeful places in New York. The walls are of a warm buff, the trim of ivory white picked out with touches of gold, the curtains of a wonderful blue shot through with dull gold, and the floor of purplish red Numidian marble. Three wonderful cut glass chandeliers complete the room.

The cafe at the end of the big room is differently treated, with Chinese chippendale furniture and a touch of the East in all its appointments. There the color is darker and quieter with a floor of black mosaic inlaid with brass. Access from the first floor to the main dining room in the basement is neither as ample or as convenient as might be expected—but the room is worth going to. It is really as long as the one above, and is wider, extending out under the sidewalk. The color scheme is again blue and ivory, this time the blue being dominant, and the ceiling is of low crowned vaults executed in a rich blue terra cotta; the ribs and groins of the vaults are parti-colored and the railing of the gallery around three sides of the room is a sort of rope railing of blue and yellow silk cord. They call it the Della Robbia room, and with good reason.

Certain of the bedroom suites were executed by the architects, and these are most beautifully managed, and in every particular throughout this hotel the same rich simplicity is found that marks the more public rooms, and is carried out in perfect harmony with use and proportion.

THE HOUSING OF THE WORKING CLASSES

An address delivered before the Ottawa Chapter of the Ontario Association of Architects, February 3rd, 1912, by Major Lorne Drum, M.D., D.P.H., of the Permanent Army Medical Corps.

PUBLIC HEALTH is a subject of interest to every dweller in a civilized community, but the technical work that underlies all public health development must largely be done by the members of the professions of architecture, engineering and medicine. Each has its own sphere. The medical profession lays down the requirements necessary for health, but it is helpless unless the engineers and architects enter into their ideas and produce in their work results that will meet their requirements. In the army of public health these professions are important and interdependent branches.

The first and general object for which they should all strive is the public health. The architect may achieve a beautiful house, a convenient dwelling, or a money-making sky-scraper, but unless he has first in each case achieved a building healthy for its occupants he has failed in what should be his highest aim. The house and the body are each health units, and the study of the house healthy is as important to the architect as personal hygiene is to the medical man. It is a most important subject and like the body healthy, lies at the foundation of all public health work. Yet, important as it is, its achievement marks but an elementary step in the work of public health, for the individual house, like the individual body in civilized communities, is dependent for the maintenance of its efficiency on its surroundings. The higher work for the architect consists in so grouping these architectural units that none may be harmful to the occupants of the others, and that the organized whole, as exemplified in the town, may afford every facility for the maintenance of the health of the population. This is the work of the town planner. We hear much about the town beautiful as an object in town planning, and so it is. So also are the provision of transport facilities, and many other desirable things. But the main object of rational town planning is to achieve the town healthy. I really cannot put this matter too strongly; and when I consider how much this planning is in the hands of the profession of architects, I realize how much we depend on you, gentlemen, for the very future of our race.

This brings me to the special subject along these lines on which I wish to address you to-day, the housing of the working classes. The working classes form the majority of the population of a community, and the problem of its proper housing is the vital question underlying the population's health. No amount of effort will eradicate consumption and other infectious diseases, nor prevent physical and moral degeneration among town dwellers, unless the housing question is attended to first and foremost.

The hooligan of the Old Country is the product of the slum. Proper housing consists in the eradication of the slum, and of the provision of new and healthy homes for the dispossessed slum-dwellers, in order that they may not, by force of necessity, start up slums in fresh places.

We see slums growing in all our large towns owing to inadequate housing conditions for our rapidly increasing populations. We in Canada to-day are much in the same condition as were the Germans after the close of the Franco-Prussian war. A great industrial boom had set in. Factories sprang up everywhere and small towns grew rapidly into large cities. In the rush to accommodate these increased populations too little thought was expended on the way this could be best done. The result was that old and faulty models were followed in new and expensive erections that will take years and enormous expenditure to rectify. We want to avoid such costly mistakes in Canada. The question before us, therefore, is, what is the best method of housing our industrial populations? It is a question largely for you architects to solve. The elimination of large slum areas is fortunately still a minor question in Canada. With us it is still not so much a question of re-housing as of housing. We are where Germany was forty years ago, and it is for us to see that the models followed are not faulty. We are at the start. On what lines should we proceed; on what models should we build?

It is a big subject. Last summer I visited, with the medical adviser of the Conservation Commission, Dr. Hodgetts, several European countries to see what was being done in these matters. Various conditions and various methods were met with as we journeyed, not only from country to country, but even from town to town. Before long I began to form a rough scale in my mind by means of which I could compare the work being done in each place we visited. It seemed to me that when European towns began to realize the necessity for the public weal of looking after the dispossessed slum dweller by re-housing, and of housing the large additions due to industrial activities, they considered that the only object was to provide lodgements in which people could live with modern sanitary arrangements conveniently arranged, without any consideration to air and light. It was simply a matter of piling up as many habitations, one on top of the other, as could be crowded on to one piece of land. The high tenement building surrounding a court and closed in on all sides was the outcome, and marks the first stage of modern sanitary housing, such as it is, for the working classes. It was a decided improvement on the dreadful high tenements and wretched hovels that existed previously, as these new buildings at least were built of good material and were provided with good plumbing. But the stale air and lack of direct sunlight from the courtyards rendered them little better than packing houses for humanity. This is the model still largely reproduced—and in costly material—on the Continent.

A decided advance was made when in many places the courtyard form of building was abandoned and large tenements were erected in rows with streets or open spaces between them. But these were—and are—still unsatisfactory. Unlike the apartment house of the better classes, these tenements have no elevators. The distance to the ground from the upper storeys keeps the smaller children from going out. If they do, their mothers cannot keep them under surveillance. It is safer to keep them pent up! Besides in these tenements, as in the courtyard model, many of the lodgings are nothing but back-to-back houses with no thorough ventilation. The result is that very often the old and easily recognized slum conditions which these buildings were erected to replace, are reproduced in their upper and less accessible storeys. Slums disguised, but still slums! Such tenements are to be found in thousands in the British isles and may be said to mark the second step in the scale. But a growing sentiment of late is to be noted against them. This sentiment was specially marked in Birmingham. That city is abandoning the high tenement and instead is endeavoring to solve the housing problem by erecting small houses, each house a separate home. Wherever old congested districts are condemned, a percentage of the dispossessed population is re-housed, when possible, in small houses rebuilt in the old district, and the rest are provided for in small houses in specially selected outlying districts of the city, within easy reach of the industrial centres by means of tramways. These suburbs are not allowed to grow up haphazard as they are with us and become shanty towns. They are carefully planned with a view to prevent congestion and to provide healthy environments. They are garden suburbs, and may be seen not only around Birmingham, but around many of the larger towns of the British Isles, and at some places on the Continent, notably at Essen and Ulm. In some cases this idea had extended to a garden city. Notable examples of this development are to be seen in Letchworth and Bourneville. Here we have the factory brought to the people. Heretofore the problem was how to bring dispossessed slum dwellers back to the factory. The cheap modern tram has solved this in most cities, but not in a satisfactory way. It is true that a great advance is made when congested slum districts surrounding a city's factory area are cleared out and the population moved to properly laid out suburbs, connected with the factories by a tram-line. But the distance to and from is often too far for the worker to return home to his midday meal. This disadvantage is obviated in the garden city. Here the factory areas are surrounded by districts laid out as garden suburbs, so that each worker has a house of his own in healthy surroundings, and yet within walking distance of his work.

This may be said to mark the last stage of development in the solving of the housing problem in the older lands, and demands our careful consideration and study when formulating any plans for ourselves. Let us profit by their experiences and avoid their mistakes.



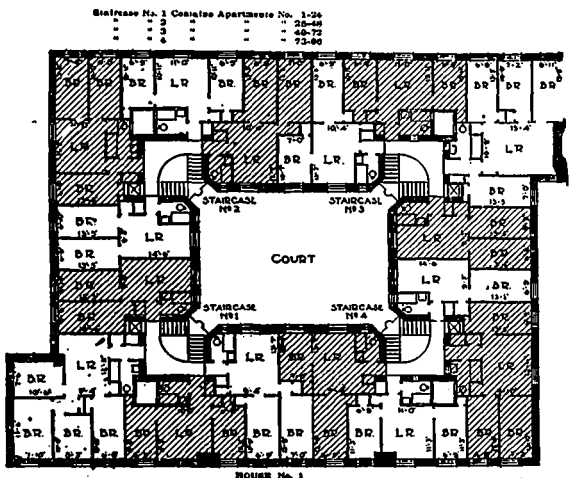
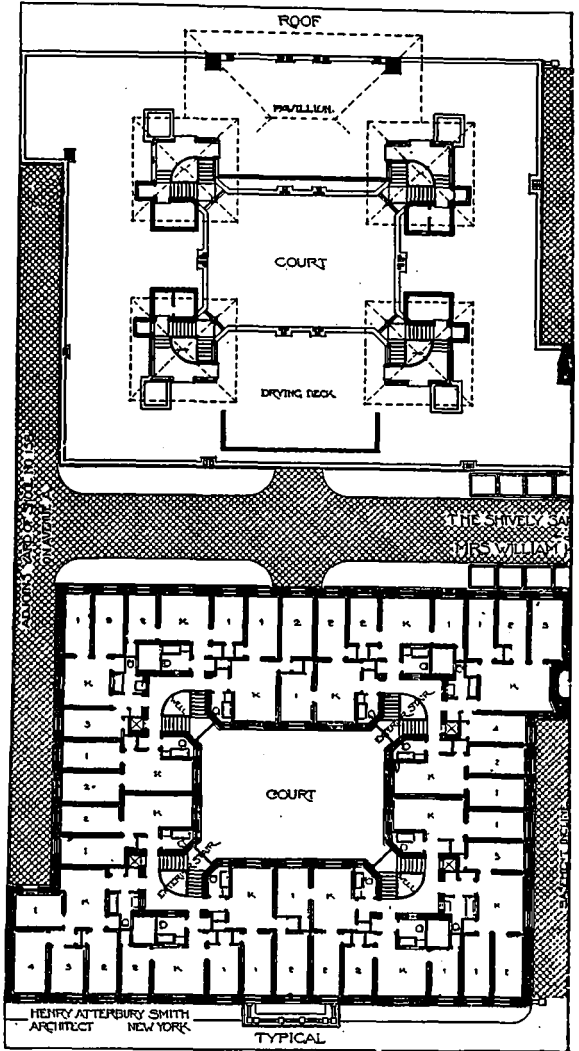
NEW YORK
TENEMENT
HOUSE

Hygienic and economic features of the East River Homes Foundation at New York, designed by Henry Atterbury Smith, Architect. By Henry L. Shirley, M.D.

IN ANY improved multiple dwelling project in New York the first and most serious obstacle encountered is the vicious limitation of the ordinary twenty or thirty-five foot city lot, which is responsible for so many of the tenement ills from which our population suffers. It is physically and economically impossible to provide adequate light and air and sufficient courts, or to properly utilize the roof spaces on a city plot less than a hundred feet square. For the purpose of Mrs. Vanderbilt's foundation there was fortunately found an eligible site comprising eighteen city lots, or considerably more than four times this minimum area. This site, in East Seventy-seventh and Seventy-eighth streets, adjoining the John Jay Park and commanding a fine view of the islands and waterfront of the East River, with its ever-changing panorama of steamers and sailing craft, is in all respects ideal for the purpose, having unobstructed air and light from all directions, permitting street facades with balconies on three sides, and on the fourth, to the west, adjoining the open playground of a public school. Other advantages of the site are in the character of the neighborhood, where advanced social reforms in other directions are being worked out. To the north and south are blocks of model tenements; nearby are the Junior League Club House for working girls, the East Side Settlement House, a Carnegie Library, a public school and a municipal bath house.

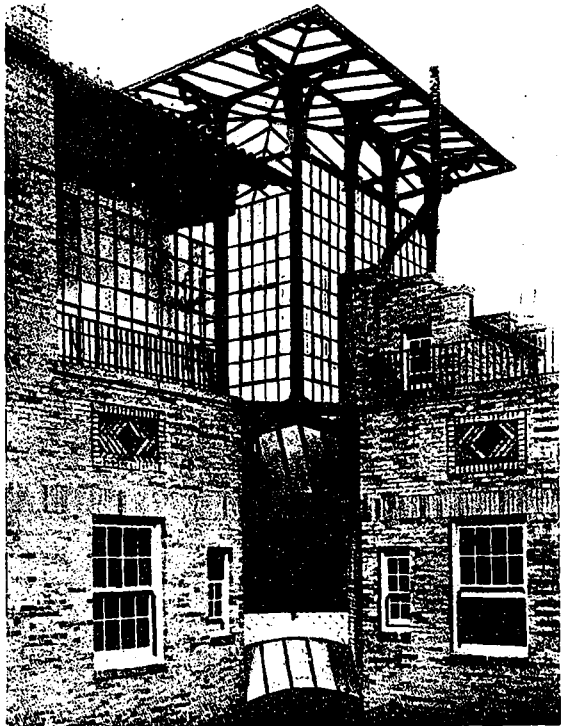
As completed and now ready for occupancy the East River Homes are four large fireproof buildings, which will house three hundred and eighty-three families in suites of from two to five rooms. There are seventy-five suites of two rooms, two hundred and twelve of three rooms, sixty of four rooms and thirty-six of five rooms. There are ample courts for air and light, to which access is had through pas-aways extending from street to street, designed after the Durchhauser of German and Austrian cities. These open passages insure a free circulation of air in all the courts. Outside staircases in each of the four corners of the large interior courts afford separate entrance to each suite of rooms, thus securing greater privacy and quiet for the tenant and eliminating entirely the dark, ill-ventilated, disease-breeding interior hall and staircase, which are such abominations in the ordinary city tenement. These open stairs are provided with safety treads set in concrete, the steps are graduated in an easy pitch comfortable to ascend, and are protected from rain and snow by louvres of wire glass projecting from each story. The recesses in the angles of the courts, in which the stairways are built are lined with white glazed tile and the vaulted arches are of Guastavino

construction. At each turn of the stair a seat is let in the iron railing to provide a resting place for children and invalids. It is very noticeable, however, that these stairs in the pure, fresh air are far less fatiguing to ascend than the ordinary, stuffy, interior staircase. The idea is new only in its application to housing for tuberculosis families, for the open



Typical and roof floor plans of East River Homes.

stair is a feature of domestic architecture long familiar in cities of Southern Europe. The Minelli-Contarini Palace, in Venice, built in the fifteenth century, has a beautiful outside staircase, and also the well-known Chateau de Blois, in France, has an ornate open stair, which constitutes one of its con-



Detail of louvre and skylight roof of stairway, East River Homes.

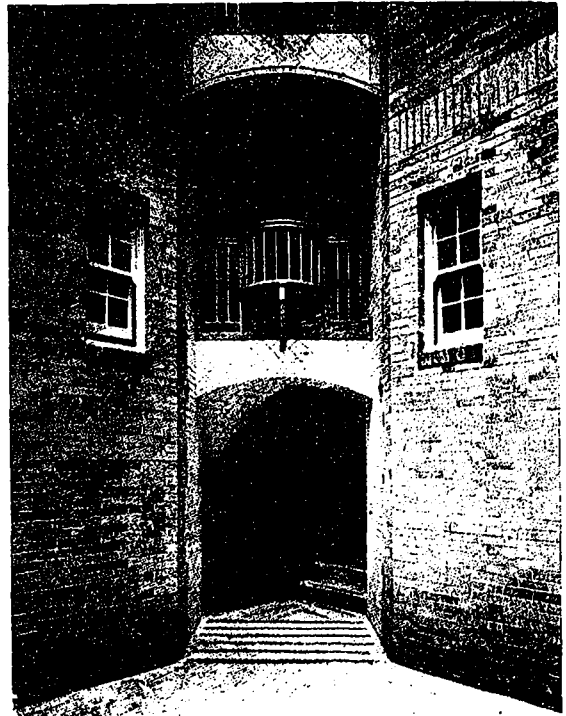
spicuous architectural beauties. Thirty years ago Mr. Alfred T. White used the open stair in a modified form in the model tenements built by him in Brooklyn. The construction is indeed an old one, has been well tried out, and is thoroughly practical. It is believed that in the almost subtropical climate of New York City, for eight or nine months of the year, the open stair is peculiarly suitable. As utilized in the East River Homes a larger number of staircases than is usual have been necessary, and it is probably too costly a design to permit of its general adoption in commercially planned flats and tenements to produce a high rate of income. For the purpose of this foundation, however, to preserve the privacy of each suite of rooms as a unit, to avoid the evils of common hallways, and to obtain the maximum of air and light, the additional cost entailed is outweighed by the numerous advantages secured. The entire roof area of these sanitary homes is utilized for outdoor life and fresh-air treatment. The roofs are fitted with loggias, open and partly enclosed, toilet rooms and comfortable seats, and upon an upper deck are spaces for open air drying of linen. Flowering plants and shrubbery, to make the roofs as attractive as possible, games and an open air school for the children will encourage their fullest use by the tenants.

