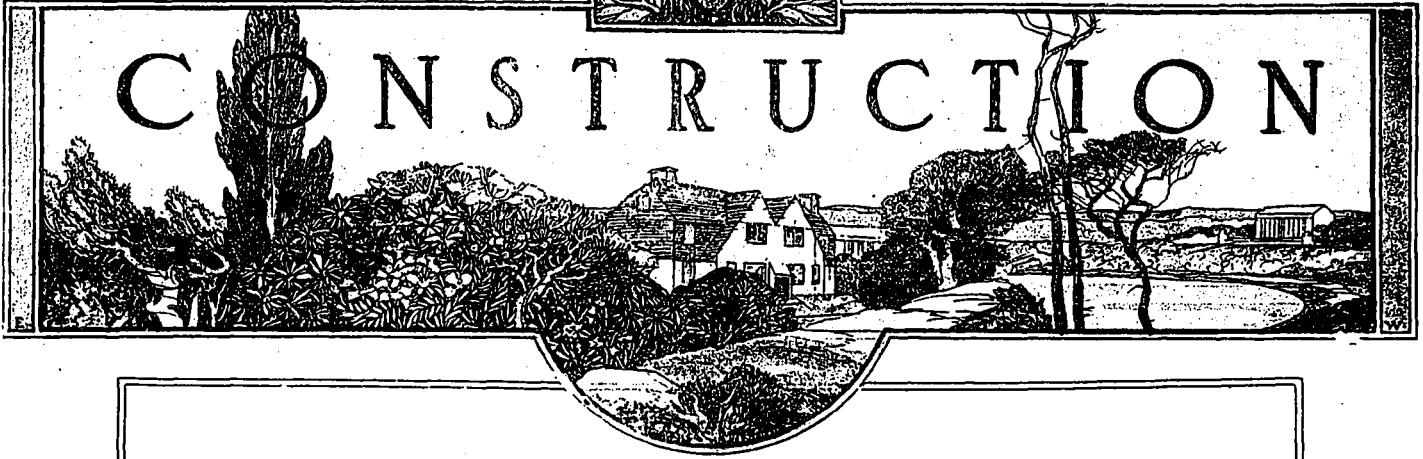


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CONSTRUCTION



January, 1919

Volume XII, No. 1

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H. GAGNIER, Limited, Publishers

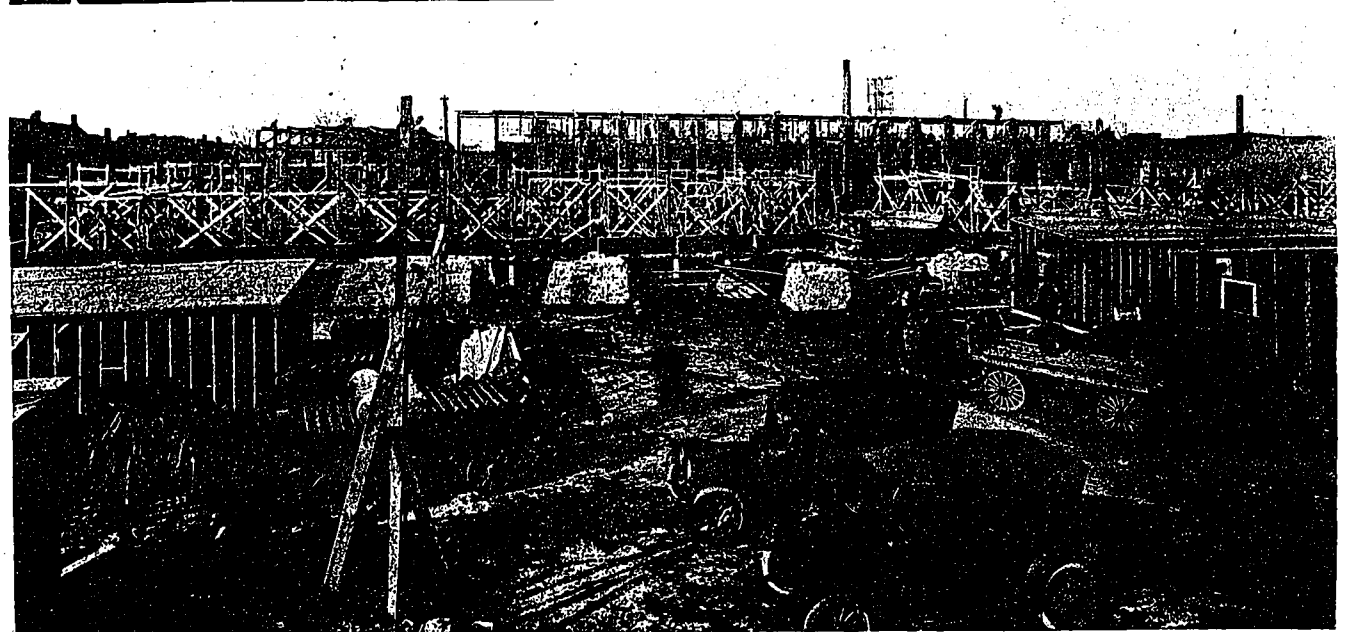
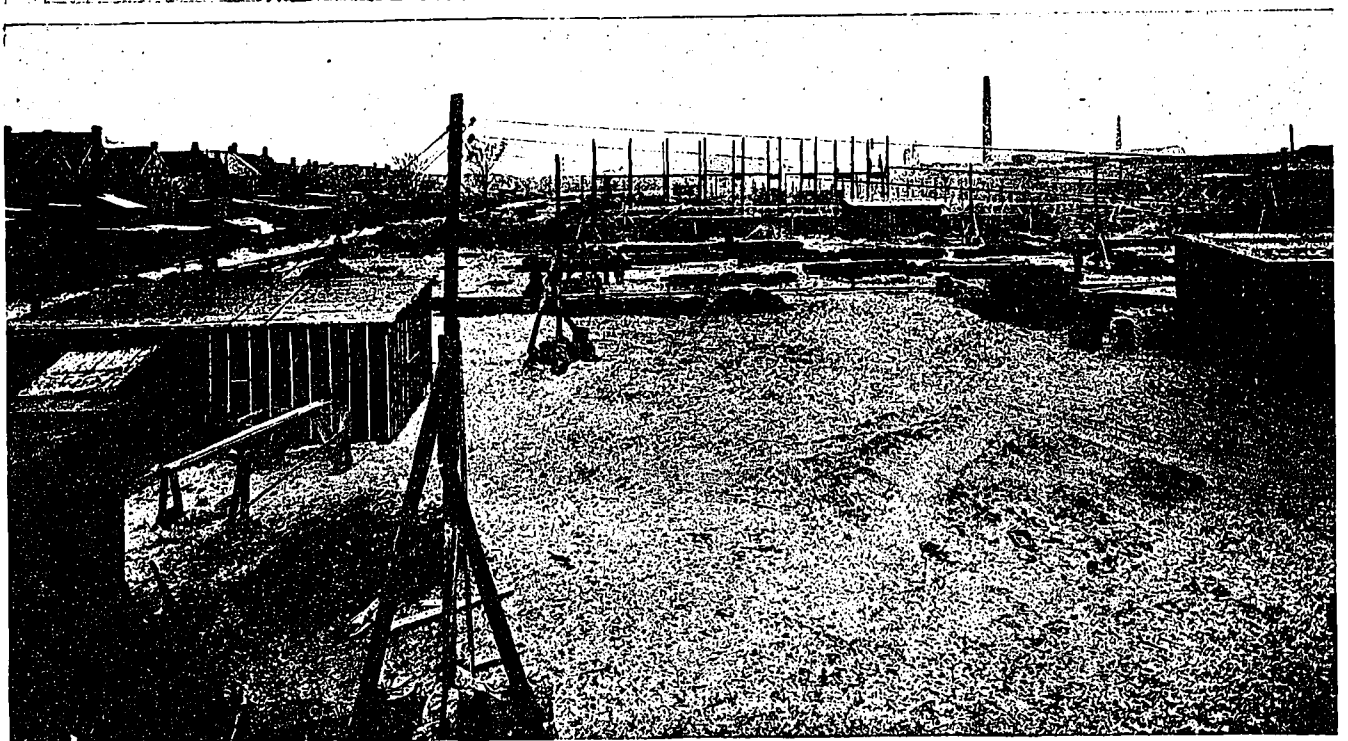
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BRANCH OFFICES

MONTREAL

NEW YORK

CONSTRUCTION



PROGRESS VIEWS, FACTORY OF THE CANADIAN AEROPLANES LIMITED, TORONTO.

(1). Digging foundations February 1st, 1917. (2). First building operations, February 16th, 1917. (3). Metal Shop and Fuselage Buildings, March 1st, 1917.

CONSTRUCTION



METAL SHOP AND FUSELAGE BUILDING, MARCH 15TH, 1917.

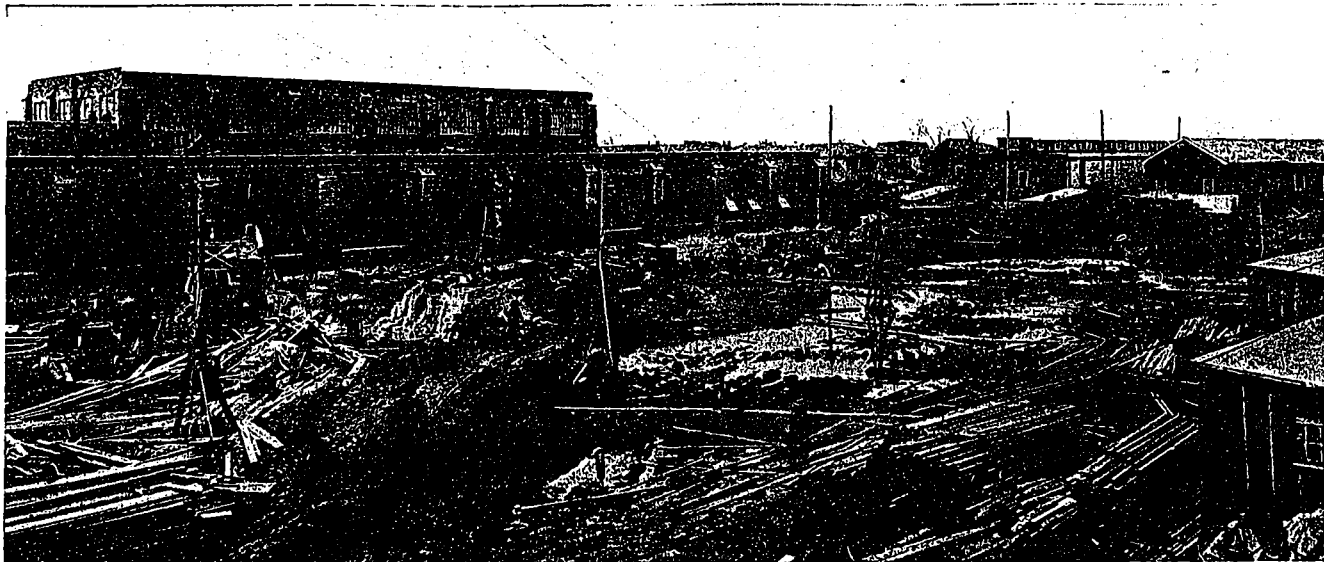
Canadian Aeroplanes Limited, Toronto

WHEN the British Government decided to train pilots in Canada about two years back, the question was how soon could arrangements be made to produce aeroplanes in this country, as machines could not be imported from England, and the United States had no equipment of this kind to spare.

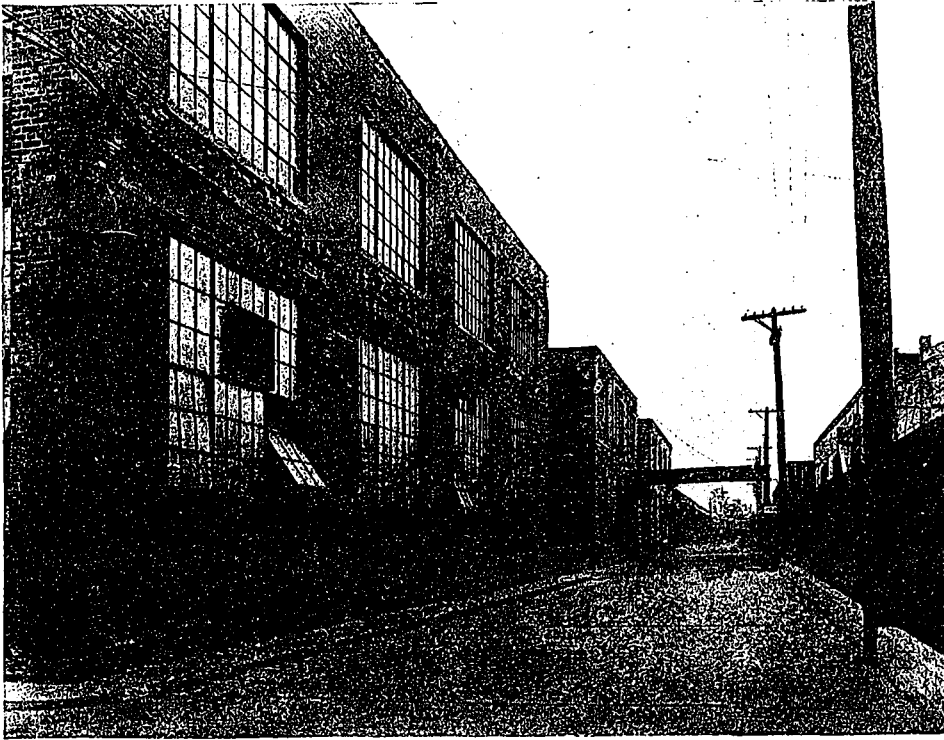
Mr. F. W. Baillie, now Sir Frank Baillie, was asked to undertake the organization of this work, with results which are now pretty much a matter of history. As an instance of manufacturing enterprise and productive capacity, the factory of the Canadian Aeroplanes, Limited, stands as an important war-time achievement. As a building undertaking, it represents an accomplishment which for speed of construction and organizing ability and resourcefulness has never perhaps been exceeded anywhere.

Ten acres of buildings started and completed in sixty-six actual working days is the record established—a feat all the more remarkable when the adverse weather conditions under which the work was carried out is taken into consideration. The group altogether comprises a storage and office building, metal shop, wood-working mill, fuselage building, winged panel building, power house, boiler house, experimental building, wood drying house, garage, and timekeeper's office.

Before the work was started an investigation was made of all possible sites in the vicinity of Toronto suitable for the erection of such a plant. It was necessary to get a level property, if possible, which could be served by railway facilities and be well-placed as regards the labor market. Such a property, comprising



PROGRESS VIEWS, APRIL 19TH, 1917, SHOWING FUSELAGE AND WING BUILDINGS PRACTICALLY COMPLETED, WITH EXPERIMENTAL BUILDING TO RIGHT.



CANADIAN AEROPLANES LIMITED, TORONTO, VIEW ALONG PRIVATE THOROUGHFARE KNOWN AS BAILLIE AVENUE.

approximately ten acres, was found just north of Lappin avenue on Dufferin street. On February 1st, 1917, the same day the property was purchased, teams were put to work breaking up the frozen ground, and construction started on the erection of permanent buildings that would be suitable for general manufacturing purposes after the war.

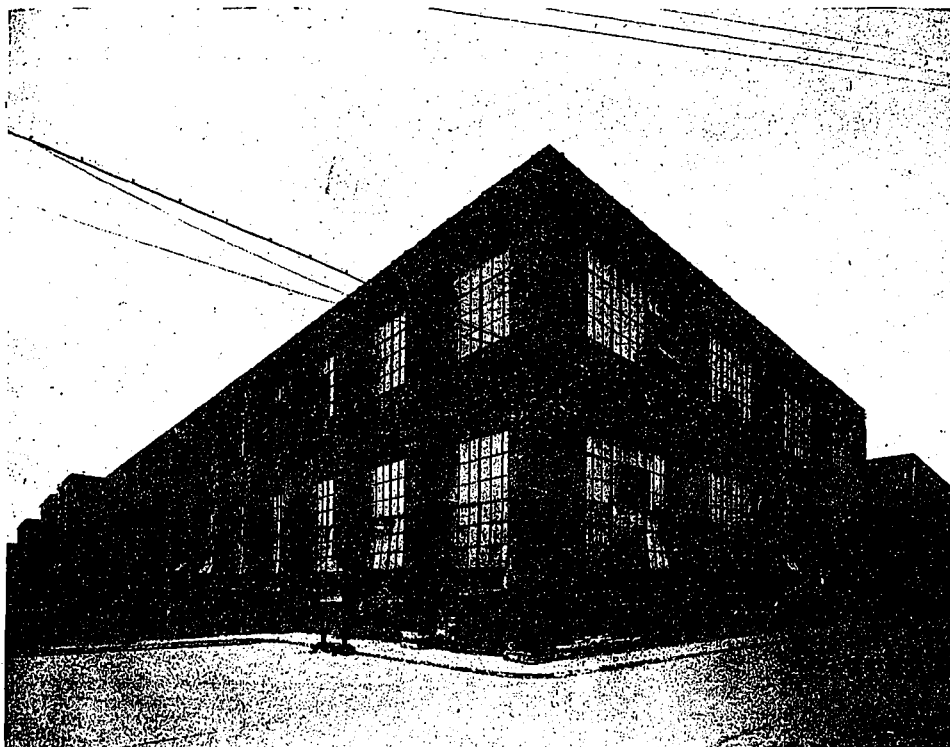
Immediately on acquiring the site the architect was instructed to begin work on the plans according to requirements previously deter-

constructed floors and splined plank roofs.