On the facades fronting the park and streets are individual balconies on every floor, communicating with the bedrooms and living rooms by large triple-

hung windows extending from ceiling to floor, thus making the balconies continuous with the floor areas and affording opportunity for outdoor sleeping and dining. By having three window sashes instead of two, which are usual, it is possible to have open two-thirds instead of half of the entire window space.

The saving in floor area by the abolition of common interior halls has rendered it practicable to make available a larger percentage of space for bedrooms than is usual in the ordinary tenement house. Bedrooms and living rooms are as far as possible situated in the front of the buildings, with windows directly on the street. Kitchens and bathrooms are in the rear and are provided with ample light and air by windows on the stairs, large interior courts and yard between the buildings. The rooms are purposely of moderate size to encourage simplicity in living and easy housekeeping.

Each suite of rooms has its own bathroom and hot water supply. The porcelain bathtubs are built into the wall and the tiled floors are brought up to the bottom of the tubs in such a way that dirt and dust cannot collect. In each bathroom there is also a free standing wash basin. The kitchens each contain a gas range, sink and stationary laundry tubs. Direct drainage for refrigerators and wall receptacles for garbage and waste, with outside ventilation, are provided. Over the gas ranges are hoods communi-



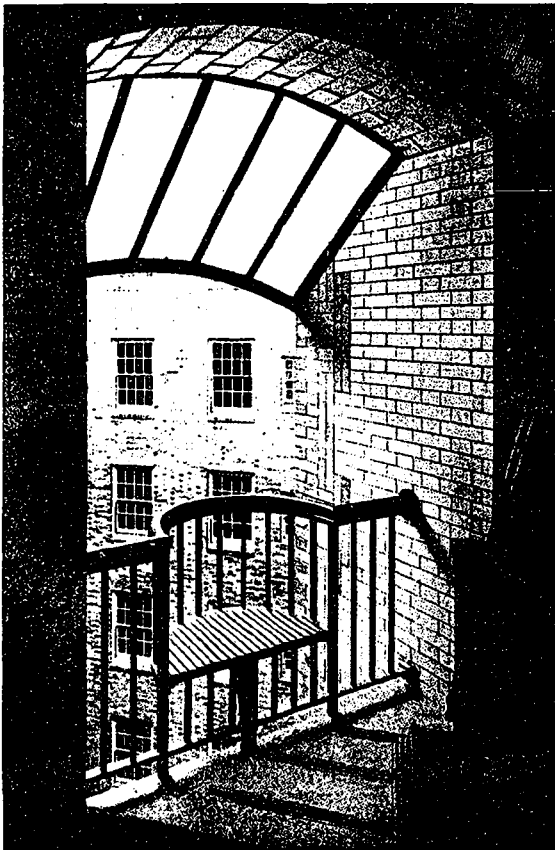
An open stairway entrance, East River Homes.

cating with an exhaust flue for carrying off the odors and vapors of cooking. These flues are equipped with electric fans which produce a continuous aspiration of air from the apartments, and thus also serve a most useful purpose in ventilation. The flooring is of monolithic material, and cover up on the walls for six inches in such a manner as to avoid angles. The surface is warm and resilient but of such a char-

acter as not to admit of tacking down carpets. Floor coverings must be rugs, which may be readily taken up for frequent cleansing. The interior finish is simple but attractive, and the walls are painted in soft, pleasing tints with a hard enamel paint, which can be easily washed and wiped down. It is believed throughout that whatever is good, clean and sanitary in a hospital is equally good in the home.

In the basement is an individual storeroom for each family, and there are lockers for baby carriages at the end of an easy incline leading to the street. In each of the basements of the four buildings three spacious laundry rooms with steam driers, are provided. The suites of rooms are heated by hot water from a central system of high-pressure boilers, and

mere charity, nor to produce income in the ordinary commercial sense, but they are a humane and philanthropic investment, which, with lower rentals than are asked for inferior accommodations elsewhere, is expected to yield a sufficient return to encourage the construction of other similar buildings in communities where they are needed. The income of this particular group of houses, however, will be devoted entirely to philanthropic objects according to the terms of the generous deed of gift creating the trust, one-half to be expended forever by the trustees in the warfare against tuberculosis—or until the dawn of that happy day for humanity when tuberculosis will be so far suppressed that further measures directed against it will be unnecessary.



Detail of landing seat and louver, East River Homes.

care will be taken to insure control and regulation to avoid overheating and insufficient humidity of the air which is warmed. The rooms are lighted by electricity, it having been ascertained that electric light can be supplied from a plant in the buildings at a price to compare favorably with the cost of gas. This is rendered possible by the utilization of the exhaust steam in running the dynamos. In buildings especially constructed for a sanitary object the vitiation of the air by combustion products and the heating effects of illuminating gas, are undesirable. Electric lighting is included for the tenant in the rental.

The East River Homes are not designed to be a

HEATING MCGILL UNIVERSITY

THE MCGILL UNIVERSITY buildings were, up to 1908, heated individually by their own steam or hot-water equipment, and took current from the local electric supply company. The coal used for the heating service was necessarily of an expensive kind, and the cost of current was rather high. Economy and improvement in service, therefore, were sought by utilizing cheaper coal in a central boiler plant and heating the various buildings from one source, employing for this purpose as far as possible the exhaust steam from electric generating sets. The buildings which will ultimately be served have a total volume of about 7,570,000 cubic feet; they contain 81,000 square feet of direct-radiation heating surface, need 185,000 cubic feet of warmed air per minute for ventilation, and require as a maximum about 475 kilowatts for light and power. The greatest demand for steam for heating and ventilation for all the buildings in cold weather would be about 30,000 lbs. per hour. The station as at present working supplies current to eleven buildings and heat to five, and the heating service will be extended to all the buildings as opportunity serves. The McGill power-house includes four water-tube boilers, three steam-electric generating sets, the necessary heaters and auxiliary machinery, and the ordinary apparatus for the switchboard and electric accessories. The heat distribution to the buildings is largely by means of forced-circulation hot water, as well as by steam, the heaters and circulating pumps are installed in the engine-room, and are at present capable of supplying hot water to 60,000 square feet of direct-radiation heating surface. Means are provided for obtaining a record of the heat delivered to the heating systems of the various buildings. The electric distribution is by underground cables throughout, the cables, as well as the heat-distributing pipes, being carried partly in tunnel and partly in conduit. Secondary heaters have been installed in two of the buildings in order to avoid the expense of renewing their existing heating pipes and radiators.

CONSTRUCTION

A JOURNAL FOR THE ARCHITECTURAL
ENGINEERING AND CONTRACTING
INTERESTS OF CANADA



ROBERT CRAIK McLEAN, Editor.

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Vol. 5 Toronto, May, 1912 No. 7

CURRENT TOPICS

THE MAYOR of Toronto should be credited with the persistent effort he is making to retrieve city congestion through a movement toward securing proper housing for workmen. *CONSTRUCTION* is not inclined to comment upon the method employed, as its author has probably studied the situation and possibilities and sees success through that adopted. It is the motive and the work which counts. To bring the project to a focus, a meeting was called in which the details were explained, which broadly is a holding or promoting company with a stock plan in which twenty thousand shares at a stated price of fifty dollars per share will represent the paid up capital. At this meeting provisional directors were chosen. The name of the company to be formed will be the Toronto Copartnership Garden Suburbs, Limited. It is the intention to secure \$100,000 before applying for the charter, and of this amount \$81,000 has already been subscribed. The honorary patron is His Royal Highness the Duke of Connaught. The honorary president is Sir John M. Gibson, Lieutenant-Governor of Ontario; honorary

vice-president, President R. A. Falconer of the University of Toronto; and a provisional directorate headed by His Worship Mayor Geary.

* * *

CONSTRUCTION is informed by the Director of the National Art Gallery at Ottawa that the omission of the names of the jury that will judge the "designs submitted in the monument to the late King Edward VII. competition," which was recently published to the sculptors of the Empire, and to which omission we called the attention of the Department of Public Works, was unintentional. The Advisory Arts Council, which is the jury in all Government competitions that deal with the fine arts, will act in this case. The names of the Advisory Council are: Sir Edmund Walker, President Canadian Bank of Commerce, Toronto; Dr. Francis Shepard, Montreal, and Hon. Arthur Boyer, Senator, Montreal. The competition programme calls for a memorial to cost \$35,000, open to artists who are British subjects, the designs to be submitted in sketch models with description, and to be delivered before October 1st next. The author of the pre-iated design will be awarded the commission, and a prize of \$1,000 will be awarded to second choice.

* * *

AN OPPORTUNITY for an exhibition of Canadian architectural talent has come, and if properly used can do more to show Great Britain the real advancement made in Canada along architectural lines than could be presented in any other way. This is the projected Canadian building to be erected in London. The design should be obtained through a Dominion competition drawn by a committee of representative architects in the Royal Architectural Institute of Canada and adjudicated by an appointed committee of similar ability either selected from among Canadian architects or from members of the Royal Institute of British Architects. No other manner of securing a design would be adequate, as the Government does not possess a designer of ability, and even if that were the case this representative of Canada in England should present the best that Canadian architectural talent can accomplish.

* * *

THE SECOND annual convention of the Alberta Provincial Builders' Exchanges was held at Lethbridge on March 16. The election of officers for the year was as follows:—President, C. C. Batson, of Edmonton; First Vice-President, J. H. Trimble, of Medicine Hat; Directors, H. J. Goode, Lethbridge; R. A. Brocklebank, Calgary; J. H. Preston, Medicine Hat, and Thomas T. Culver, Edmonton. Among the interesting topics discussed, that most important was a proposed uniform standard contract form, a committee from the Alberta Association of Architects being present to discuss its provisions with the builders. Architects G. M. Lang and James A. MacDonald represented the profession, and the Exchange by a committee consisting of J. J. Marr, of Calgary; C. C. Batson,

of Edmonton; J. H. Trimble, and J. Glenister, of Medicine Hat. The contract form was agreed upon, and when adopted by the Architects' Association and the Exchanges will be known as the Alberta Contract Form. Another measure of importance was discussed in the liability and insurance method to be adopted. This was placed in the hands of a committee consisting of W. J. Richards, of Calgary; O. H. Miller, of Medicine Hat, and J. Glenister, of Lethbridge, which reported that the matter better be left to be arranged by each individual Exchange in the province. The discussions on the reports of the incorporation and resolution committees and the banquet which followed indicates that the builders of the province are not only progressive but interested in the best advancement of the builders' interests. The following delegates were present from Exchanges beside that of Lethbridge.—Calgary, R. A. Brocklebank, W. J. Richards, G. M. Lang, C. P. Ruty, Thos. Tucker, R. Macfarlane, W. Buckner, G. Silvester, Jas. A. Macdonald, W. Sutherland, R. J. Priestly, J. Marr, C. H. Wells, Ascar Carlson; Edmonton, C. R. Frost, Thos. H. Miller, C. C. Batson; Medicine Hat, J. H. Preston, C. Prince, John H. Trimble, R. A. McCarter.

* * *

IT IS REFRESHING to note that the city commissioners of Edmonton steadily refuse to allow temporary infringement upon the building laws in favor of those who wish to further increase fire risks in the city by additions of wooden structures to enlarge rooming houses. It is rare, especially in the United States, whatever it may be in Canada, when the most conscientious and able building commissioner is not over-ruled by the city alderman, and violations of the building ordinances permitted. Edmonton property will have a higher and more staple value, the shack period of its existence will be more quickly erased, and the building of permanent structures encouraged by the civic officers refusing to be influenced by the plea of necessity presented by owners of fire-trap structures. These guardians of the upbuilding of the future metropolis of the Peace River country are laying their foundations well and should be encouraged by every permanent investor to maintain a rigid control of the construction of the city.

* * *

THE PROHIBITIVE prices of residence real estate and inadequate street car service in Toronto will make apartment houses a profitable subject for investment for some years to come, and the city architect should receive the support of not only the architectural profession, but citizens generally in his endeavor to prevent congestion and limited air space, and uniformity of distribution in residence districts by calling for more space around apartment houses. Five hundred square feet to an apartment house is none too large a space, particularly in localities that are built up with solid blocks of residences. As this is entirely in the interest of the people and the influence of those who would not object would

not cut much of a figure politically, it is presumed that it will have the support of the city officials. At least, architects can refuse to make plans that contemplate a lesser area adjacent to apartment houses.

* * *

THE BETTER late than never policy that seems to actuate the Parks Commission of Toronto in seeking to secure park and boulevard improvements is timely. It is regrettable, of course, that such sections as those in the Don and Humber valleys were not expropriated years ago, but the necessity for these additions to park territory are becoming more apparent every day, and even the suspicion that they may be now moved through the urging of real estate interests, the fact that many of these interests will be served, and the high price the city must pay, should not influence the people or their representatives on the Parks Commission against securing these sections which the development of a park system requires.

* * *

POINT GREY, a suburb of Vancouver, where the Provincial University site is located, is adopting building laws that should be applied to the residential sections of cities as well as suburbs. No dwelling house in Point Grey may be erected on a space of less than 2,500 square feet in area nor have a clean cleared space around it of less than 300 square feet. The regulations provide that the height of any room in any dwelling house shall be at least eight feet with the exception of those in the attic, which must be eight feet high over half their area, and each room or group of two rooms must have windows of at least one-tenth the area of the rooms, and other regulations regarding foundations, grade materials and chimney, form a restrictive by-law that would meet with opposition in many localities, but instead of a hardship gives an added value to the property and works in the direction of health and security for the entire population of the district so controlled.

* * *

CALGARY'S city planning commission is actively engaged in projecting a general scheme for city improvement, and as a preliminary are inspecting the physical aspect of the city and ordering a general clearing out of unsightly and unnecessary obstructions. School and vacant lots will be improved, planting of shrubs and flowers and tree planting along streets and boulevards being the immediate work. In the future the completion of a park system which will take in the different landscape features of the city, small parks and playgrounds will come within the activities of the commission. If it does nothing further than the tree planting and cleaning up of school grounds, it will do much toward the enhancement of values in real estate and adding to its reputation as a livable city.

* * *

NOW THAT the Municipal Committee of the Ontario Legislature has given the matter of regulation and control of the location and erection of

apartment houses, Garages and tenements into the hands of the civic authorities, one more chance is gone for city officials to place the blame for civic inertia upon "that wicked partner," the provincial government. That even this civic relief was obtained by Toronto, in whose behalf the measure was passed, is surprising when one considers the peanut calibre of the brain of one representative, the chairman of the committee, who answered the requested amendment providing for the burying of wires and removal of poles from the streets, by saying, "Suppose I use gas; should I pay for giving my neighbor electric light service?" As the comment was endorsed and request denied, it can be assumed the whole committee was of like mentality.

* * *

LEIPZIG, the future Chicago of Germany, is to hold an International Exposition for Building and Habitation, with special expositions connected therewith, in 1913. If a typical one-home dwelling, with all modern improvements, could be erected on the grounds and miniature reproductions of office and other buildings as designed by Canadian and United States architects, could be displayed as exhibits in the Canadian and United States sections, much would be accomplished for American trade in building appliances. In connection with the exposition Leipzig will celebrate next year the opening of the largest railway passenger depot in Europe, now in course of construction, and the unveiling of a monument commemorating the centennial of the battle of Leipzig in the Napoleonic war. Both events will attract enormous crowds to the city, in addition to the exposition.

* * *

THE EXPOSITION which opens on April 27 at Ghent will cover 200 acres, and it is already expected that the limits will have to be extended to find room for exhibitors. The *Salle des Fêtes* will be in the Park of Courtrai, and alone will cover 8 2-3 acres. It will be constructed of substantial material and remain as a permanent memorial. The opening event will be an exhibition of flowers on a grand scale, covering 70,000 square feet. What may be expected can be well imagined when it is remembered that Ghent is probably the greatest centre in the world for flower exportations. The entire world's fair at Ghent will be divided into 22 large groups, a detailed description of which is given in the catalogue just issued. The exposition may be continued till November 15, 1912.

* * *

THE BREAKING up of the apprenticeship system in Scotland has forced upon the public authorities the problem of how to give boys a chance in life by affording them practical instruction in trades. For several years the Edinburgh School Board has provided, in connection with 27 separate public schools with 10,538 pupils, night instruction to classes in stenography, typewriting, and in certain handicrafts—cabinet-making, upholstering and plumbing. In some of the night classes 98 per cent. of the day pupils are in attendance. A noteworthy

development of this educational policy is the recent opening by the board of supplementary schools and large workshops for the trade instruction, where boys will receive thorough training in evening classes at the public expense. The new buildings comprise 10 workshops, equipped with the requisite tools and appliances for the following trade classes: Cabinet-making, carpentry and joinery, plumbing, tinsmiths' work, engineering, brass finishing, molders' work, pattern making, tailoring, upholstering, French polishing, and plasterwork; and there are also rooms fitted for cookery and laundry work. The site of 3½ acres cost \$37,435, the buildings \$29,200, and the equipment \$9,830.