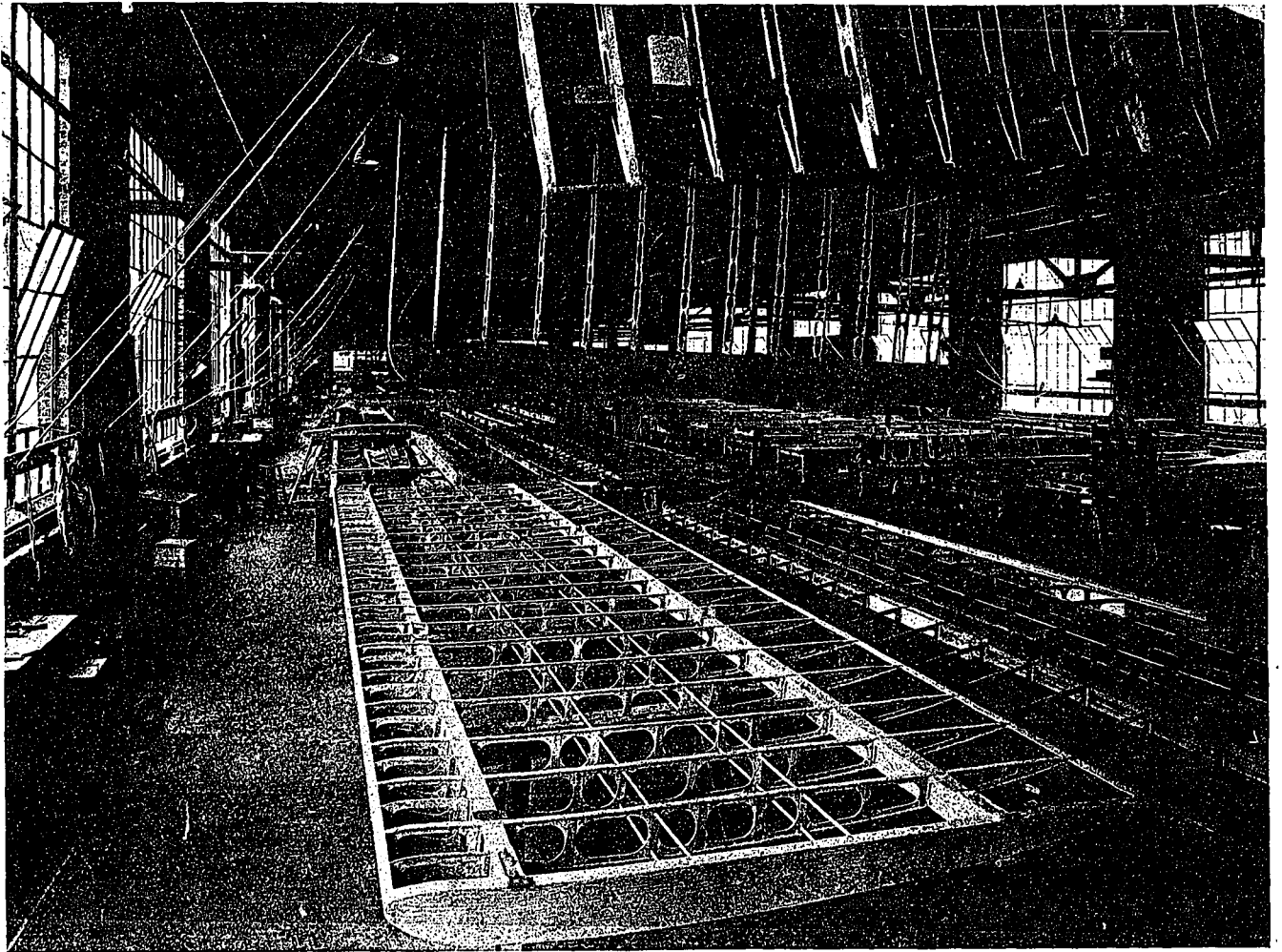
Some idea of the rapidity of construction can be gathered from the fact that the company was occupying some of these buildings inside of a month, while within forty-five days' time the manufacture of aeroplane parts was in progress to a considerable extent.

There was practically no overtime work on the job, and no work on Saturday afternoons, Sundays or at night, save in a few isolated cases, such as some rough labor work and some over-

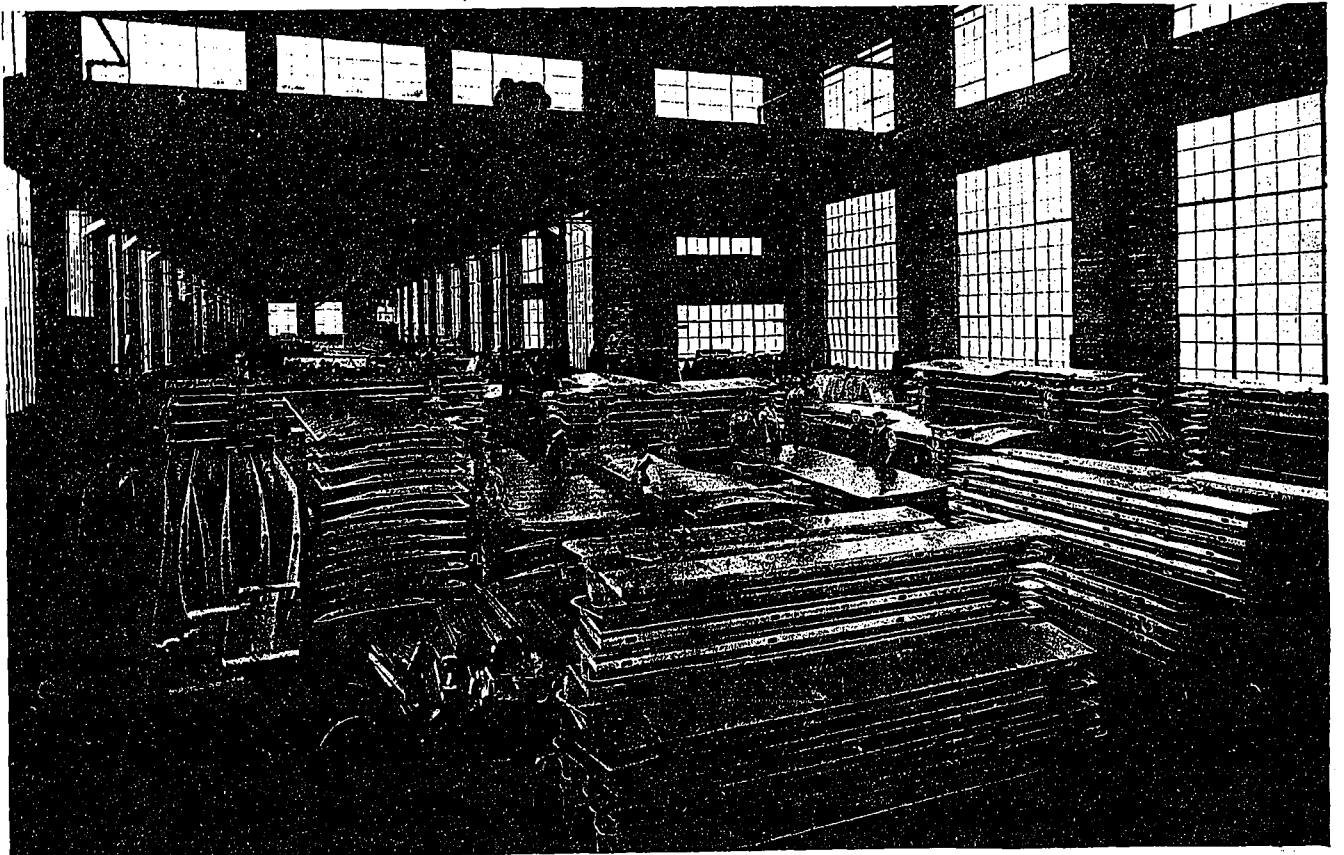
time for painting at the very end. By May 7th, three months and a week after operations started, the buildings were completed, roadways and sidewalks laid, and the contractors' plant entirely removed from the premises. By deducting Sundays, Saturday afternoons, rainy days and days when it was too cold to work, the total number of full working days amounted to sixty-six. It is doubtful if such a record has been equalled by any similar war work on this continent. This result was obtained through the hearty co-operation of the owners, architects and contractors, and de-



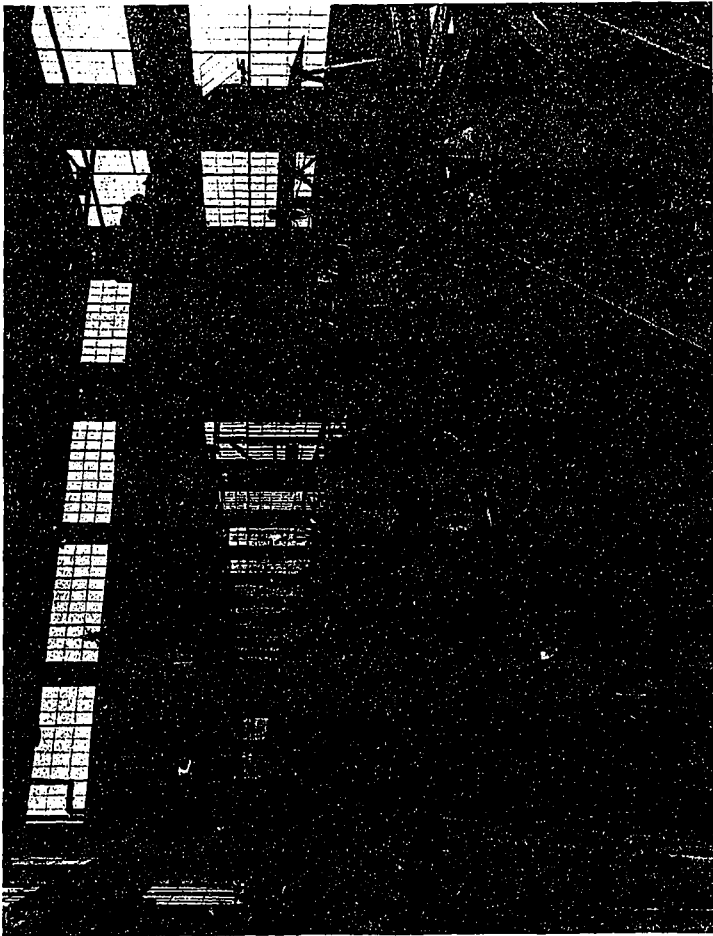
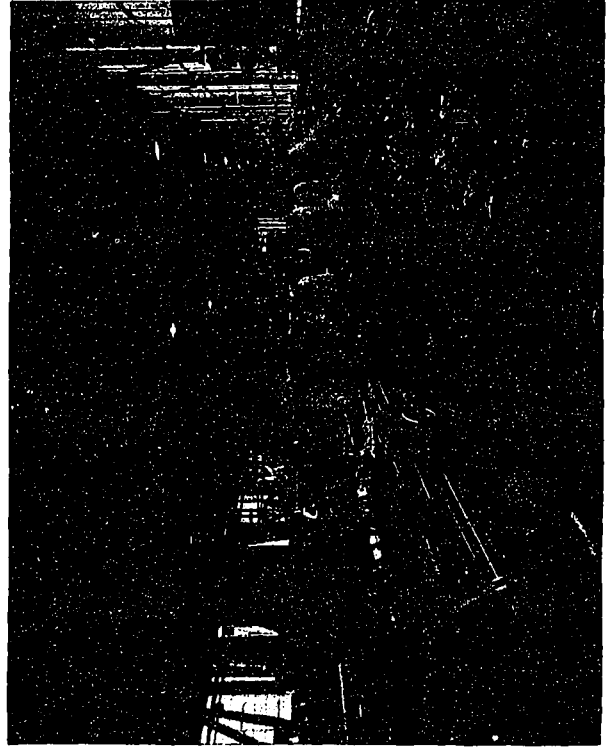
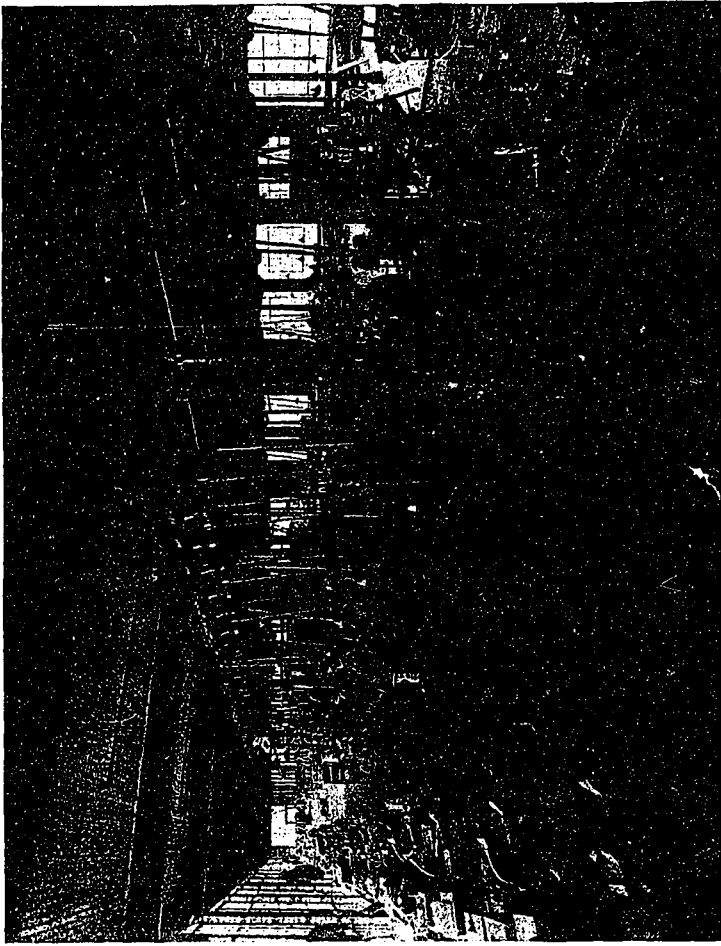
METAL SHOP.



INTERIOR OF WING BUILDING, SHOWING PANELS READY FOR COVERING



SHIPPING ROOM, FACTORY OF CANADIAN AEROPLANES LIMITED, TORONTO. JOHN M. LYLE, ARCHITECT.



VIEW SHOW-
ING SECTION
OF TOOL ROOM

SHIPPING
ROOM,
FUSELAGE
BUILDING

Factory of
Canadian Aeroplanes
Limited

JOHN M. LYLE, ARCHITECT.
JACKSON-LEWIS COMPANY, CONTRACTORS.

TOOL DE-
PARTMENT
METAL SHOP.

FLYING BOAT
NEARING
COMPLETION.

1914/7/18

notes organizing methods and capabilities quite upsurpassed.

Before any contracts were let, an investigation was made by a Canadian inspection company as to the steel in hand at the time in Montreal, Winnipeg, Hamilton and Toronto, and the contract finally awarded to a local steel firm on the basis of a penalty and bonus system; the contractors to receive a bonus of \$100 per day on each building for every day under his schedule for delivery, and to be penalized an equal amount for every day behind such a schedule. Some idea of the speed in delivery and erection of the steel may be gathered from the fact that on a schedule of delivery set for six weeks, the contractors were able to earn a bonus of six thousand dollars.

When it is borne in mind that, besides steel columns, beams, etc., there was a great deal of truss work—certain spans being $67\frac{1}{2}$ ft. wide, and other 60 and 45 ft. wide—some idea may be gathered of the fabrication entailed thereby. The wing panel building, which has a span of 60 ft., is 400 ft. long, while the fuselage building, which has a span of 45 ft. in one section and $67\frac{1}{2}$ ft. in another, is over 500 ft. long.

In order to preclude the possibility of any delay of materials, orders were only given with the strict understanding that deliveries would be promptly made. A contract was made with a local brick company that they were to agree to take no other orders and to supply a continuous haulage of at least twenty teams per day. If, in addition, it was deemed necessary by the architect, they were to ship by rail. At one time bricks were being laid hot from the kilns.