* * *

ADVERTISERS in CONSTRUCTION are recommended to look into the Western field with a view to establishing branch concerns. The United States consular reports are calling attention to the field for the sale of construction supplies, equipment and appliances. Many of the specialties in common use in the Eastern provinces are comparatively unknown or are not presented in the hardware and other displays of dealers in Western cities. A vigorous campaign inducing local building supply dealers to "feature" these specialties and architects to include them in the building plans seems to be the only way of getting a proper share of the opportunity that exists. Probably too much emphasis can not be given to the point that architects should be interested. They have the very best occasions to exhibit such specialties to the persons who intend to build. It is unnecessary for them to commend or advance any particular make of article, but they can prevent the builder of a house or other structure from not incorporating, either through ignorance or by oversight, devices that would increase the building's usefulness, convenience, or comfort to the owner or add to strength or beauty of the building. CONSTRUCTION is widely circulated among the architects and builders of the West, but its introduction of the material and daily reports are often made ineffective in these districts because of the short time given to tenderers, and local representation as an accessory is strongly advised.

* * *

THE AGENCY business formerly operated under the name of Eadie-Douglas, Limited, with head office at 12 University street, Montreal, has been reorganized and the name changed to Douglas-Milligan, Limited. Mr. H. G. Eadie has withdrawn absolutely from the business and the present organization consists of H. P. Douglas, president; G. M. Milligan, vice-president; E. M. Watson, secretary-treasurer. The Toronto branch office is now under the management of Mr. W. F. Gouinlock, with offices in the Confederation Life Building, and the company is represented by live agents in the leading cities throughout Canada. The company represent in the building and mechanical lines some of the best known concerns in the business of supplying building materials and appliances to the architects of Canada.



TANDARDIZED STREET WIDTHS

By JOHN NOLEN, F.A.S.L.A.

Paper read before the Town Planning Convention at Philadelphia by one of the best landscape authorities on a subject that forms the basis of all city planning or improvement.

IF WE ARE to remedy the municipal ills from which we now suffer, some large physical changes in cities are absolutely necessary and inevitable. Nevertheless, permanent progress in city planning will not result usually from spectacular schemes for the sudden transformation of our cities, nor from revolutionary programmes and proposals. Advances will come more often from a patient but open-minded and scientific study of such problems as are represented by the title of this paper, followed by a close co-ordination of one subject with another in a comprehensive plan, thus recognizing the unity of the city and the inter-relation of all its parts. It would not be difficult to convince anyone not already convinced—if such there be—of the importance of fixing street widths more intelligently and discriminatingly. At the present time an average of twenty to forty per cent. of the total area of cities is devoted to streets, rising in the case of Washington, D.C., to fifty-four per cent. Therefore, even a slight variation in the width of the streets of a city becomes a matter of importance. Consider, for example, what an excess of two feet in the width of the fourteen hundred miles of paved streets of Philadelphia would involve in the cost of land and paving! On the other hand—and here the lack of intelligent and discriminating action has even graver aspects—consider what the lack of a few feet in the width really necessary for streets in Philadelphia already involves! It involves directly the expenditure of enormous sums of money for street widening, or, indirectly, of much greater sums, practically incalculable in amount, as the penalty for conditions which still appear to our too timid minds virtually unchangeable.

The evils of the present system of fixing street widths are acute. They demand prompt but careful examination and correction. What, then, are the causes of the existing difficulties in this matter of street widths and what are the remedies? Some students of this subject are of the opinion that the evils are due, in part at least, to a standardization of street widths; to the fact that city councils or other municipal authorities have heretofore fixed upon a certain number of feet, usually forty, fifty or sixty feet, as the width for all streets. Undoubtedly such action has proved a handicap to many a city. But is the standardization itself the evil? Is it not the arbitrary and unintelligent character of that standard; and is not the remedy another standard, or other standards, rather than the abandonment of the

principle of standardization? Is there not danger of reacting too far, or of reacting in the wrong direction? The remedy for a stupid standardization of street widths is not likely to be found in the abandonment of all standards, but in the adoption of more intelligent standards.

It would seem that street widths could be satisfactorily standardized because the facts upon which such widths rest are capable of definite classification and, furthermore, because it is practicable to collect scientific data concerning these facts and from this data to reason to sound conclusions with a considerable degree of confidence. While these facts are numerous and varying, they are not more so than those connected with the cutting of metals, or some of the other operations that have been so successfully standardized in the industrial world in recent years.

What are the facts which should determine street widths? They are (1) the width required for "a line of vehicles," thus fixing roadway units; (2) the width required for "a line of pedestrians," thus fixing sidewalk units; (3) the classification of the streets of a city according to the traffic requirements put upon them, or the other functions that they are to serve; and (4) an estimate of the present and future traffic of the streets of any given class, the width required to meet that traffic, and then the standardization of that width.

(1) It is not yet possible to fix with scientific accuracy the width required for a line of vehicles, partly because the data as to the actual average width of present day vehicles is inadequate, and partly because that width is just now in process of change, due mainly to the increasing size and use of the motor truck. Nevertheless, the conclusions on this point are already fairly definite. The difference is represented by about one foot. One set of investigators holds that nine feet or thereabouts should be fixed as the width required for a line of vehicles. They base their opinion upon the fact that some motor truck bodies to-day have a width of eight feet and that the tendency of manufacturers is to increase the width of trucks. The margin for safe clearance, taking into account average skill in driving, would require about another foot for each line of vehicles, making the total width nine feet. Other investigators find that to-day very few vehicles, even large motor trucks, measure more than six and one-half or seven feet in width, and that conditions of construction or laws are likely to place a limit upon

advantageous width close to seven feet. This view has the support of some of the vehicle companies who hold, in the interest of the manufacturer and user of trucks, as well as the public, that six and one-half, or, at most, seven feet, should be the maximum width.

It is not the purpose of this paper to try to settle finally the width required for a line of vehicles, or, indeed, any other fact or specific point connected with the standardization of street widths. The purpose is merely to indicate the advantages and necessity for such standardization and to suggest some reasonable basis for it.

But to apply further the method suggested above, we may assume for the sake of making the application definite, that a width of eight feet, the present working figure of many of the best practitioners, is sufficient for a line of vehicles. As a matter of fact, not only the width of vehicles but also the load is likely to be standardized by law, so that the engineer, landscape architect, or city planner will have a definite maximum figure to work with. These limits may have exceptions, but the exceptions should be discouraged by a vehicle license tax, which would increase very rapidly on vehicles above certain dimensions.

In addition to the space required for vehicles, allowance must be made on many streets for electric cars. Assuming double tracking, which is the most economical method usually, this allowance should be not less than twenty feet.

(2) Various methods have been devised and followed for determining the width of sidewalks. The most customary is to make the sidewalk some fixed proportion of the roadway. In some cases, following this method, each sidewalk is one-half the width of the roadway; in others one-third the width of the roadway. The latter appears to represent the most frequent practice. This method, however, appears arbitrary, and, in some instances, would be unsound, because the use of the sidewalks does not necessarily increase and diminish with the amount of traffic on the roadway. However, the custom of making the sidewalk one-third the width of the roadway has proved fairly satisfactory in practice. For example, in the subdivision of a one-hundred-foot business street into a sixty-foot roadway and twenty-foot sidewalks. Fixing the width for a line of pedestrians at two feet, if the application of the principle to pedestrians does not appear too academic, this allows, on a street with a total width of one hundred feet, for ten lines of pedestrians on each of the twenty-foot sidewalks. The proper width of sidewalks, the method of determining that width, and a more rigid control of encroachments upon sidewalks, all deserve more attention than they have heretofore received.

(3) The classification of the streets of a city according to the traffic requirements put upon them or the other functions that they are to serve is, of course, one of the fundamental requirements of any attempt to standardize street widths. European countries have made such classifications. Here are the figures for some of the cities of England and Germany.

The London Traffic Commission made five divisions as follows: Main avenues, 140 feet; first class arterial streets, 100 feet; second class streets, 80 feet; third class streets, 60 feet; fourth class streets, 40 to 50 feet. No street was to be less than 40 feet. This standard classification, applying to London and its suburbs, is a great advance over the London Building Act of 1894, which put the average width of streets "in the public interest" at 40 feet clear or 20 feet from the centre of the roadway to the nearest external wall; and the council could not require a greater width than sixty feet.

The standard classification for German cities of the second size, cities like Leipzig and Frankfort, is as follows: Main thoroughfares 85 to 118 feet; secondary thoroughfares, 50 to 80 feet; local streets, 35 to 47 feet.

A Prussian law, in force since 1875, apparently drawn to meet the requirements of Berlin, fixes the following dimensions for the laying out of new streets and for the alteration of old ones: Main thoroughfares, 95 feet or over; secondary thoroughfares, 65 to 95 feet; local streets, 40 to 65 feet.

The width of streets in different American cities varies greatly. There are very few that have adopted standards for the classification of streets according to traffic requirements. Probably the best classification is that of Washington, D.C., which is as follows. Main thoroughfares, 160 feet; secondary thoroughfares, 120 feet; local streets, 60 to 90 feet. The German city standards, given above, appear to be more reasonable and logical than those of London or Washington, and there is a distinct advantage in having more or less range within each classification, as against fixing the width hard and fast to a single figure. It ought to be practical to classify most of the streets of a city either as main thoroughfares, secondary or local streets, and to apply to them one of the standard widths adopted for their respective classifications.

(4) To determine such classification, however, requires an estimate of the recent and future traffic requirements of the streets of any given class. It does not seem wise to begin by fixing the width of a street at say fifty or sixty or one hundred feet, and then apportioning that width as favorably as may be between roadway and sidewalk. It is better to begin at the other end and try to decide what traffic capacity in roadway and sidewalk the street should provide for, thus determining which class it falls in; and then applying the unit of measurement adopted for car lines, for vehicles, for pedestrians, for trees, etc., decide upon the required width. For example, here are three illustrations of this method:

I. An average main thoroughfare is to have, say, a double track car line, 20 feet; six lines of vehicles, three on each side of tracks, 8 feet each, 48 feet; twenty lines of pedestrians, ten lines on each of the two sidewalks, two feet each, 40 feet; total for an average main thoroughfare, 108 feet.

II. An average secondary thoroughfare is to have, say, a double track car line, 20 feet; four lines of vehicles, two on each side of tracks, eight feet each, 32 feet; sixteen lines of pedestrians, eight lines on

each of the two sidewalks, two feet each, 32 feet; total for an average secondary thoroughfare, 84 feet.

III. An average local street is to have, say, roadway for three lines of vehicles, eight feet each, 24 feet; twelve lines of pedestrians, six lines on each of the two sidewalks, two feet each, 24 feet; total for an average local street, 48 feet.

These are only averages and are given simply as illustrations of the method of standardization proposed and its application. The range of street widths for such a classification might be as follows: Main thoroughfares, 90 to 180 feet; secondary thoroughfares, 60 to 90 feet; local streets, 40 to 60 feet.

Such a standardization would naturally differ from city to city as conditions and requirements differed. Its advantages would be twofold: first in fixing the range of normal street requirements of three or more important classes; secondly in definitely and consciously trying to determine in advance to which class a particular street belonged. Of course, even with such a classification there would be many, many exceptions—special streets, having special requirements and, therefore, calling for special provisions. But if no standards whatever are fixed—and this is the important practical point—there is danger that the normal differentiation of the streets of one class from those of another will be constantly overlooked, or that private interests through pressure and influence may succeed in securing action which is in conflict with the public requirements. It was largely to prevent these results that street width standards, in most cases unintelligent and indiscriminating, were adopted by cities in the past. Where no standards whatever have been adopted many illustrations can be found of the abuses that have crept in, particularly the failure to allow sufficient street width for main and secondary thoroughfares.

In the discussion thus far no reference has been made to trees, grass strips, or other planting in the streets, or of space set aside primarily for the adornment of the street or for insuring the benefits of light and air and an appearance of spaciousness. Such reference was omitted merely to simplify the subject and bring it within the compass of a brief paper. Of course, trees are desirable not only in residence streets, but also in most business streets. Of the many arguments against the greater use of trees in our business streets, the only sound argument in most instances is that there is no room for them. But as with traffic so with trees. The same method should be applied. If we are to have trees we must determine the width requirements of a line of trees, or two lines of trees, or whatever else is needed. Except for temporary effects, it is not good policy to plant trees in a space that is needed for roadway or sidewalks; nor is it good policy to plant one or more lines of trees in a space that is inadequate for their successful growth. If, for instance, it is decided that six feet is the minimum space in which a line of trees of a given species can flourish, then we should standardize that width for that species of tree and provide it.

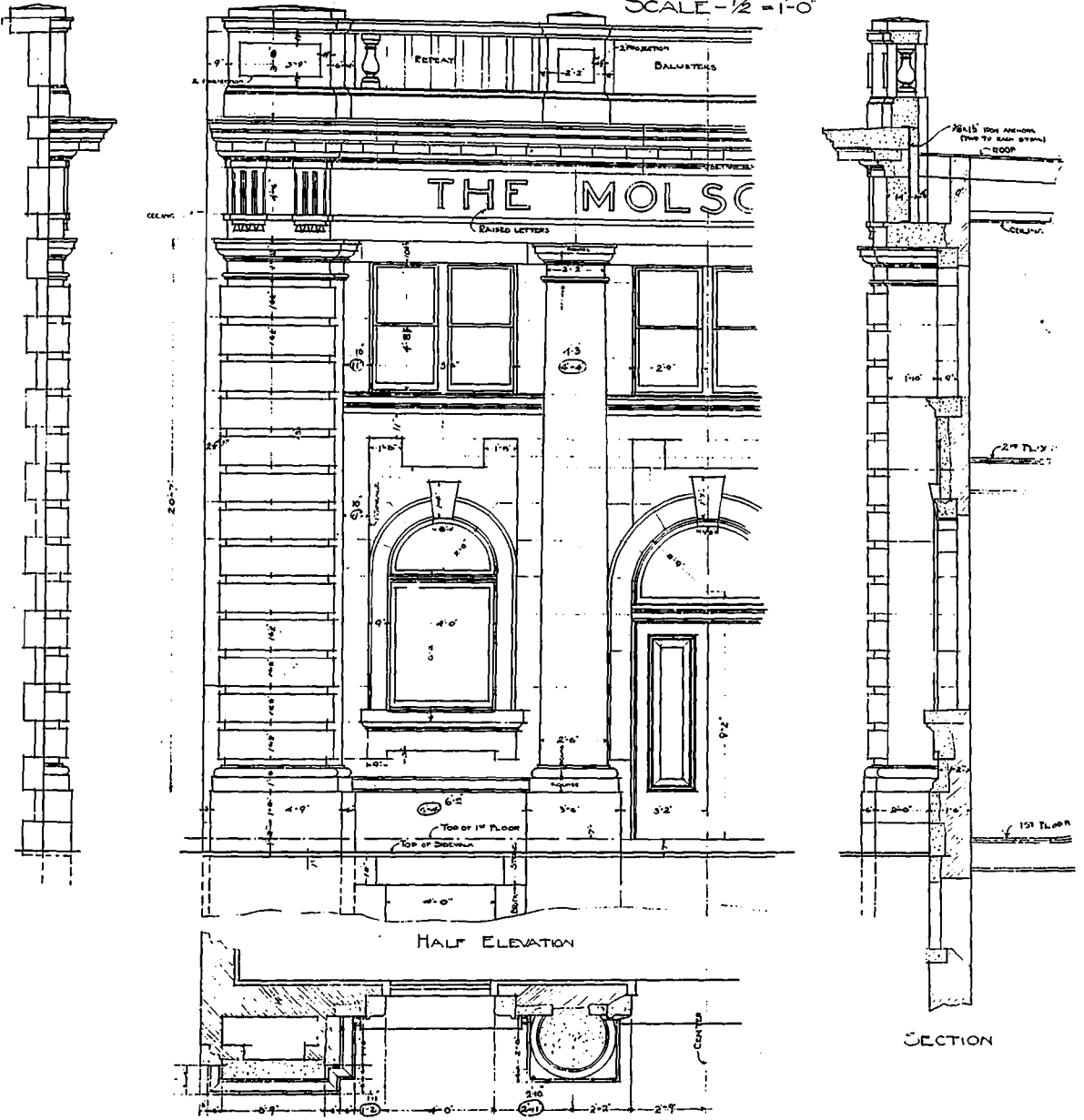
Exceptions there should be undoubtedly to standards for trees as for roadways and sidewalks, but they would be recognized as exceptions and justified because of exceptional conditions. Standards can only be applied profitably to the normal, but in such matters as street widths five-sixths, perhaps nine-tenths, of all cases would be normal.

The traffic and use of many city streets increase from year to year, tending to shift some streets from one classification to another. How to provide a method of meeting this increase is a difficult question to answer. To begin with, we must recognize that a city that is alive has growth, and that growth makes changes from time to time necessary. Street widths cannot be made right "once for all." The utmost foresight must be exercised and then adjustments and widenings made to meet new conditions. Street development, like most other features of city planning, is an unending process. In the field of education the unending character of the process was expressed by the boy who inquired at a public library for a book which, he said, was entitled "How to Get Educated and How to Stay So." So it is with streets. The problem is how, by the exercise of skill and foresight, to design and arrange them to fulfill their functions and then from time to time how to re-design and re-arrange them to meet new requirements. In the case of streets where increased traffic is expected, the most practical method of providing for it, perhaps, would be to reserve some extra space between the roadway and sidewalk, or in the centre of the roadway, or between the sidewalk and the buildings, utilizing this space temporarily as an area planted with trees and shrubs, or merely with grass.

The evils that might follow from the adoption of an indiscriminating set of standards, or from an unintelligent application of a discriminating set, have not been overlooked. They might be serious. But it is my opinion that under our present city organization such evils would ordinarily be less than those that almost inevitably follow from a lack of any established standards and from the policy of determining street widths piecemeal, as each is presented for decision.

THE "MADE-IN-CANADA" exhibition train, which will leave Toronto in May on a tour from the Atlantic to the Pacific, is arranged by the Canadian Home Market Association, and is intended to show the quality and variety of goods manufactured in Canada with the idea of extending the home market for them. The train will consist of 12 cars, 10 containing exhibits of the different Canadian factories and 2 the accompanying staff. The route is from Toronto to Montreal and Ottawa, thence to about a hundred towns and cities in Western Canada. There will be a model-house car, fully furnished, and showing the products of numerous Canadian factories; also composite exhibits showing the process of manufacture of raw steel into its many finer products.

SCALE - 1/2" = 1'-0"



Half Elevation and Details of the Molsons Bank, Toronto. Langley & Howland, Architects

PLAN AND
DESIGN IN
SMALL BANKS

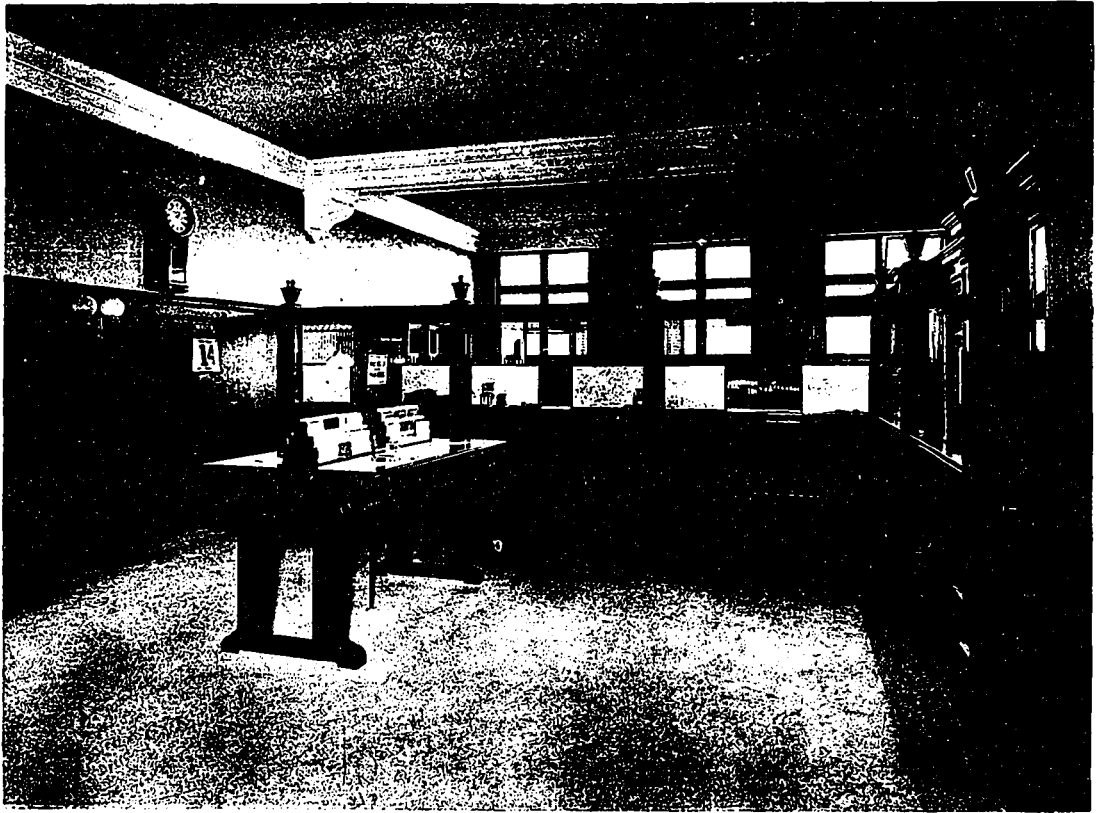
The growing necessity for small banks in rapidly forming and increasing communities calls for simplicity of arrangement and effective plan

SEVERAL excellent examples of solutions of the small bank problem are given in photograph and plan of banks recently erected in Toronto by representative architects.

While location and accessibility of building material has its relation to bank construction as in other structures, the favorite material for the exterior of a small bank seems to be stone, as no other material so well expresses the substantial qualities of strength

and permanence, though brick in simple design and broad masses and panels also contributes to this semblance of dignified stability which should mark all edifices devoted to the care of the wealth of a community. Neither the Canadian banking laws or those of the United States allow of banks "going into the real estate business," in the sense of constructing larger buildings than the business of the bank can use and the renting of the surplus space for offices; the Canadian law is somewhat elastic in this provision, but those of the United States are most arbitrary, so that a separate company must be formed in order to build for revenue as well as the personal use of the bank.

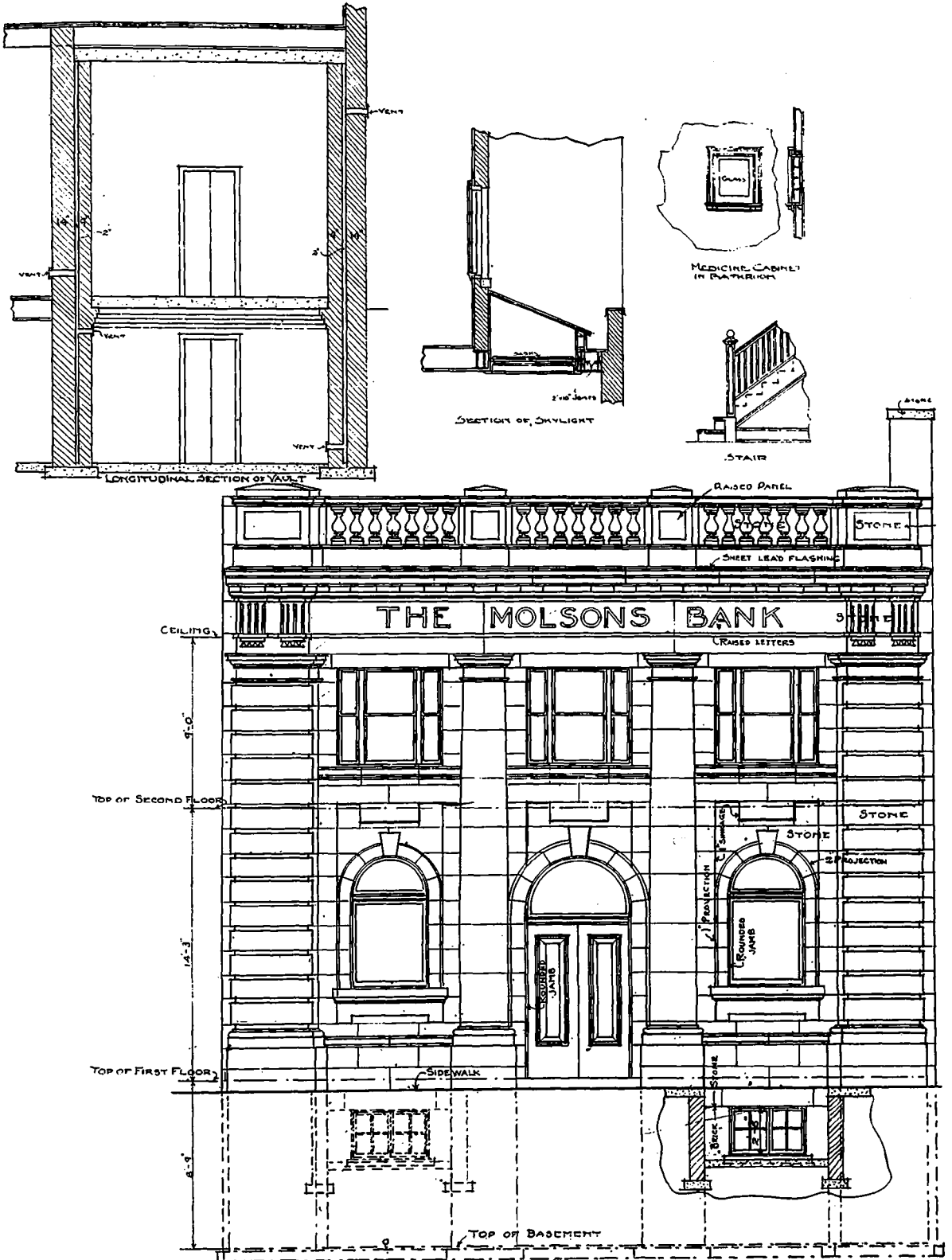
Probably following an old English custom, the branch bank in Canada often provides living quarters for its employees, and these are deemed a part of the bank premises and do not come under the prohibitory provisions regarding investment.



Banking Room.

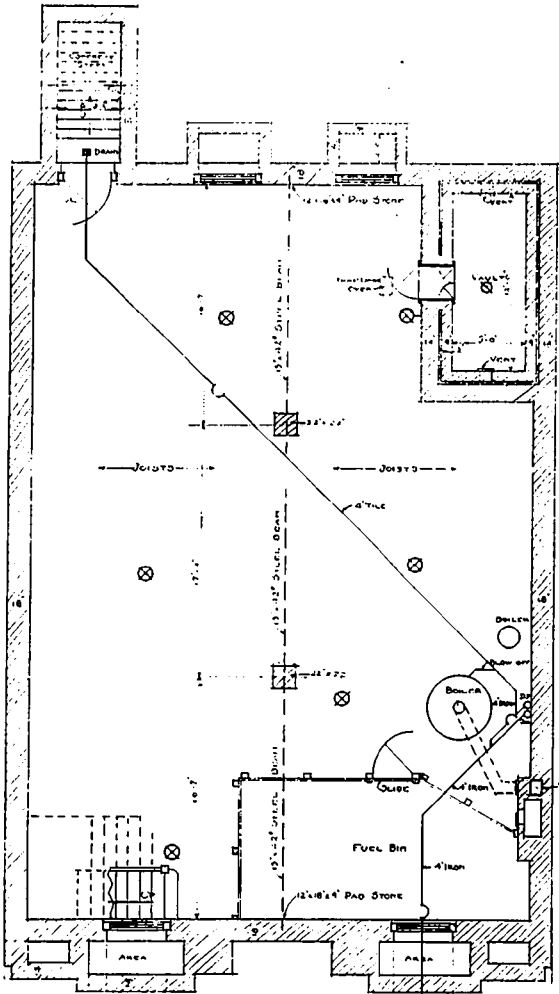


The Molsons Bank, Toronto, Ontario. Langley & Howland, Architects.

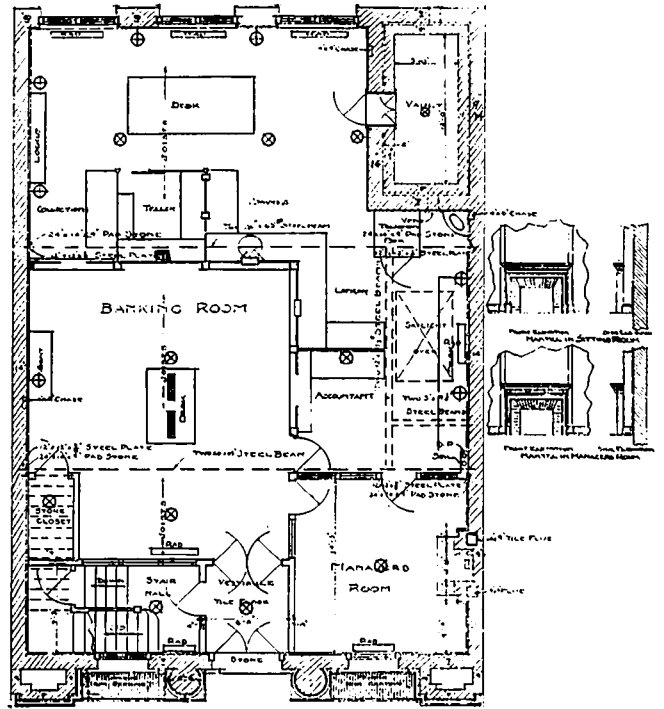


Front Elevation and Details.

The Molsons Bank, Toronto, Ontario. Langley & Howland, Architects.



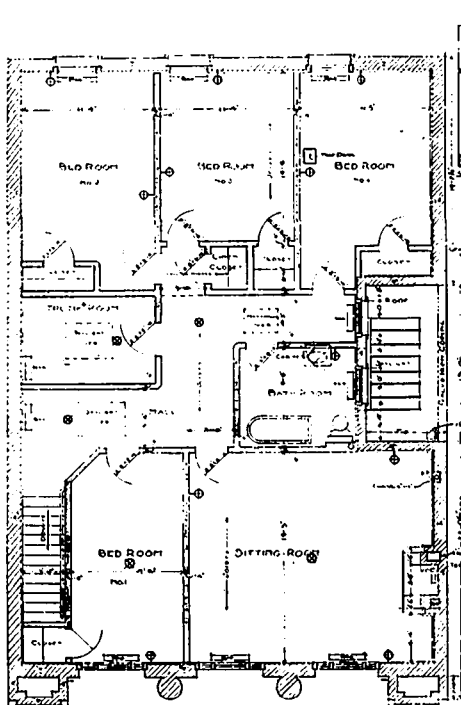
Basement Plan.



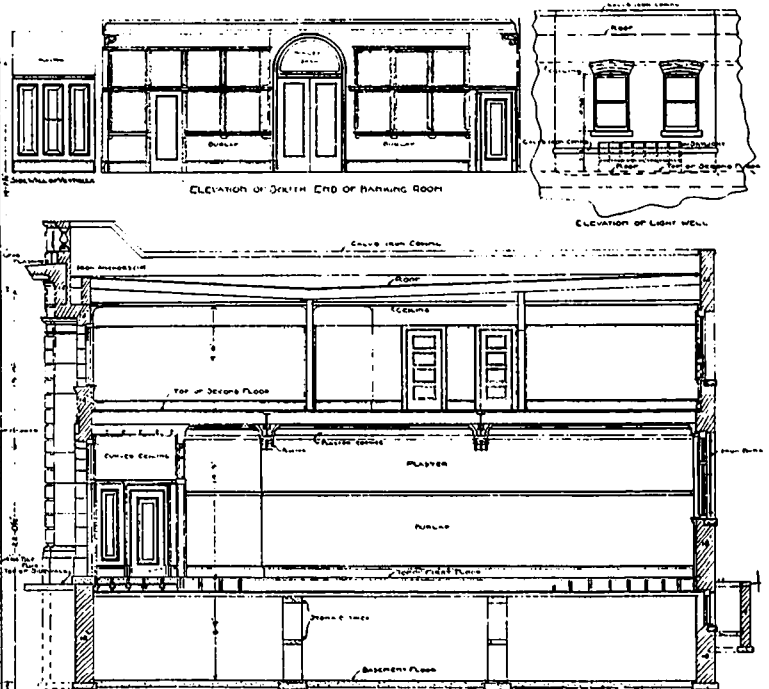
First Floor Plan.

PLANS OF
MOLSONS BANK, TORONTO.