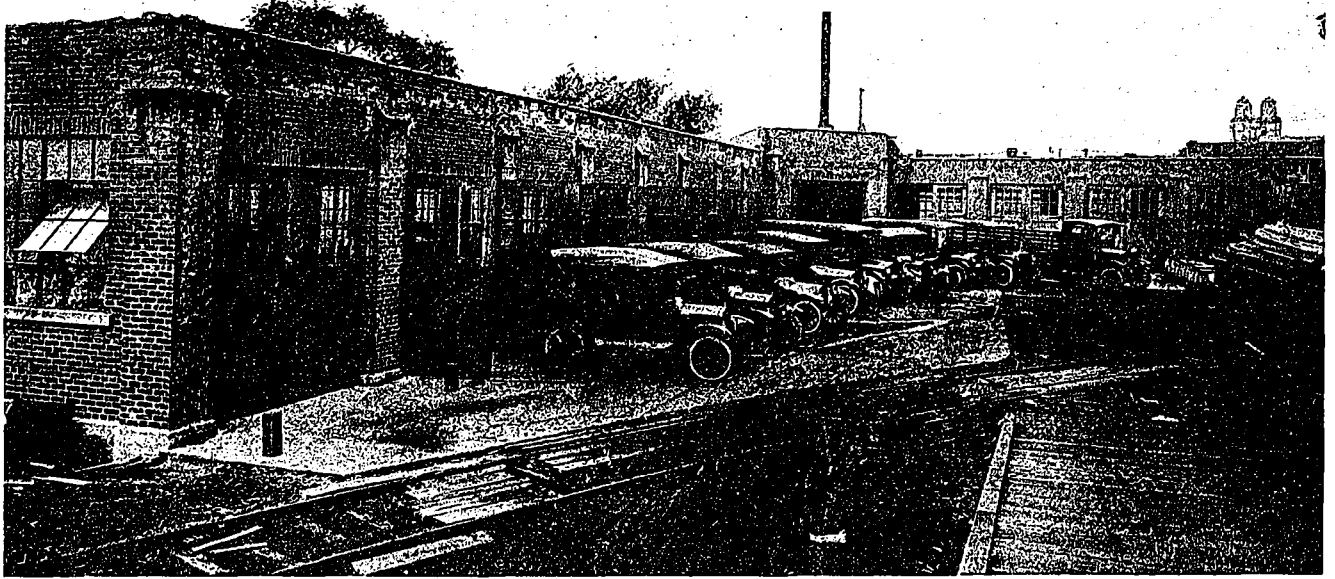


WING BUILDING, FACTORY OF CANADIAN AEROPLANES LIMITED, TORONTO.

During the first two weeks very severe weather prevailed, the thermometer dropping to 15 to 18 degrees below zero. Special precautions were taken to protect the trenches from the frost, and also the concrete during erection. Later in the spring, owing to the rather wet character of the soil and the fact that snow and ice had accumulated inside the buildings, it was necessary to thaw out same



FUSELAGE BUILDING, SHOWING MACHINES READY FOR SHIPMENT.



GARAGE CANADIAN AEROPLANES, LIMITED, TORONTO. JOHN M. LYLE, ARCHITECT.

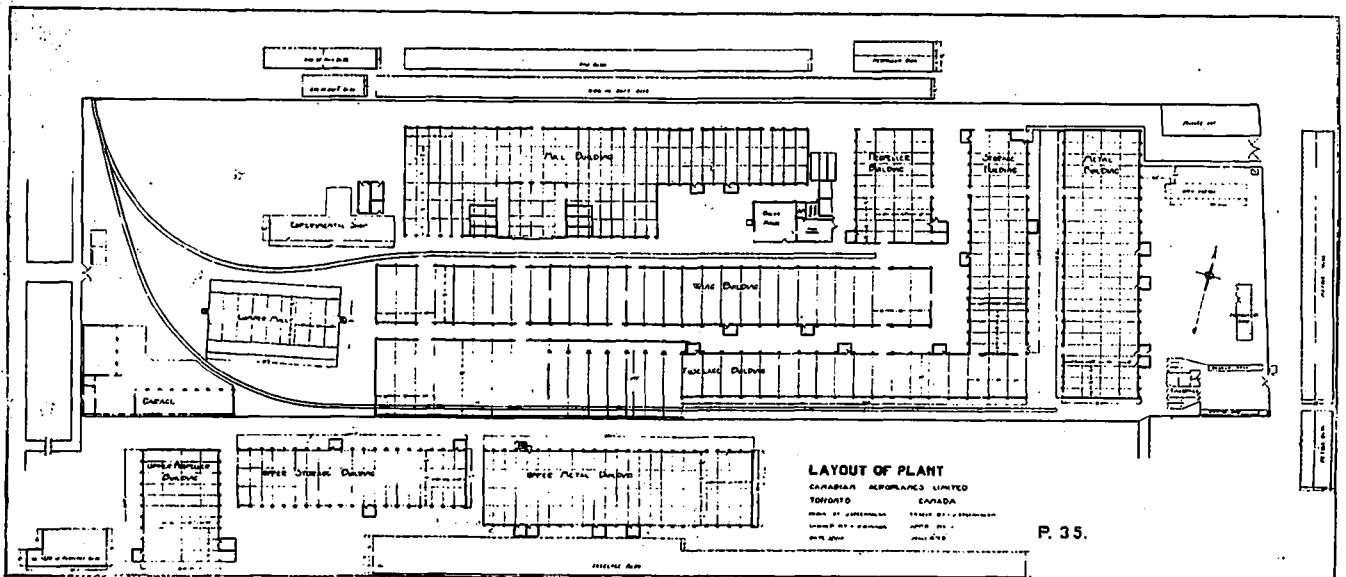
with auxiliary salamanders. A sea of mud was the natural result, and it was necessary to drain off the water from this mud and fill in with cinders. Steam rollers were put in to crush down this cinder-fill, and it was an interesting sight to see at one end of the building a sea of mud, in the middle a steam roller at work, and at the farther end a gang of men laying the work floors.

The buildings are heated by steam from a central plant, radiators being used instead of piping. This service work was put through in record time by a local heating firm, employed under the general contractors. Owing to the character of the work to be carried on in the plant, it was necessary to have specially well-lighted shops, and this has been obtained by the use of large areas of metal sash.

Special care was also given to the matter of routing materials in the process of manufacture

so as to successfully co-ordinate all branches of the work. With this in view, the buildings were planned with a central stock room, distributing the raw material stock on one side to the metal-working plant, and receiving it back again at the other end of this stock building, where it was joined with the finished mill-wood part received at the other side of the stock room, and distributed to the assembling departments. Material from the lumber yards, situated at the west end of the property, likewise progresses in one direction to the stock room. The final assembly, starting from the stock room end of the buildings, progresses toward the shipping department, down the two long buildings.

The following additions were made to the plant during the past year: Second storey on metal building; six dry kilns; nine bay extension to wing and dope building, 180 x 60 ft.; nine bay



BLOCK PLAN, FACTORY OF CANADIAN AEROPLANES LIMITED, TORONTO.

JOHN M. LYLE, ARCHITECT.

extension to fuselage building, 180 x 80 ft., and a seven bay extension to fuselage building, 120 x 14 ft.

All details of construction are what might be termed standard; that is, all steel is of standard size and lengths. All partitions, etc., throughout the plants are in small units and standardized, so as to permit them being moved from place to place and put up again without cutting.

Quantity Surveys for Buildings

Competitive methods are more vicious today than ever. The age of efficiency in which we are at present developed, is producing many fine high class specialists, but in reality the whole scheme is nothing but a most scientific method of price reduction. For instance, if through your efficiency man you can save a dollar a thousand in laying brick, what becomes of the dollar? The next job you figure you reduce that bid a dollar a thousand on brick and pass the result of your scientific organization work over your head back into the pockets of capital.

Out of all the chaos there finally comes a ray of light, more than a hope, a sure, time proven process that will eliminate the evils of the present day competitive menace.

This acknowledged remedy is known as the "Central Quality Survey" method. Under its guiding hand a full value and uniform competitive list of quantities can be established in any market; it gathers statistical information of inestimable value, to be in turn imparted to all. It covers costs, estimating, standardization, credits, insurance, and such legal matters as must necessarily come under its scope. It has full association powers and has proven to be a direct producer of profits for those who have had the perseverance to incorporate the work.

We all know each item on a plan represents a certain value, and every item omitted is an absolute loss. The items on a plan represent the material you will be obligated to buy, and the labor you must pay for in executing the work. Therefore, the interpretation of every plan must be as near perfect as possible, free from confusion, and the only way to stop confusion is to have a job listed by one man carefully and properly and all competitors accept this uniform and correct interpretation. In fact, it is the most economic, most efficient, most properly applied principle ever submitted to the building interests.—C. E. Flamboe in a Builder's Bulletin of the Master Builders' Association of Wisconsin.

Commercial Restrictions Withdrawn

Important cable dispatches have been received by Mr. G. T. Milne and Mr. F. W. Field, the British Trade Commissioners at Montreal and Toronto respectively, from the Imperial Department of Overseas Trade in London pointing out that since the armistice was signed many restrictions on commerce have been withdrawn, while in the case of those which remain, licenses are being granted much more freely than previously. Particulars regarding these relaxations will be published weekly in the "Board of Trade Journal," the official organ of the Imperial Government for notices regarding trade.