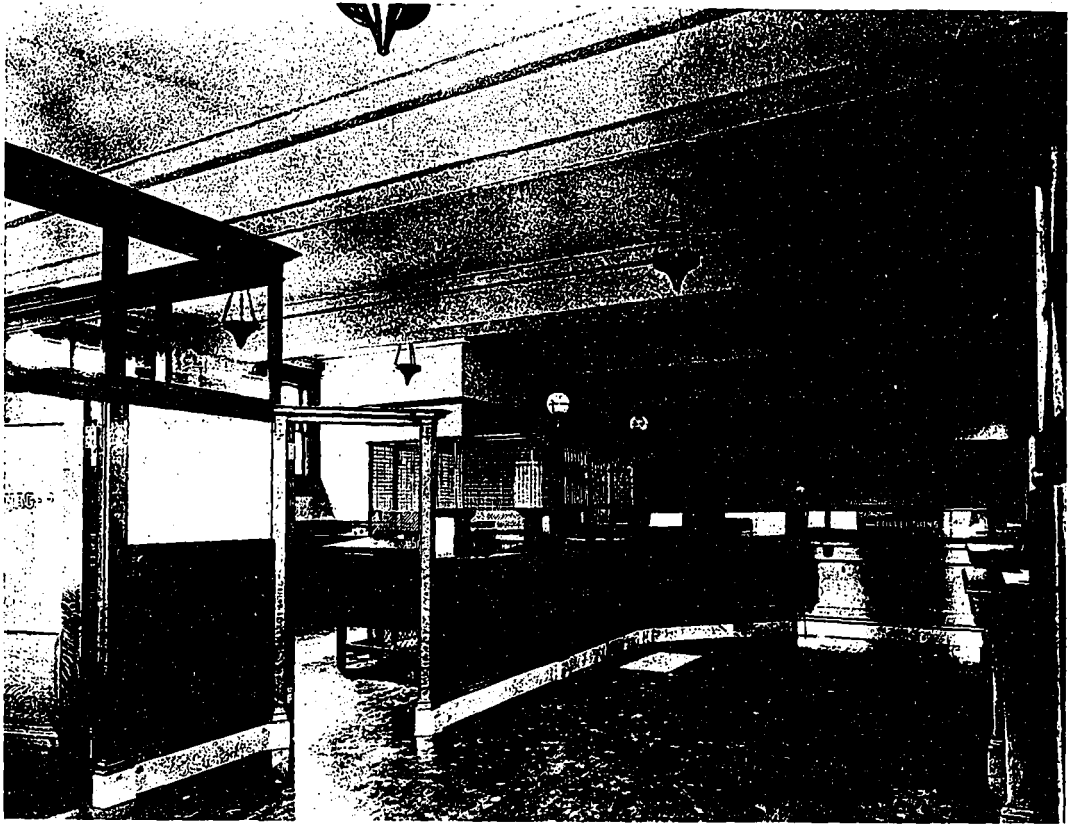
LANGLEY & HOWLAND.
ARCHITECTS.



Second Floor Plan.



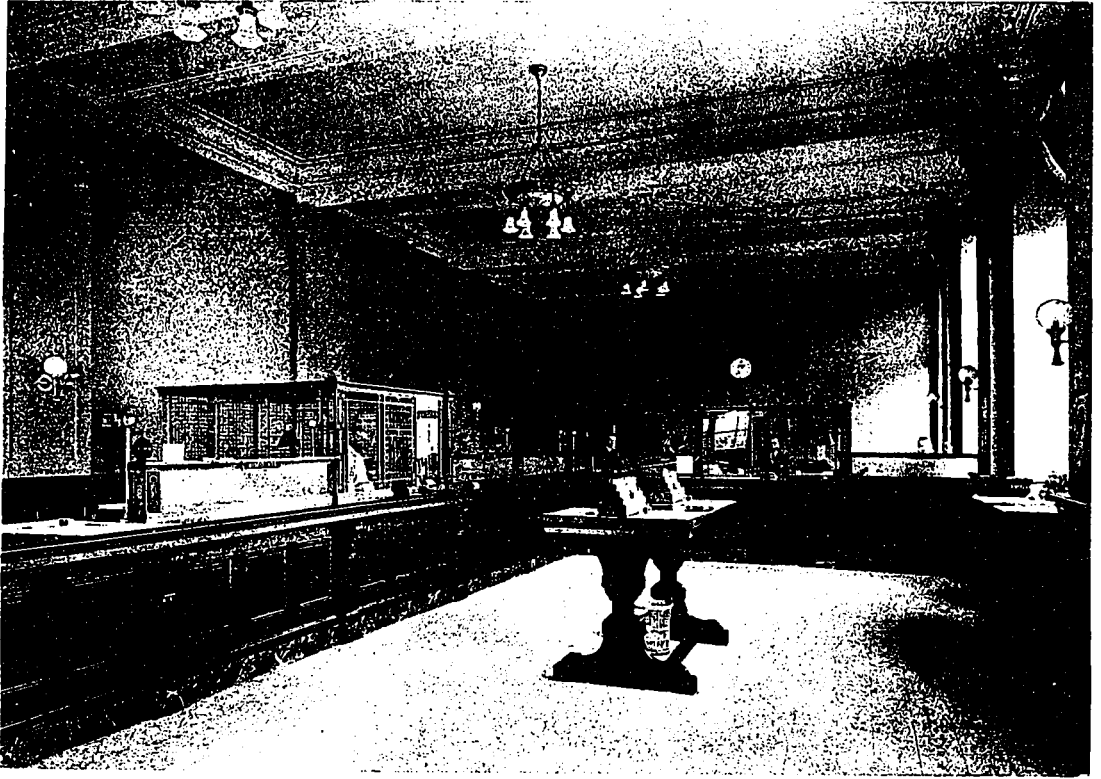
Longitudinal Section.



Banking Room.



The Union Bank of Canada, Toronto, Ontario. H. Byron Gilbert, Architect.



Banking Room.



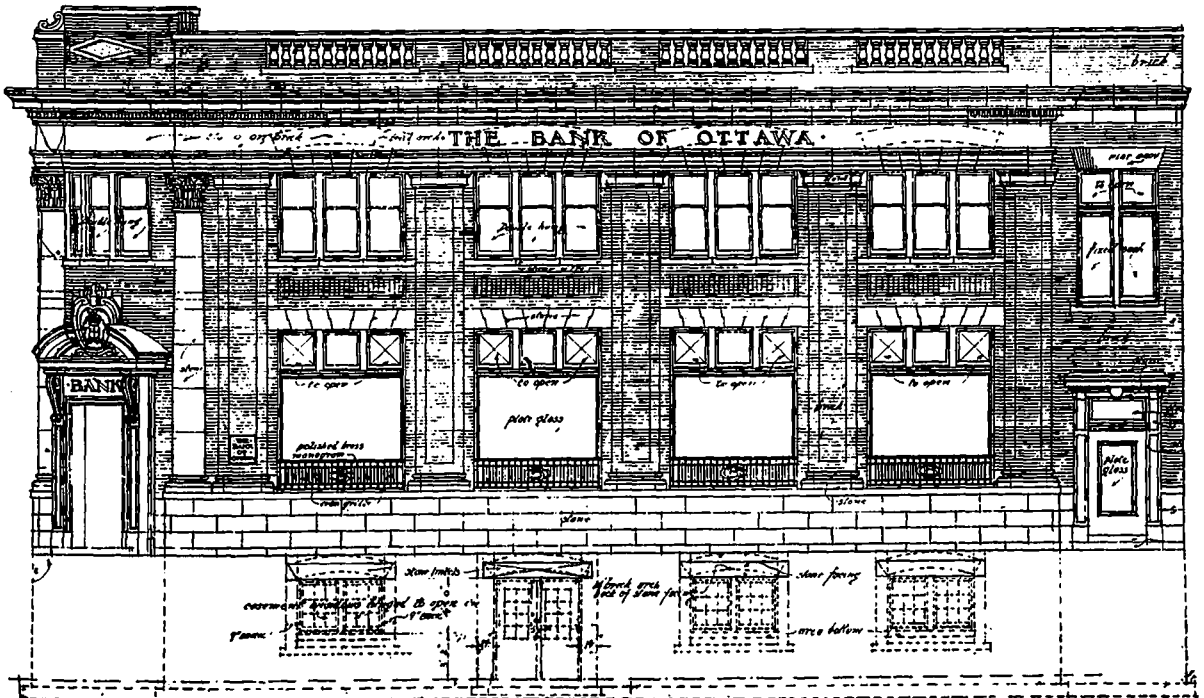
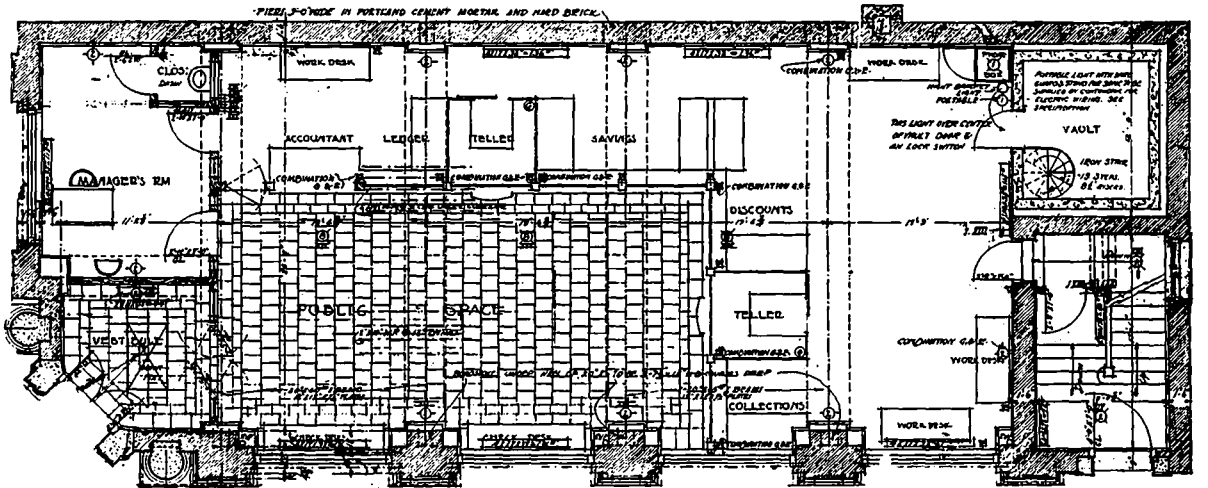
Bank of Ottawa, Gerrard St. and Broadview Ave., Toronto, Ont. John M. Lyle, Architect.

The Molsons Bank, Toronto (Langley & Howland, Architects), is in this class. Here the exterior is of cut stone with columned entrance and entablature across the entire width of the facade. The basement is occupied by the heating system and an extra vault is installed, the floor joists resting on a steel beam running through the centre from front to back. The first floor is arranged in a compact form for the convenient transaction of the banking business. To the left of the entrance lobby are the stairs to upper floors. On the right is the manager's room. The banking room occupies the remainder of the space, one-fourth of which is given to the use of the public and the remainder to the several departments, and a large vault occupies one corner. An excellent feature is the large open space behind the teller's cage for miscellaneous business uses. On the second floor is a well planned apartment con-

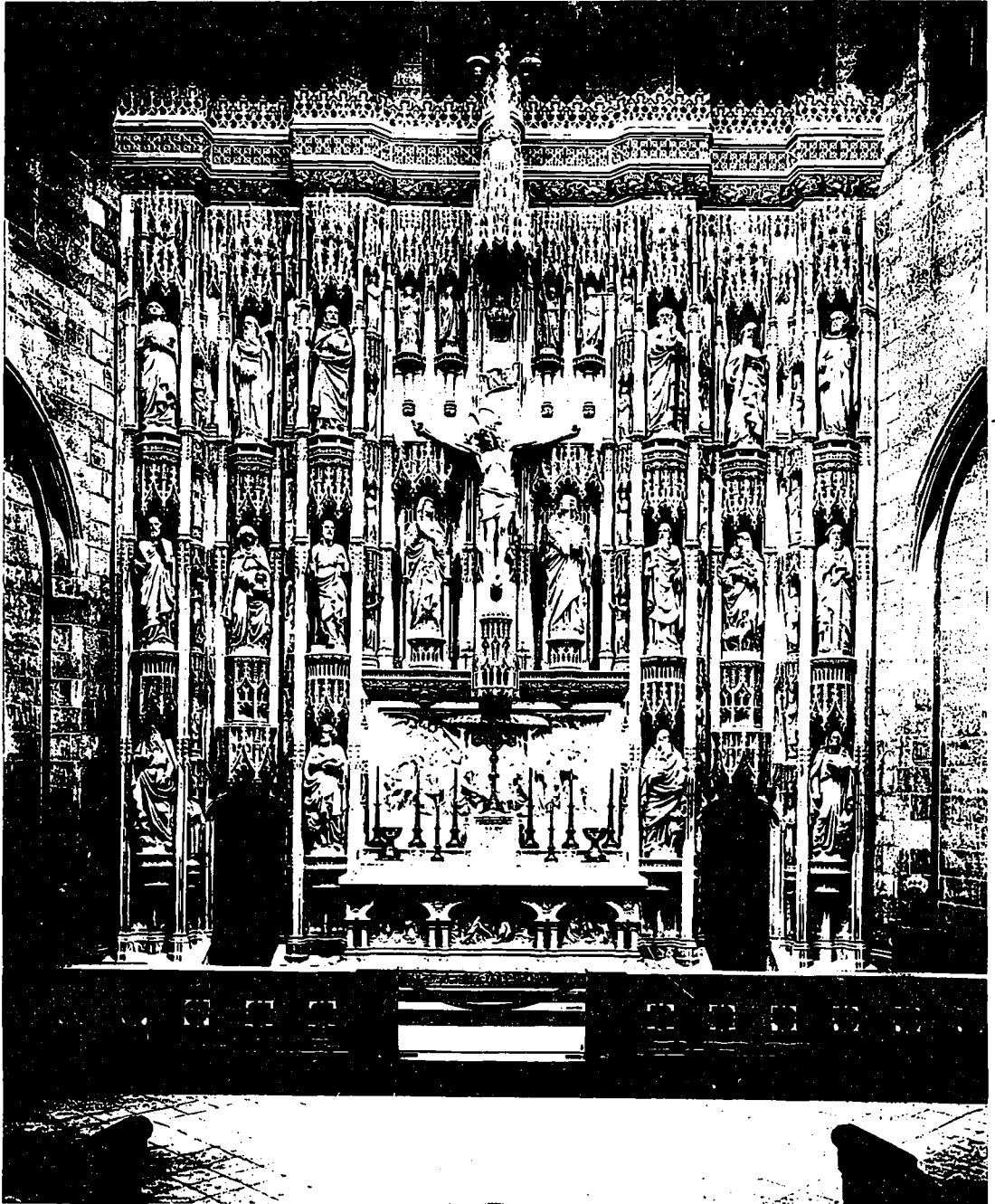
taining sitting room, bath and sleeping rooms for employes of the bank.

The Bank of Ottawa at Broadview and Gerrard streets, Toronto (John M. Lyle, architect), is designed in Don Valley red pressed brick, with bay, cornice and frieze of Indiana limestone. The windows are finished with wrought iron grills into which is worked the monogram of the bank. The interior finish is oak as far as wood is used, but a large proportion is in white marble tile work. The cages and grills are of bronze and the bays and counter are executed in verde antique marble. The second floor is divided into a suite of modern offices for the use of the American Life Insurance Company, which occupies them.

There is no department of business that gives so much attention to the general design and materials employed as these great financial institutions.



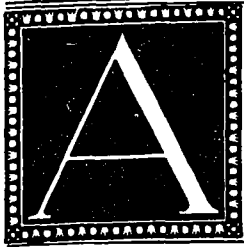
Plan and Elevation of the Bank of Ottawa, Toronto, Ontario. John M. Lyle, Architect.



Reredos and Altar in Christ Church Cathedral, St. Louis, Missouri.

Kivas Tully, F.A.I.A., Architect, St. Louis. Harry Hems & Sons, Sculptors, Exeter, England.

In connection with the reredos and altar it should be noted that special permission was granted the sculptor by the Government at Washington to bring "aliens" into the United States for the special purpose of erecting this work of art. The structure, which is thirty-five feet high, is said to be the most ornate Gothic work of its kind yet erected on this side of the Atlantic, and since the fifteenth century, when the high altar screens of St. Alban's Abbey in Westminster were built, no sculptured stone reredos on so extensive a scale has been made in England or in Europe.



NOTABLE EXAMPLE OF ALTAR SCULPTURE

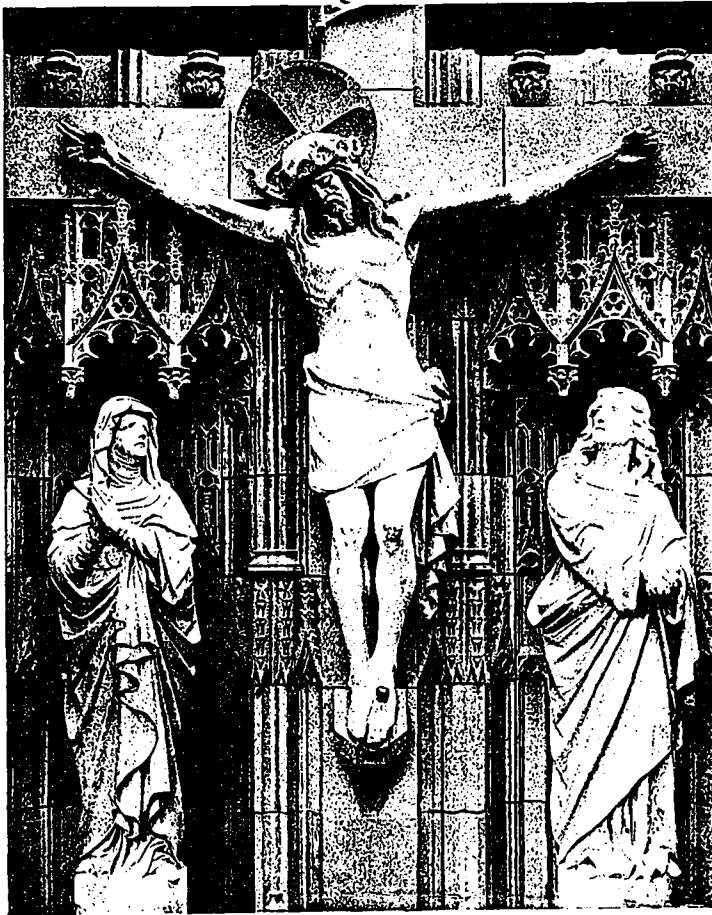
A reredos and altar executed by British sculptors for an edifice in the United States a remarkable example of church sculpture work.

THE NEW REREDOS which was unveiled on Christmas Day last by Bishop Tuttle in Christ Church Cathedral, St. Louis, Missouri, is undoubtedly the finest conception of its kind ever erected during modern times in either hemisphere. The fabric itself is not without exceptional architectural interest, as it was the first episcopal edifice of its kind to be erected upon the western side of the Mississippi River. Designed in the early English style of Gothic art by the late Mr. Leopold Eidlitz, architect, of New York, in 1867, it enjoys the goodly reputation for being, next to Trinity Church, Broadway, in the latter city, the finest Gothic ecclesiastical edifice built on this side of the Atlantic during the greater part of last century. These recently erected additions to Christ Church Cathedral are constructed entirely of Caen stone, the blocks having been selected personally by the sculptor (Mr. Harry Hems, of Exeter, England), from quarries situated near the historical town of that name in Normandy (France), indeed from the selfsame subterranean workings that William the Conqueror and his consort, Queen Matilda, used when they reared the great Abbaye aux Hommes and the adjacent Abbaye aux Dames, both of them Cathedrals in point of size and magnificence, which all travellers in that part of north-western Europe will remember to have seen at Caen.

The reredos at St. Louis Cathedral extends across

the whole of the end of the apical termination to the choir, and has two doors (of bronze), arranged according to the ancient Benedictine plan, and opening out to a narrow presbytery in the rear, which, in its turn communicates with a door at the southern end of the fabric that leads to a covered way communicating directly with an extensive choir vestry. Measuring from the line of the white marble floor laid in the sanctuary and upon which all

rests, up to the pierced cresting, the height is 35 feet. The central spire, which terminates the elaborate canopy of delicately pressed stone work immediately above the sculptured figures of the crucified Christ, as may be seen in the illustration, rises somewhat higher. It is interesting to record the final stone of this—the last of all to be placed *in situ*—was expertly laid by the Very Rev. Carroll M. Davis, Dean of Christ Church, robed in full vestments. The width is 30 feet, whilst, at the base, the reredos measures four feet through, inclusive of the altar, which is also of Caen



Central Detail of Reredos.

stone, save for its white Carrara mensal, a fine slab 12 ft. 6 in. by 2 ft. 6 in. by 7½ in.; the whole weighs 160 tons. These stones were so carefully packed, that in spite of their long journey by rail from New York after being conveyed across the Atlantic—and the exceptional delicate and fragile character of almost every stone, not the slightest damage was incurred to any one of them.

Mr. Kivas Tully, of St. Louis (of the architectural

firm of Tully & Clark, the latter gentleman dying during the early progress of the work), was the architect who designed and under whom these beautiful and costly additions to this St. Louis cathedral were carried out. The actual work itself was made in the studios of Messrs. Harry Hems & Sons, the widely known ecclesiastical sculptors, at

niches, of which there are fully half a hundred, are enriched by much elaborately conceived tracery and carving. The statues themselves are grouped over and around the great Rood upon which the Redeemer of all mankind is transfixed, flanked by figures of the Blessed Virgin and St. John the Beloved Disciple. Unitedly they represent an all-en-



St. Elizabeth Detail of Reredos.



St. Anne Detail of Reredos.

Exeter, England. The motif for the general design was founded upon the celebrated 15th century high altar screens in Winchester Cathedral and St. Alban's Abbey, mediæval inspirations reputed to be the most beautiful examples of 15th century Gothic stonework in the world. Late in the last century Mr. Harry Hems was engaged for fully seven years in the careful renovation of the last mentioned of these great screens.

As may be realized from the reproduction of the photographs we are enabled to illustrate through the courtesy of the sculptor himself the various groined

during sermon in stone, more potent in its teachings than the lips of the most eloquent preacher can ever hope to propound. There, cunningly carved by the facile chisel of the sculptor is gathered together a continuous Bible story. It commences with Moses, the great law giver, followed by David, the psalmist, and in turn by the prophets and the Apostles. The history of the early Christian church is vividly portrayed by the statues of such great mediæval teachers as St. Ambrose, St. Jerome, St. Augustine, and the Venerable Bede; St. Patrick, too, the Apostle of the fifth century, and St. George,

Patron Saint of England, are seen amongst the crowd. Nor are more modern ecclesiastics altogether overlooked, for figures are introduced of Samuel Seabury, the first American Bishop (consecrated at Aberdeen, Scotland, November 14th, 1784), of John Keeble, the sweet singer, who awoke the English Church to a realization of its Catholic heritage, and last, but by no means the least interesting, a life-like statue of Daniel S. Tuttle, D.D., the present venerable and much-beloved Bishop of Missouri, in which diocese St. Louis is situated, who is practically the Primate of the United States of America.

The large panel immediately over the super-altar contains a realistically sculptured representation, modelled in high relief, of the Nativity, whilst those carved upon the altar front represent, respectively, the meeting of Mary Magdalene with our Lord immediately after the Resurrection—flanked on the north side by one of the Annunciation, and on the south by the Presentation by His reputable parents of the Holy Child in the Temple.

By special permission of the United States Government this splendid work of intensely devotional religious art was admitted into that country duty free. Mr. Harry Hems personally superintended its erection at St. Louis, a task taking four months to accomplish. The actual work was carried out by three of his skilled assistants, whom he brought over with him especially from Exeter for that purpose. The period originally specified by the Dean and Chapter for the completion of the whole work was two years, and it is interesting to learn all was begun and finished within that time. The outlay has been \$50,000.

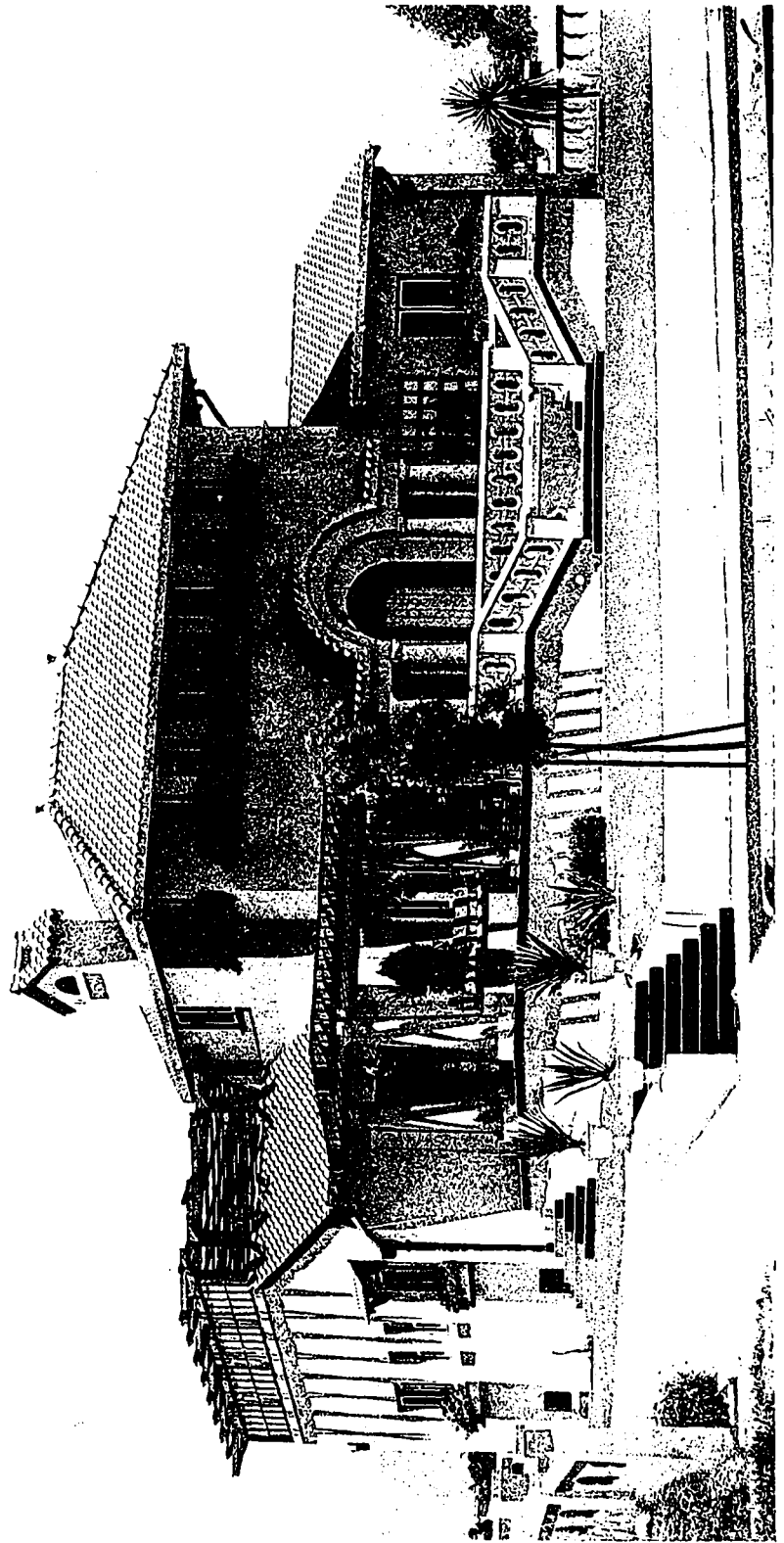
Mr. Harry Hems and his trio of trusty artificers, it is good to know, refer since their return home, in warm terms of the kindly consideration they experienced at every hand through the whole of their sojourn in St. Louis. There was not the slightest evidence of jealousy on the part of any of the repre-

sentatives of the various trade unions, all of whom welcomed them cordially as honored fellow-craftsmen from over the seas, and went out of their way to offer them every possible hospitality. Mr. Hems, who has almost completed his three score and ten years of life, is no stranger on this side of the Atlantic. Amongst other honors, he received medals at the Centennial Exhibition, Philadelphia, U.S.A., in 1876, for his exhibit there of sculpture and ecclesiastical carving, and he exhibited with the same success at the World's Fair in Chicago, in 1893.

OF RECENT ART exhibitions in London, one most interesting is a display of old glass panels at the Fine Art Society's Galleries. There are altogether 149 pieces of stained and painted glass, which are effectively shown in small groups of panels, so arranged that the light shines through the glass pretty much as it would *in situ* if it were not for a greater sharpness of contrast of dark background. The vast majority of the panels go back to early mediæval, mediæval, and Renaissance times, and the collection as a whole comprises examples of English, Flemish, Swiss, German, and Dutch craftsmanship. If the specimens are observed in chronological order the conclusion is reached that the earlier periods of the art were its finest; the quality of the glass possessed a deeper brilliancy, the tones were richer and blended into finer harmonies. It is curious to note that one of the most interesting specimens is one of the earliest examples of the art. There are later designs dealing with religious subjects, also of great interest. And then, in later periods, the artists seem to have striven for the expression of merely anecdotal ideas which have been expressed equally well, or better, in the arts of painting and carving of the same period. Examples such as these, apart from the virtuoso's and collector's point of view, and from the point of view of technical accomplishment, have not the same artistic importance as the earlier pieces.



Central Panel of Reredos.



A Residence in Concrete with Tile Roof, at Los Angeles, California. B. C. Corbett, Architect.



SPECIFICATIONS FOR CONCRETE AND MORTAR

The improvement in cement manufacture not taken advantage of by engineers in their specifications for many classes of concrete work.

THAT the quality and reliability of Portland cement have been vastly improved in recent years is well known and admitted on all sides. Improved methods of manufacture, with the advance of knowledge and the demands of engineers, have contributed to the present-day excellence of cement, to which must also be added the work of the Engineering Standards Committee of England and the Association of American Portland Cement Manufacturers, and the resulting specifications. It is noticeable, however, that many engineers, says Engineering in an authoritative article in the issue for March 15, have not yet taken full advantage of the admitted improvement in cement, and have not altered their general specifications for concrete and mortar. In too many cases the old customary proportions of cement and aggregate still stand in general specifications covering wide classes of work. Special circumstances require special treatment, and specifications are, or should be, drawn to meet these; and if this cannot be done beforehand, the resident engineer should see to the matter on the spot. Nevertheless, in the execution of public works the major part is usually carried out under what may, for our purpose, be termed the engineer's general specification. Concrete in ordinary foundations, retaining walls, street works, etc., falls, as a rule, under this heading. Naturally, the practice of different engineers varies, but it may be taken that what is generally known as six to one concrete is very largely specified in works of ordinary construction, though concrete less rich in cement is, of course, often used. But the proportion of six to one would appear to be possessed of some special virtue, judging by the extent to which it is specified. It has become, under limitations, a sort of standard, and has been adopted, we might say, from time immemorial, without regard to the efforts and success of cement manufacturers, urged on by engineers themselves, to produce a better material. There can be very little doubt that nowadays an enormous tonnage of cement is annually wasted owing to this attitude. We say wasted, because if six to one concrete is used in large quantities where eight to one or ten to one is good enough, the result is a waste of cement, and, therefore, of money. The matter is well worthy of consideration by large users of cement. It is the more remarkable since anyone with the necessary knowledge and experience will be able to recall to mind work executed with, say, six to one concrete, and to draw a comparison with other work of a similar kind, where the engineer having to practise a rigid economy prescribed eight or nine to one with perfectly satisfactory results. The situation, though perhaps not in so wide a sense, is similar in regard to mortar. Everybody likes, and

rightly so, to have a good mortar; but there is no need to use a stronger mortar than circumstances require, having regard to the qualities of the materials and the design of the work, etc. The proportions most usually specified for mortar are probably three to one, but for much work built of brickwork, and for masonry of ordinary construction, four to one cement mortar is good enough if it be properly made. The late Sir Benjamin Baker, whom all admit to have been a leading exponent of sound practice, used four to one cement mortar for part of the masonry of the Asyut Barrage, and similar proportions have been, and are, of course, used by other engineers. Still, full advantage has not yet been taken of the splendid qualities of cement as now turned out by the leading makers, and remembering that excellent work is built every day in lime mortar, if it be decided to use cement instead of lime in ordinary situations, a less liberal allowance than is often provided of the former will in many cases yield results amply sufficient for the purpose in view.

If suitable stone for "plums" or "displacers" is available at low cost, these masses may be put into concrete in many instances. It naturally depends upon circumstances whether it is cheaper to put in "plums" or not, but if the work is properly done there is, except in special cases, no reason why "plums" should be prohibited. Speaking generally, where the work is thoroughly well done, and all "plums" are fully surrounded by concrete, deposited in a trench, the maximum cubic quantity of "plums" that can be put in is about 30 to 33 per cent. of the whole. Where the situation lends itself to the use of "plums," 20 to 30 per cent. of stone so deposited is cheaper than a like quantity of concrete, and more rapidly filled in, provided the stone be available at suitable rates. Many engineers will not, however, allow "plums," and their attitude in this matter is probably due to prejudice, or to difficulties they have experienced in getting work thoroughly well done. The temptation to crowd "plums" in anyhow, not keeping them properly separated, is, unfortunately, hard for some people to resist. On the other hand, if it be intended to permit "plums," the contractors should, where possible, be so informed when tendering. Sometimes specifications are found to prohibit "plums" for all descriptions of work, but when the concreting is being carried out, a proportion of "plums" is allowed for a common-sense or other reason. In such a case the whole monetary advantage is apt to fall to the contractor unless special arrangements are made.

The attention of those who set their faces, under all circumstances, against the use of "plums" may be drawn to the masonry construction of many reservoir dams where the masonry consists of as large a measurement as possible of selected stone built in concrete of proper qualities for the class of work. The case is obviously not entirely analogous to that of dumping lumps of stone into a mass of concrete in the way "plums" are usually deposited, but it nevertheless serves to show that the latter course is, under suitable circumstances, perfectly sound practice.

Large quantities of concrete are used in the streets

of towns as foundations for different descriptions of paving. If the general average standard practice only be considered, it is found that the thickness and quality of concrete under street paving varies in different boroughs where the traffic and other conditions are comparable. The thickness of concrete usual in London is generally greater than in many provincial towns. Traffic is, no doubt, greater in London, but the loads hauled over the streets of many provincial towns exceed in weight those common in London. The question may be asked, What, under given conditions, is the minimum thickness and the cheapest class of concrete that is suitable, and which will ultimately cost the least, all things considered, on which to lay the paving of streets? If 6-in. thickness is satisfactory in one case, why is 8-in. or 9-in. thickness provided in another where the loads are no greater? One engineer will put in 8 in. of six to one concrete, covered with a three to one floating, 1 inch thick; another will specify four to one floating; another eight to one concrete, instead of six to one; and another seven to one concrete and no floating. The thickness of concrete necessary must depend in some degree upon the amount of trenching expected in the street in connection with gas, water, and other mains. This particularly applies in London, where such operations are constantly going on.