Orders placed during the war period now have good prospects of being executed, and arrangements for new business should be made without delay.

The following relaxations in particular should be noted:—

1. Permits to manufacture and Priority Certificates in connection therewith are no longer necessary.

2. Firms are at liberty to accept civil or commercial orders for immediate execution, thus freeing the engineering industry among others, for commercial work.

3. All the principal kinds of raw materials may now be used for the commercial manufacture of goods for export, but these raw materials themselves may not be exported in certain cases without licenses. Among those to which this condition applies are the following:—

Aluminum, Brass, Iron, Nickel, Steel, Antimony, Copper, Lead, Spelter or Zinc, Tin.

In general, restrictions on the export of manufactured goods have been removed, while they have been retained in the case of raw materials.

The following list indicates some of the most important items the export of which was formerly prohibited to all countries, but which are now permitted to be exported to any part of the British Empire:—

Articles—manufactures of asbestos; belting, cotton—including belting impregnated with balata or rubber; copper—and manufactures of—except wire bars, plates, rods, sheets, stripe tubes; galvanized sheets—corrugated or flat; iron and steel rivets, nuts and screws; iron and steel wire cloth, linoleum, magnesite and magnesite bricks, nails, (wire), steel sheets, (black), tools, (small).

Certain factors will continue to hamper the export trade, notably (1) shortage of labour till the army is demobilized, (2) shortage of tonnage, (3) the need for reorganization of plant in certain industries before resuming normal work, but it is considered that the effect of these factors will diminish greatly in a few months.



THE LATE EDMUND BURKE

Senior Member of the Architectural Firm of
Burke, Horwood & White, Toronto

Obituary

The death of Edmund Burke, which occurred from pneumonia on January 2nd, deprives Toronto of one of its best-known citizens, as well as the profession of architects of one of its most prominent members.

Deceased was born in Toronto sixty-eight years ago, and was senior member of the well-known firm of Burke, Horwood & White, with office at 229 Yonge Street. Few men of the present generation of architects have so widely held the respect and esteem of their confreres, or been more closely identified with the building progress of the country. Practicing continuously for a period of over forty years, during the time when Canada was passing from its more backward state to the present great strides of nationhood, his efforts stand out prominently in the modern character of Canadian architectural work.

The late Mr. Burke received his education at Upper Canada College, and studied his profession in the office of Gundry & Langley, and afterwards became a member of the firm of Langley, Langley & Burke. He was vice-president of the Architectural Institute of Canada at the time of its organization, and held the presidency of the Ontario Association of Architects in 1907, during one of its most active and progressive periods. He was also a member of the Toronto Technical School Board and a member of the Board of Assessors, and was appointed by the Dominion Government in 1906 to select a design for the proposed new Departmental Buildings at Ottawa.

Among the many buildings in Toronto designed by Mr. Burke were the McMaster University, Parkdale Methodist Church, Walmer Road Baptist Church, Jarvis Street Baptist Church, Sherbourne Street Methodist Church, Trinity Methodist Church, Metropolitan Methodist Church, Castle Memorial Chapel, and the Meteorological Building, north of the University grounds. Later on, in association with Mr. Horwood, and since Mr. White became a member of the firm, he designed the Robert Simpson Departmental Store, the Methodist Book Room, the Central, Broadview and West End Y.M.C.A.'s, the building of the W.C.T.U., large additions to the Toronto Gas Works, and the Hudson Bay Departmental Stores at Calgary, Vancouver and Victoria. He was also responsible for the architectural treatment of the Bloor Street Viaduct at Toronto, recently opened to traffic.

When president of the Ontario Association

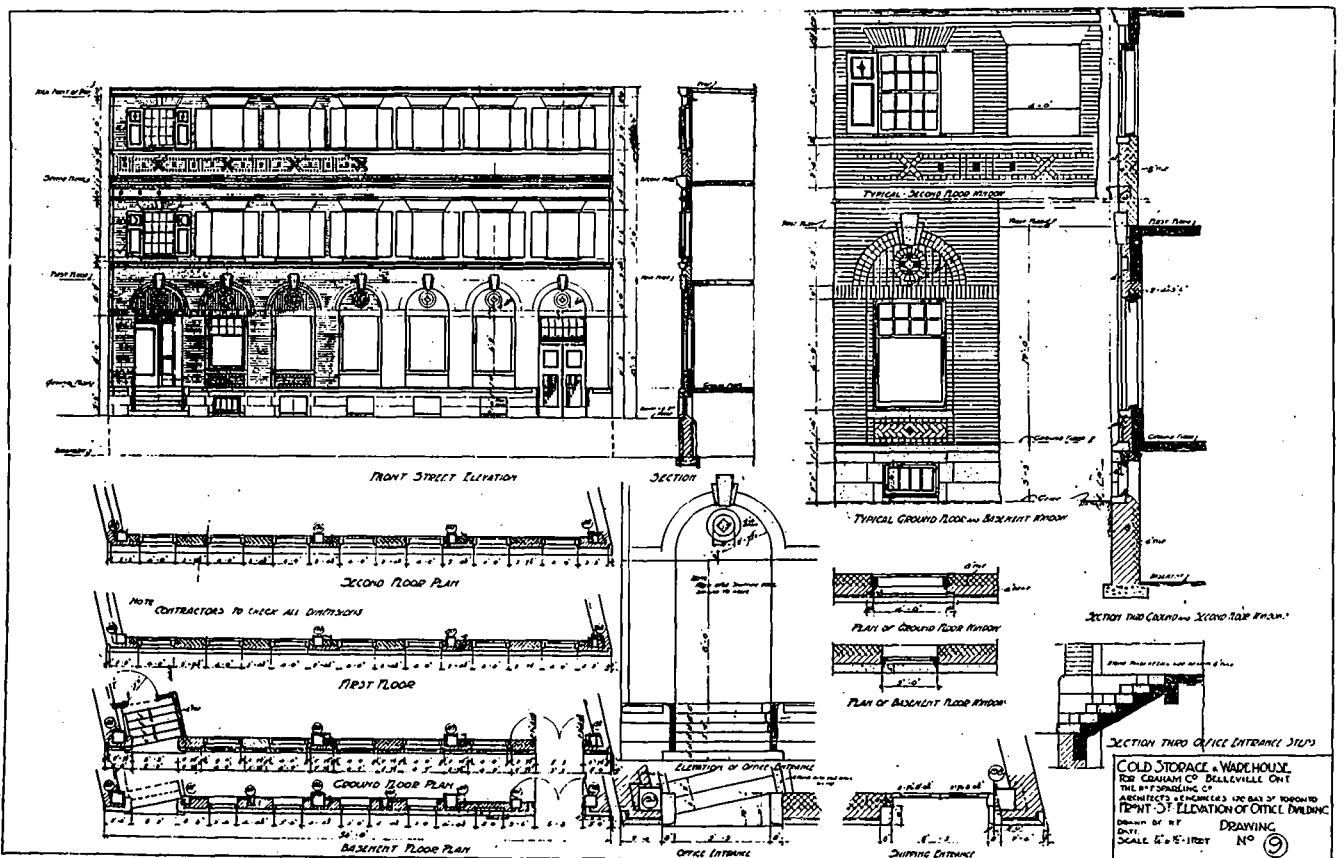
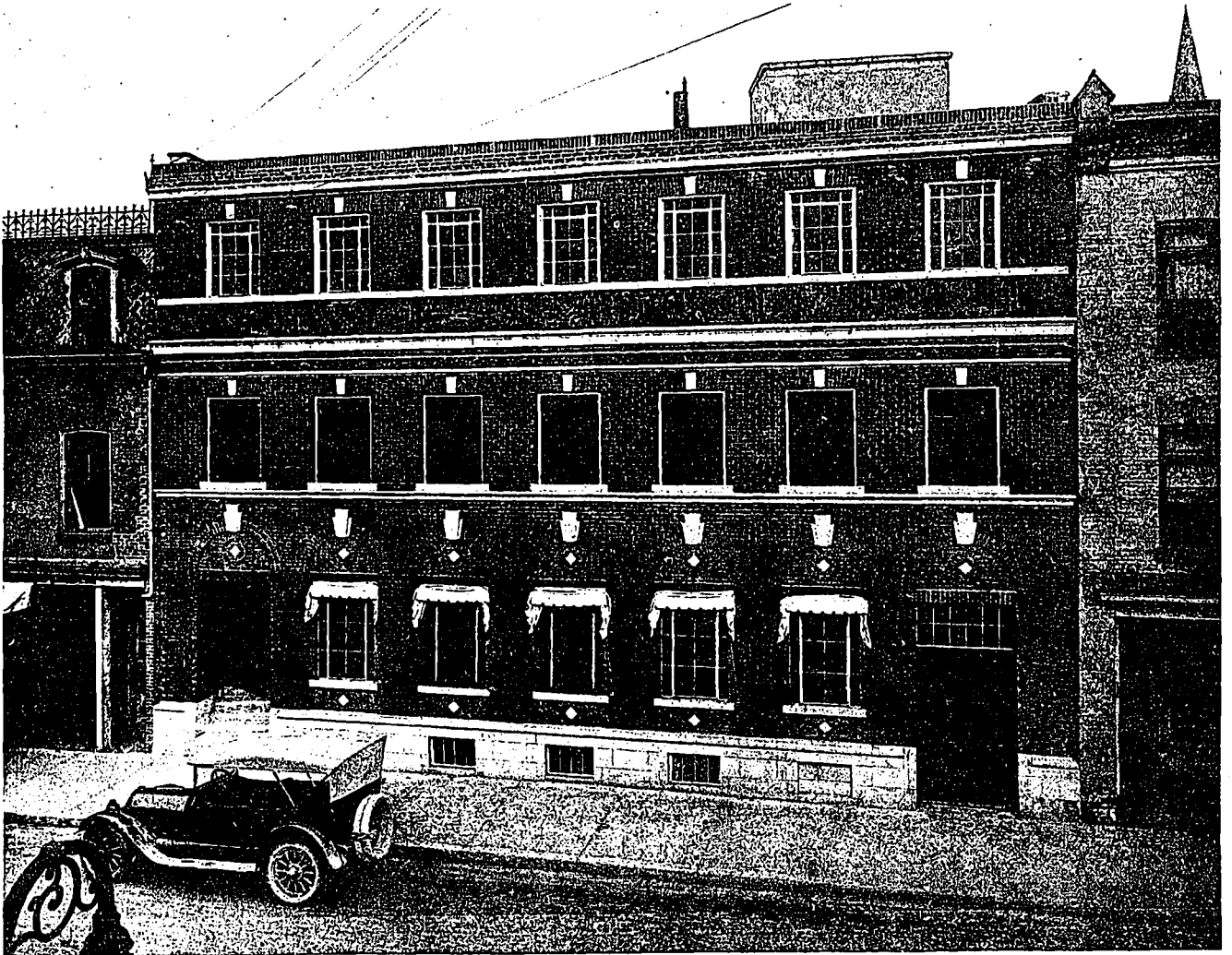
of Architects, Mr. Burke submitted a comprehensive plan for the æsthetic improvement of the streets, park system and water front of Toronto, which met to a large extent with public approval at that time. He was also a member of the Guild of Civic Art since its inception, and an occasional contributor to contemporary publications of articles and opinions relating to architectural and kindred subjects.