A strong committee was appointed some time ago by the Institution of Civil Engineers to investigate and report upon reinforced concrete. This committee has published a preliminary report, containing much useful information. In spite of the general knowledge and wide use of cement, there are several points of practical interest and importance in regard to which definite information is lacking. At any rate the information has not yet been focussed and placed authoritatively at the disposal of the profession. If the Institution committee now sitting would investigate and make a pronouncement upon some of these points in regard to the use of cement, the report would be of the greatest practical value.

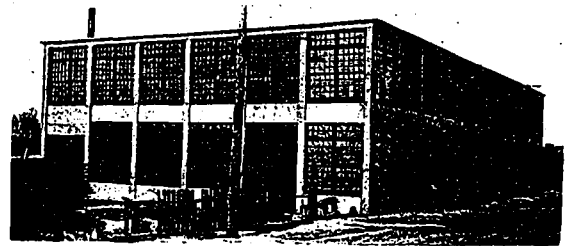
The final point that suggests itself is in reference to sand. What sand is suitable for the making of concrete and mortar? There has been of late a certain amount of discussion as to the quality of sand that is permissible. The majority of specifications call for "clean, sharp sand." What is clean, sharp sand? For at the best the description is a relative one in practical work. It becomes largely a matter of opinion and judgment, and must always remain so, depending to some extent on the class of work required, and on what it is possible to obtain. The engineer can, if he thinks necessary, always insist on the sand being washed. We should be the last to interfere with or curtail the discretion exercised by a reasonable and competent resident engineer; in fact, we think nowadays it too often happens that the resident engineer does not, or is not permitted to, exercise a sufficient amount of individuality or discretion without reference to his superiors. Some engineers would accept unwashed sand which others would insist on being washed, and both might be perfectly right under different circumstances. In the course of the evidence quoted in the preliminary report of the

Institution Committee on reinforced concrete the opinion was expressed that too much washing of the sand may be undesirable. That is to say, under certain conditions it may be a mistake to insist on the sand being quite clean or free from all foreign matter. It is well known that experiments have been made, perhaps more in America than in this country, on the use of sand containing clay or other so-called impurities, the results of which tended to prove that the presence of a certain percentage of clay was beneficial. A paper was read about two years ago at the meeting of the Institution of Mechanical Engineers in Liverpool which showed that the presence of certain impurities in the sand, if not in too large a quantity, yielded improved results in the mortar under test.

The probability is that for years there has been used sand regarded as clean, or clean enough, which in reality was not clean—i.e., free from all clayey or other foreign matter. It is also probable that in other cases contractors have been put to unnecessary expense and trouble in washing sand which was good enough for the work required, or in obtaining sand in strict compliance with the specification as to cleanliness. Work has to be carried out from time to time for which nothing but the best of every description of materials and workmanship will suffice, but in the ordinary work of construction under normal conditions, extreme strictness is usually not essential, but only extravagant. At any rate, sufficient data have not yet been published in regard to the use of sand containing so-called dirt, and we commend the subject to the attention of the Institution committee, whose considered judgment, if it is able to take the matter up, would carry great authority.

TRADE NOTES

AN INTERESTING type of factory building is illustrated by the structure recently erected at Preston, Ontario, for the Canadian Buffalo Sled Company by J. H. Mickler of Preston. It is one of the best expressions of extraordinary percentage of fenestration, as well as general efficiency and economy



in time and material in construction. The construction is unique in that it is slow-burning mill construction, yet it has an exterior appearance of reinforced concrete, being cement faced on galvanized expanded metal lath so arranged that it is absolutely windproof. The sashes are all double glazed, making it an easy heating proposition, in fact less than half the usual radiation for brick construction is required in the coldest and stormiest weather. The

maintenance and construction cost of this building is fully 25 per cent. less than for brick buildings, and the saving of time in erecting this type of building is an important item. The constructor states that a building say 120 feet long by 60 feet wide, two stories high, can be built by twelve men in about three weeks' time.

STEEL AND RADIATION has been awarded the contract for all the metal casement windows for the sixteen story C.P.R. building, Toronto (Darling & Pearson, architects). This is the largest order for casement windows ever placed on this continent. The contract specified metal and the Crittall form of casement, of Braintree, England, was selected after keen competition with other standard makes.

STUART SMITH, cementologist, Dallas, Texas, has accepted the chief chemistship of the Superior Portland Cement Company, Ltd., Orangeville, Ontario. Mr. Smith's experience in the Portland cement industry covers a period of ten years, five of which he held the chemical directorship of the Marquette Cement Manufacturing Company, La Salle, Ill. He also served in the chemical engineering department of the Lawrence, Alpha and Atlas Portland cement companies of the famous Lehigh district.

INCREASED business in the sale of J-M asbestos, magnesia and electrical supplies, throughout the territory covered by the Canadian H. W. Johns-Manville Co., Limited, at Winnipeg, has necessitated a move from their old quarters at 320 Main street to 89 Princess street. The new building will enable a much larger stock of goods to be carried on hand than heretofore. Mr. M. C. Burgess, who has been a resident of Winnipeg for many years and is well and favorably known in that section, has charge of this office, and under his supervision is a force of nineteen men.

ARCHITECTS and contractors are naturally interested in anything which will tend to increase the standard of their specifications, and Solomon & Spielmann, of 22 St. John street, Montreal, are in a very happy position in handling particularly attractive lines. This company are the exclusive Canadian agents for Griffiths Bros. & Co., London, England, and are obtaining a remarkable sale for their "Rapidal" water paint. "Rapidal" is inexpensive, easily applied, has a great covering power and is as soft as butter under the brush, and when applied sets as hard as a rock and becomes thoroughly washable in a few weeks. It stands perfectly on Portland cement, brick, stone, wood, rough cast, glass, and on new plaster, on Canadian red and all other kind of work. Another product of Griffiths Bros. is their "Ferrodor" elastic paint and those who have used it for several years testify to "Ferrodor" being superior to red lead or zinc. "Ferrodor" is used by leading railway and gas companies and preserves all metal and wood work. It does not crack and it stands great dry heat and steam,

and is free from all substances that can affect the metal. The "Vitros" enamel which is now being specified for exclusive decorating work, will resist boiling water and dry heat and flows easily and permanently. "Vitros" is not a cheap enamel, but has stood the test; for baths, bathroom walls, lavatories and general decoration it is an excellent composition.

EASTERN Canadian financiers and manufacturers, headed by F. B. McCurdy, J. R. McLeod and F. M. Brown, with their associates, have concluded arrangements with the city of Port Arthur for the immediate erection of a modern steel and wood car plant, with a capitalization of \$5,000,000. At a meeting of the Board of Trade and the Council of the city of Port Arthur on March 29th all details were finally decided on by which the company, which will be known as the Ontario and Western Car Co., Ltd., will establish its plant. The company will employ 1,000 men, and as the plant will be located at the head of navigation and the centre of Canada it will be in a position to supply freight and passenger cars at the point where they are most needed. Owing to the geographical location, the company should be able to assemble materials more cheaply, and therefore build cars at a lower cost, than any other plant in Canada. Credit is due to the Industrial Commissioner of Port Arthur, N. G. Neill, who has been the means of promoting this enterprise and interesting Eastern capital.

THE INCORPORATION of the business of W. J. Hynes, known to the building public for the past thirty years, became a necessity through the great increase of business and the need for a substantially enlarged plant. In forming the company Mr. Hynes has associated with himself men who have been with him for a number of years and who are thoroughly competent to handle the increased responsibilities entailed by the rapid growth of the business, while the personal supervision of Mr. Hynes will, of course, continue as in the past. The officers of the company are as follows: W. J. Hynes, president and general manager; Wallace Haney, vice-president and contract superintendent; R. M. Case, second vice-president and shop superintendent, and Edward W. Miller, secretary-treasurer. Its field of work covers every line and ramification of modern plastering, viz.: metal and wood furring and lathing and construction work and plain and decorative plastering in all materials. The manufacture of architectural relief decorations in staff, cements—in fact practically all plastic materials, has long been an important branch of Mr. Hynes' business, and the new company proposes to extend and widen its activities along this line. Models of every variety and for all purposes are made to details supplied, or from original designs, and the fact that a present, contracts for relief decorations are being executed for shipment to cities as far apart as Edmonton, Alta., Winnipeg, and Charlottetown, P.E.I., shows the wide scope which this branch of the work has already reached.

ARCHITECTURAL SCHOLARSHIPS

THE COMMITTEE on University Scholarships of the Architectural League of America, has announced the programme for 1912-1913. Through its affiliation with the Toronto Society of Architects the League is international in its character and the scholarships are open to Canadian draftsmen that come under its conditions equally with those in the United States.

ANNOUNCEMENT.

For the year 1912-1913 four Scholarships are available, three in Harvard University and one in Washington University, St. Louis. These Scholarships entitle their holders to free tuition for one year, the cost of such tuition being \$150.00. The Scholarships will be awarded to those who stand highest in the competitions in design to be held in May, and who fulfill the other requirements. The competitions will be conducted in the various cities through the organizations affiliated with the League.

Candidates—(a) Candidates must have graduated from an approved high school or (b) they must have passed the entrance examinations to the university for whose scholarship they are candidates, or (c) they must bring evidence of equivalent training. They must also have worked not less than two years as draughtsmen in architects' offices, or must be graduates of a recognized institution of learning of college rank, and must be members of an organization associated with the League.

The competition for the Scholarship in Washington University will also be open to students who have not yet entered the junior class in design in that institution.

Should any candidate successful in the competitions fail to qualify the candidate next in rank will be appointed.

The successful candidates must bring a written recommendation from their last employers and must be endorsed by the Chairman of the League Committee on University Fellowship.

Candidates should notify the above chairman as soon as possible of their intention to take part in the competition. The chairman will send such candidates a blank on which the candidate will indicate what his training and education have been.

Programme—The programmes will be given out May 11th, at 9.00 a.m., at a place in each city designated by the officers of the local organization or by the Chairman of the League Committee on University Fellowships in the case of individual members of the League.

Eight consecutive hours will be allowed for making a preliminary sketch, a tracing of which will be retained by the competitor, the original being handed to those supervising the preliminary competition.

Supervisors of examinations will endorse the original sketches and send them at once, either to the chairman of the Department of Architecture of Harvard University, or to the Professor of Architecture of Washington University, according to the programme developed by the candidate.

The essential features of this sketch are to be adhered to in preparing the final drawings.

Final Drawings—The competitors will have until Monday, May 27th, to complete the drawings called for by the programme. The drawings are to be sent in a mailing tube, and must bear the postmark or express stamp of the above date. The drawings of the unsuccessful competitors will be returned.

Identification—The name of the designer should not appear on any of the drawings. The sketch and the final drawings should bear some device, a copy of which, with the author's name and address, should be sealed in an envelope and enclosed with the drawings. The competitor must not have any assistance whatever in preparing his drawings and must enclose in his identification envelope a written statement, signed by him, to the effect that the drawings have been made by him alone, without the assistance of other persons.

Judgment—In judging the drawings great weight will be

given to the qualities shown in the preliminary sketch, as well as in the final drawings.

The Scholarships in Harvard University—These Scholarships are for special or for regular students. The preliminary sketches and the final drawings should be addressed to the chairman of the Department of Architecture, Harvard University, Cambridge, Mass. The drawings will be judged by the Professor of Architecture in that University and a Boston architect appointed by the League. The successful candidates will be required to fill out an application blank to be obtained from the chairman of the Department of Architecture, answering certain questions tending to show that they have fulfilled the preliminary conditions of candidacy.

The University reserves the right to grant one of the Scholarships for the year 1912-1913 to a League applicant for re-appointment who has done distinguished work. One of these Scholarships will be reserved for a candidate outside of Massachusetts, unless there should be no such candidate whose design in the opinion of the judges is of sufficient merit.

The Scholarship in Washington University—The preliminary sketches and the final drawings submitted for this Scholarship should be addressed to the Professor of Architecture, Washington University, St. Louis, Mo. The award will be made by that officer and a St. Louis architect representing the League.

Candidates should at once communicate with the Professor of Architecture regarding their eligibility. The successful candidate will be able to enter Washington University as a regular student.

Committee on University Fellowships, Architectural League of America.

ABRAM GARFIELD,
WM. A. BOHNARD,
ALBERT E. SKEEL, Chairman,
Rose Building, Cleveland, Ohio.

April 1, 1912.

ARCHITECTURAL FIRMS

ISADORE FELDMAN wishes to announce that he is now practising architecture in offices located in the Canadian Bank of Commerce building, 199 Yonge street, Toronto.

EDMUND H. YEIGH, formerly with J. P. Hynes, has opened an office in the Kent building, Toronto, for the practice of architecture. Mr. Yeigh is an architect of ability and address.

TYPE under the Old Country sketches in last issue of CONSTRUCTION misspelled the name of the artist, Andrew Rollo, A.R.I.B.A. Mr. Rollo's work is so well known, it is hardly necessary to call attention to the mistake.

W. F. BUTLER, architect and superintendent, of St. John, N.B., announces that on January 31 last the partnership which existed between him and Mr. J. M. Macdonald was dissolved and Mr. Butler is now carrying on the business with offices at 5 Bell street.

WILLIAM FRAZER, A.R.I.B.A., has opened an office at 34 Victoria street, Toronto, for the practice of architecture. His experience is general, particularly in office building, factory construction, churches, residences and apartment houses. For the past four years Mr. Frazer has been manager of the office and designer for G. M. Miller & Co. Previous to that time he practised in the Old Country and successfully carried out the National Burns Memorial at Mauchline, a large concert hall, a technical school at Dunoon, and other work.

Barrett Specification Roofs

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IN the illustration below the Turner Construction Company, of New York has brought together in a scale drawing an accurate representation of most of the important modern concrete buildings which they have erected during the past nine years, at an approximate cost of \$12,000,000.

It is an imposing display of best types of modern construction—"a concrete city" indeed—scientifically designed for maximum service at minimum cost and minimum maintenance.

In the use of concrete, the designers of these buildings planned for economy—the real economy that results from adequate strength and no repairs.

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Barrett Specification type of Roofs	1,490,523 sq. ft.
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Slate Roofings	21,640 sq. ft.
Tile Roofings	5,619 sq. ft.
Ready Roofings	38,381 sq. ft.
Copper Roofings	6,355 sq. ft.
All other kinds	7,448 sq. ft.

It is important to remember that while all these buildings were constructed by the Turner Construc-

tion Company, the specifications were drawn by a large number of architects and engineers. That the great majority of these specified a Barrett Specification type of roof, emphasizes the fact that whenever this roof is practical the best modern engineering practice will have no other kind.