The deceased was a respected and life-long member of the Jarvis Street Baptist Church, and had been a deacon for many years, as well as chairman of the Church Choir Committee. He was an outstanding figure in the Baptist Convention of Ontario and Quebec, and had held a number of offices in the gift of the denomination. He had been a member of the Church Edifice Board for a long period, as well as the Church Extension Board, and has designed more churches by far for this denomination throughout Canada than any other architect.

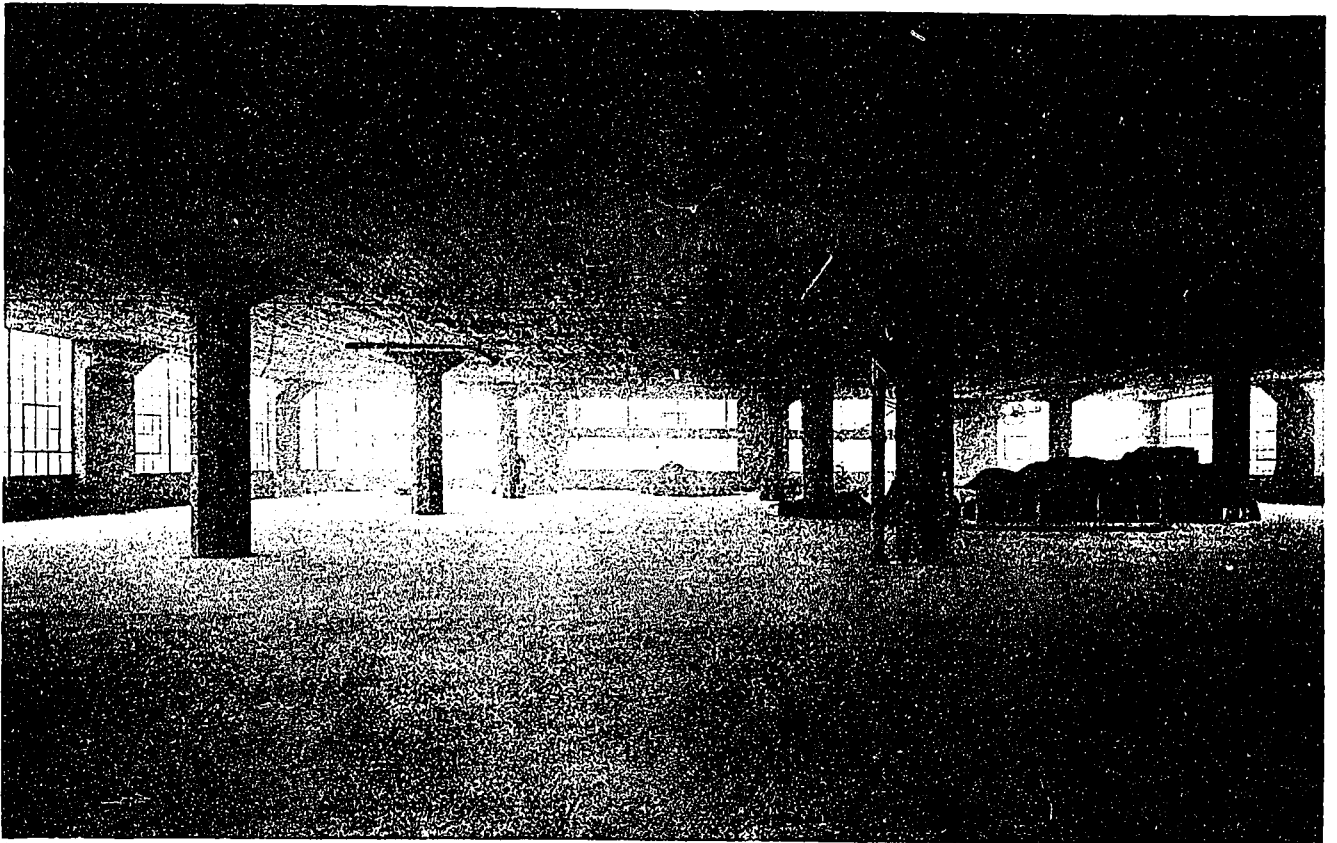
Mr. Burke was a member of the National Club, Canadian Club and the Rosedale Golf Club. He was apparently in the best of health up to a week before his death, being a man of a very vigorous and active type, and his passing comes as a sudden and distinct shock to all who knew him.

Another victim of pneumonia whose death we regret to record is Isadore Feldman, of the firm of Hynes, Feldman & Watson, Toronto, who passed away unexpectedly while on a visit to Detroit on January 9th. Mr. Feldman was one of the younger members of the profession, with a promising career before him. He received his entire training in the office of Mr. J. P. Hynes, in whose employ he remained for several years. In 1913 Mr. Feldman engaged in practice on his own accord, but shortly afterwards rejoined Mr. Hynes at the time the firm of Hynes, Feldman & Watson was formed.

Although only in his thirty-second year, he was already responsible for a large number of commercial buildings, and was rapidly achieving a reputation as a designer of work of this character. Mr. Feldman possessed a singularly affable personality, which impressed itself on all with whom he came in contact. He was a member of the Ontario Association of Architects and the Masonic Order, whose members, together with a large circle of personal friends, will regret to learn of the life of one with such a bright future so suddenly brought to a close.



STREET ELEVATION, COLD STORAGE AND WAREHOUSE OF GRAHAM LIMITED, BELLEVILLE, ONT.
 WM. F. SPARLING COMPANY, ARCHITECTS.



INTERIOR VIEW OF WAREHOUSE, SHOWING 30 FT. SPANS.