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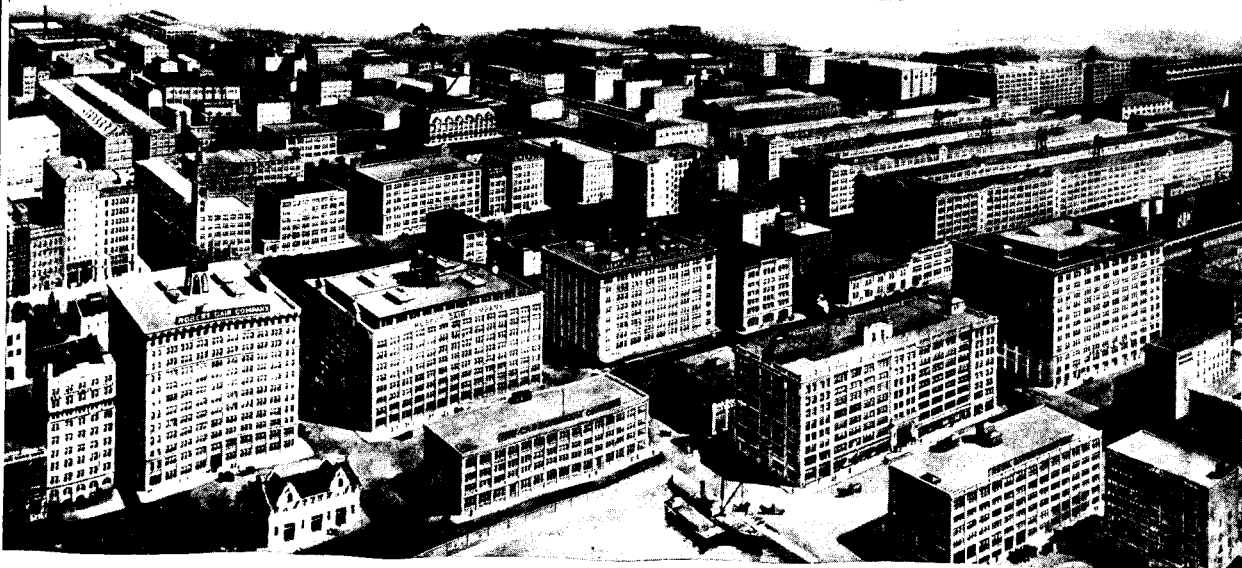
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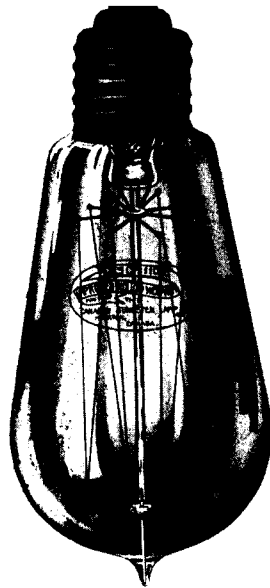
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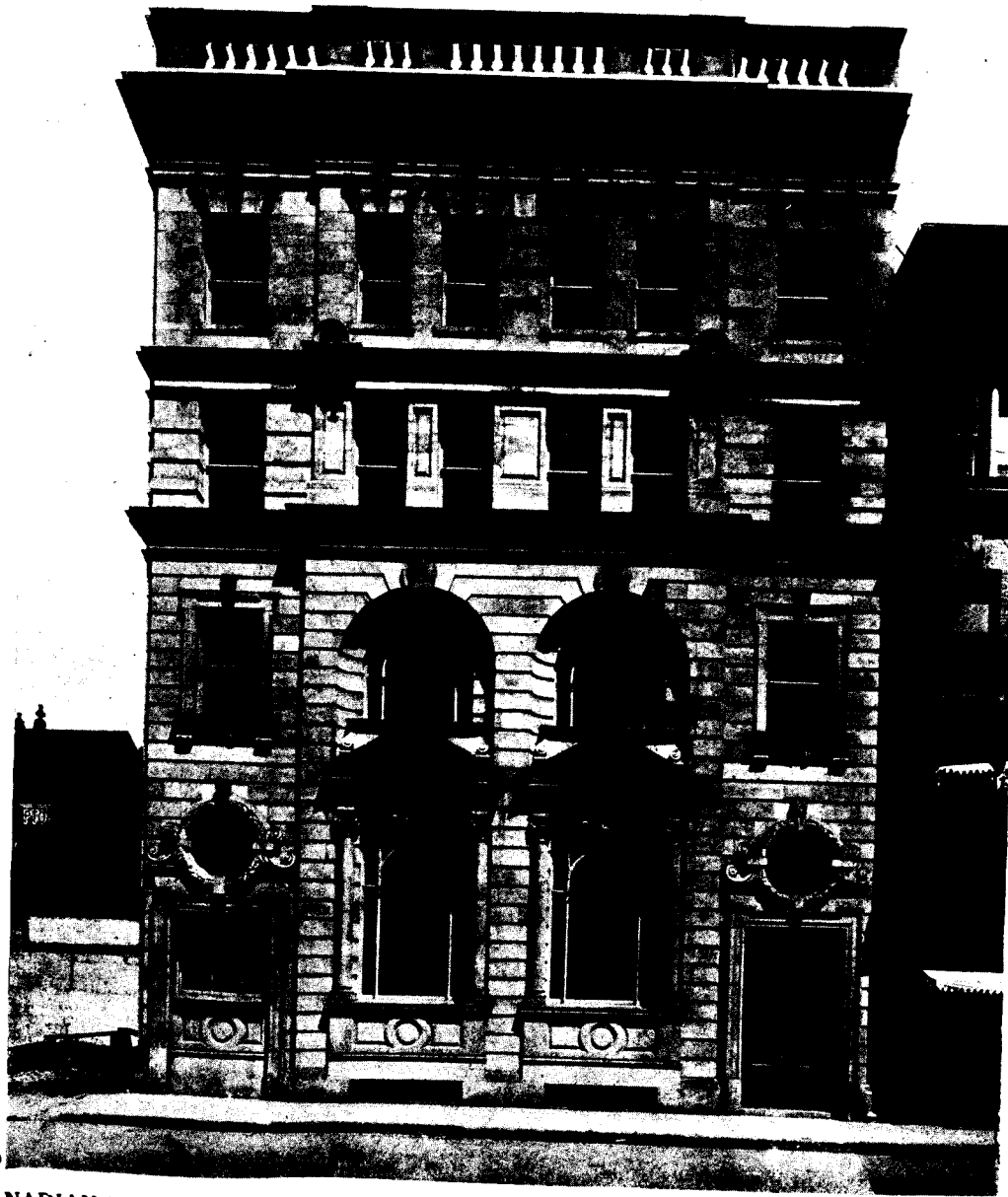
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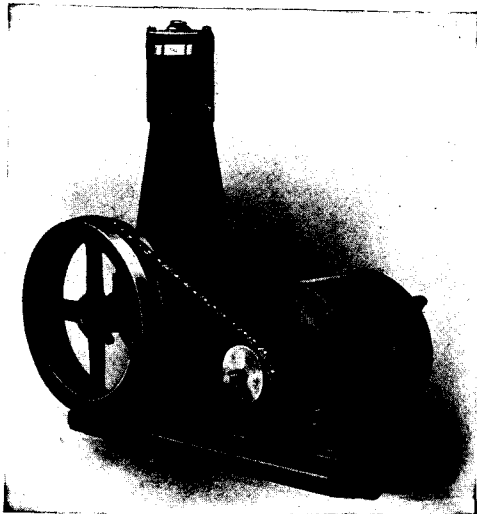
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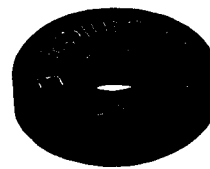
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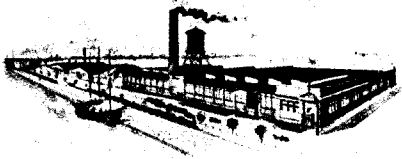
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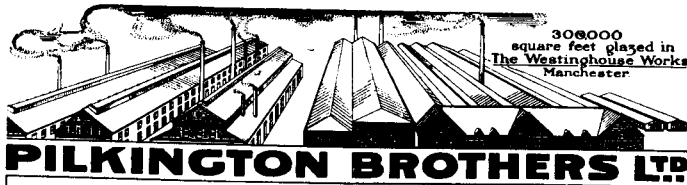
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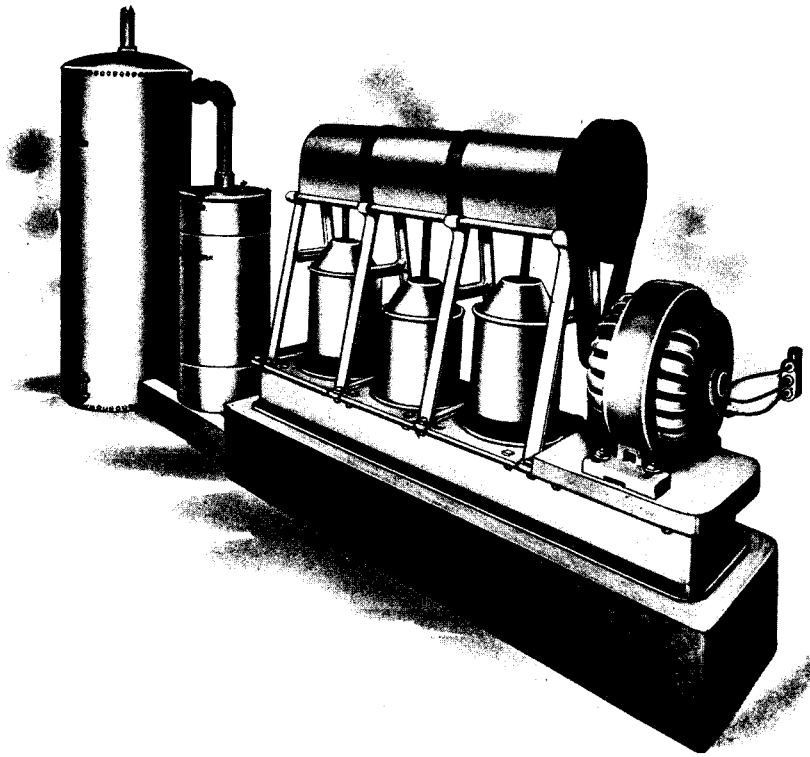
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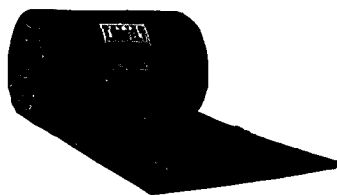
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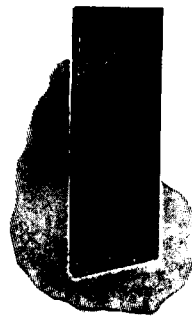
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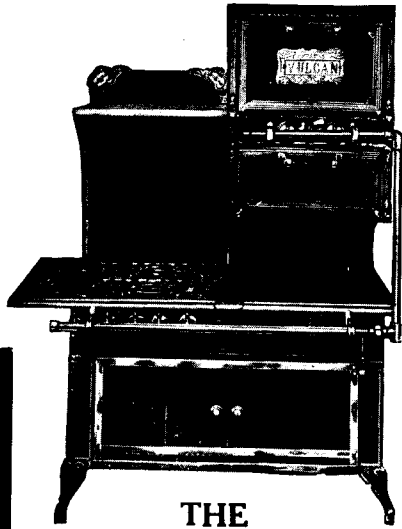
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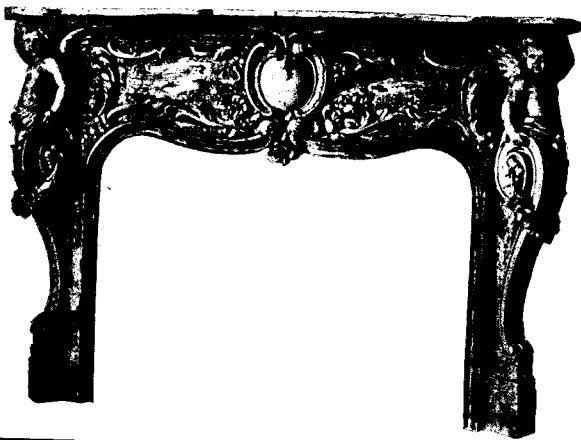
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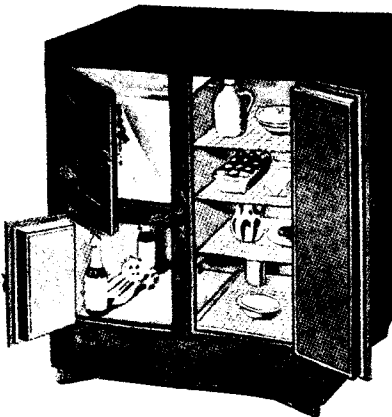
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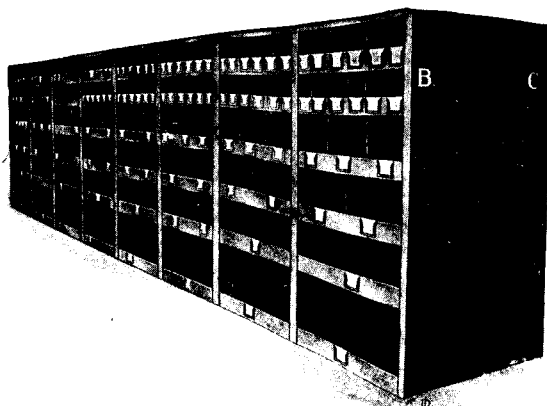
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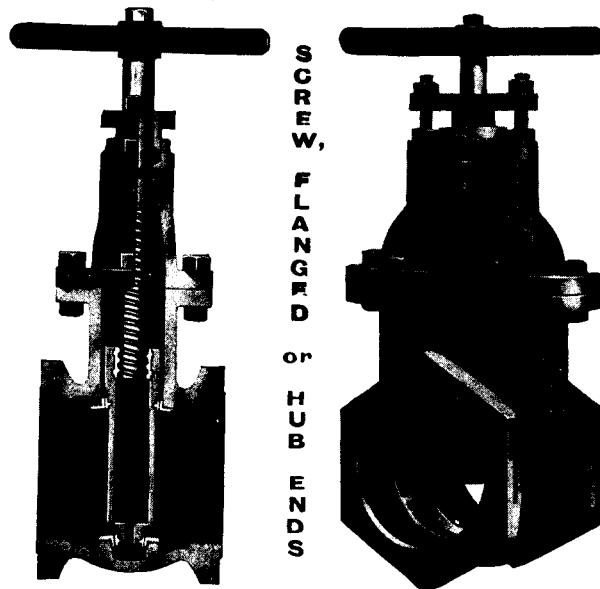
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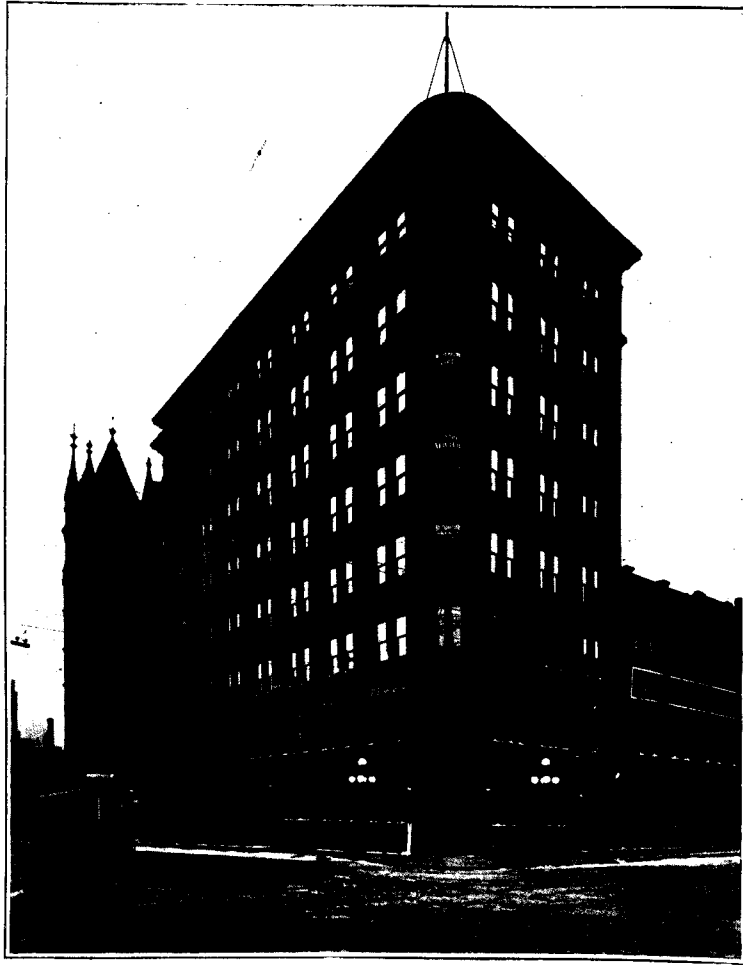
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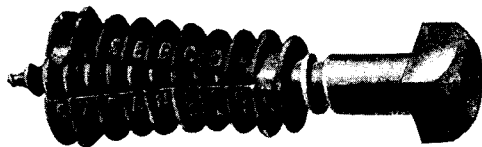
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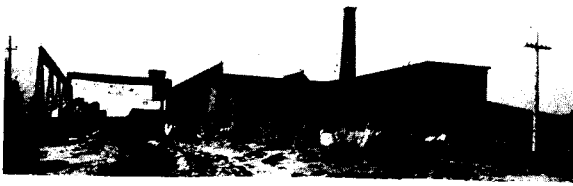
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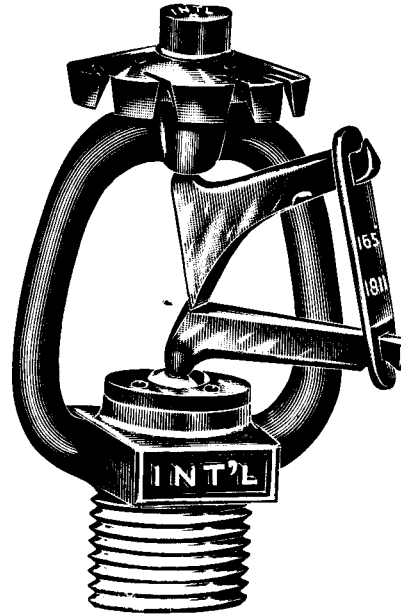
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the direction of the National
Board of Fire Underwriters.

(c) Included in the list of ap-
proved Electrical Fittings issued
by the Underwriters' National
Electric Association.

(d) Inspected and labeled un-
der the direction of the Under-
writers' Laboratories (Inc.)

(e) Included in the list of con-
duits examined under the stan-
dard requirements of the National
Board of Fire Underwriters, by
the Underwriters' National Elec-
tric Association after exhaustive
tests by the Underwriters' Lab-
oratories and approved for use.

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