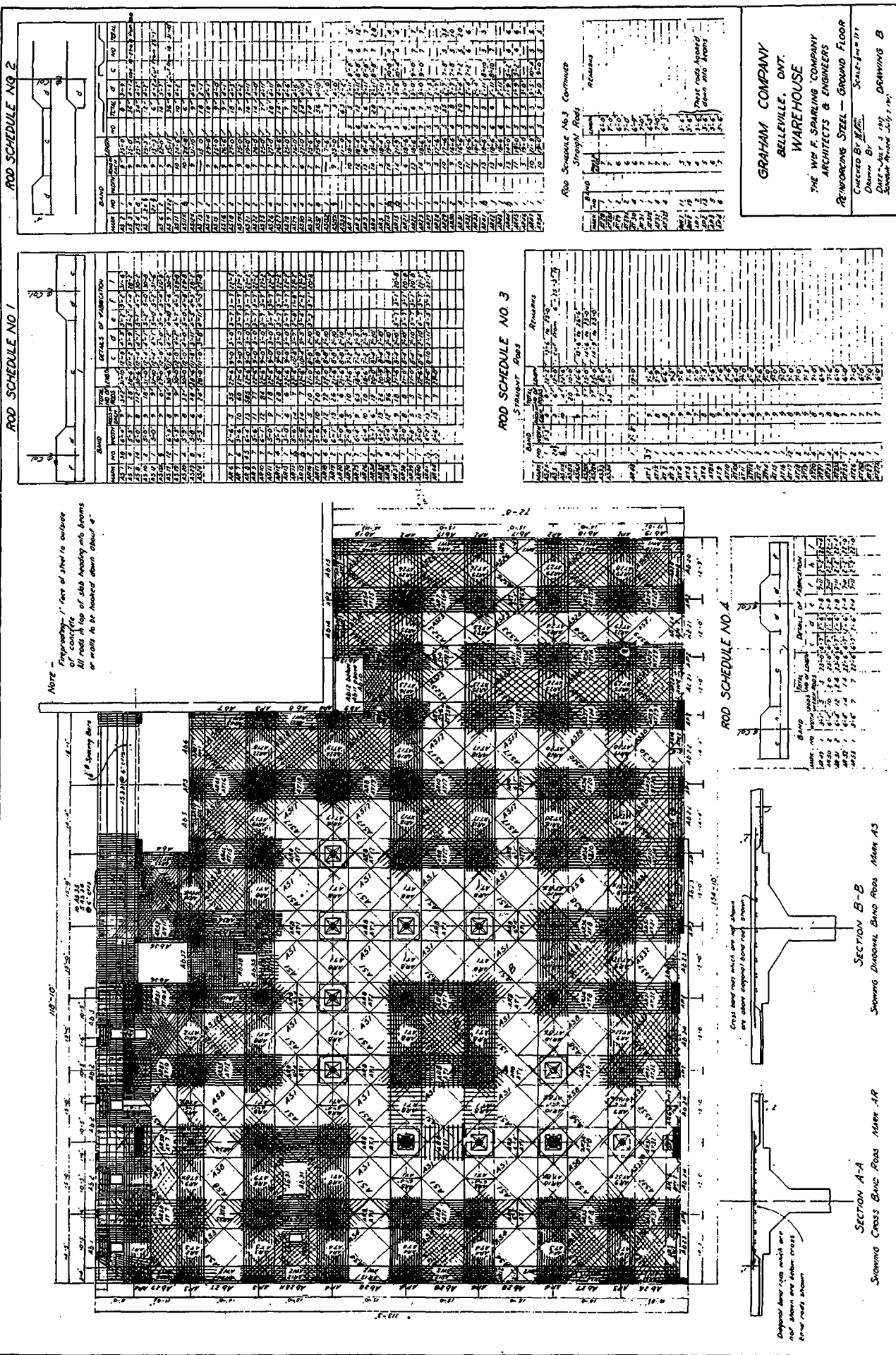
Warehouse and Cold Storage, Belleville, Ont.

Early in the spring of 1917, the plant of Graham's Limited, Belleville, Ont., was destroyed by fire leaving only a few walls standing. The loss included the office and shipping building, a cold storage building and plant, and manufacturing and storage buildings. It was decided to rebuild and in the following June a start was made to clear away the wreckage preparatory to the construction of a fireproof plant of up-to-date design.

Reinforced concrete was adopted and the flat slab type was selected for the warehouse and cold storage, whereas beam and slab construction was used for the irregular shaped office building. In the warehouse, two storeys and basement, the owners required spans of 30 feet each way to carry a live load of 200 lbs. to the square foot; but for the ground floor, columns at 15 feet centres were allowed in the basement and the floor itself designed to carry 400 lbs. to the square foot. The flat slab construction of the ground floor was carried out on one side and acted as a loading platform allowing the basement to run uninterrupted to the wall of the loading platform. In order to reduce the size of the main interior columns in the warehouse a rich mix and a large percentage of steel combined with special horizontal ties were used, based on the regulations of the London

County Council, dated 1915. The footings were on rock at the level of the basement floor. Suitable bearing areas were blasted out under the columns to distribute the load to the rock. The flat slab in general was designed using Chicago stresses and the Chicago ruling. The wall columns were designed to handle the heavy moments induced by the 30 ft. slab, so that the combined stresses were not in excess of the permissible stresses. The 30 foot span flat slab is the largest built on this continent and results in a general interior effect such as is indicated in the accompanying illustration.

Large sections of steel sash and wired glass are used between the wall columns, and the slab at the walls is carried on an up kick beam acting as a curtain wall to the floor above. The sash is connected directly to the underside of the floor slab with no break in the ceiling. This insures the best possible distribution of light. The outside of the warehouse which is of reinforced concrete, has large sections of ventilating sash. The architectural treatment is simple and in keeping with a building of this type. To accommodate chutes, conveyors, etc., holes in the floor slab and loading platform have been provided. The roof drainage was accomplished by sloping the roof slab. Over the loading platform a concrete canopy is suspended



DETAIL OF STEEL REINFORCEMENT (GROUND FLOOR), WAREHOUSE OF GRAHAM LIMITED.
 WM. F. SPARLING COMPANY, ARCHITECTS.



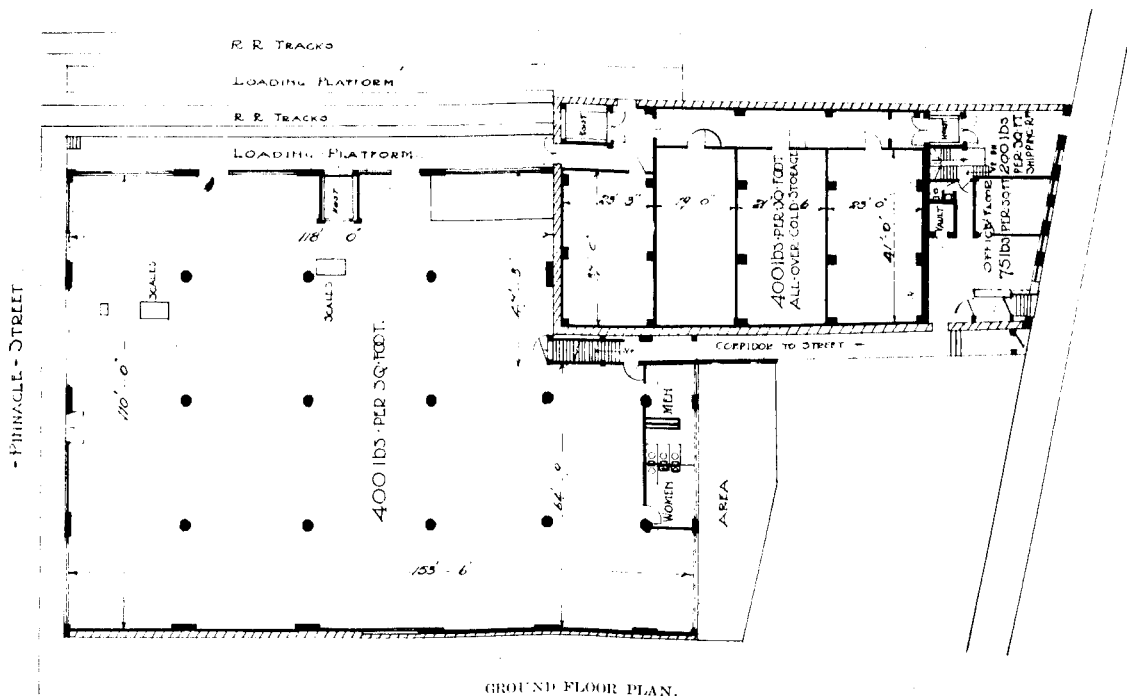
REAR VIEW, COLD STORAGE AND WAREHOUSE OF GRAHAM LIMITED, BELLEVILLE, ONT.

as may be seen in the photograph of the rear of the warehouse. A special bracket was cast on the outside of one of the wall columns to carry the metal chimney in such a way that it did not interfere with the headroom to the loading platform, and at the same time was outside of the building on the upper floors. The 30 foot floor slab designed for 200 lbs. per square foot was carried to 400 lbs. per square foot live load, without sign of permanent deflection.

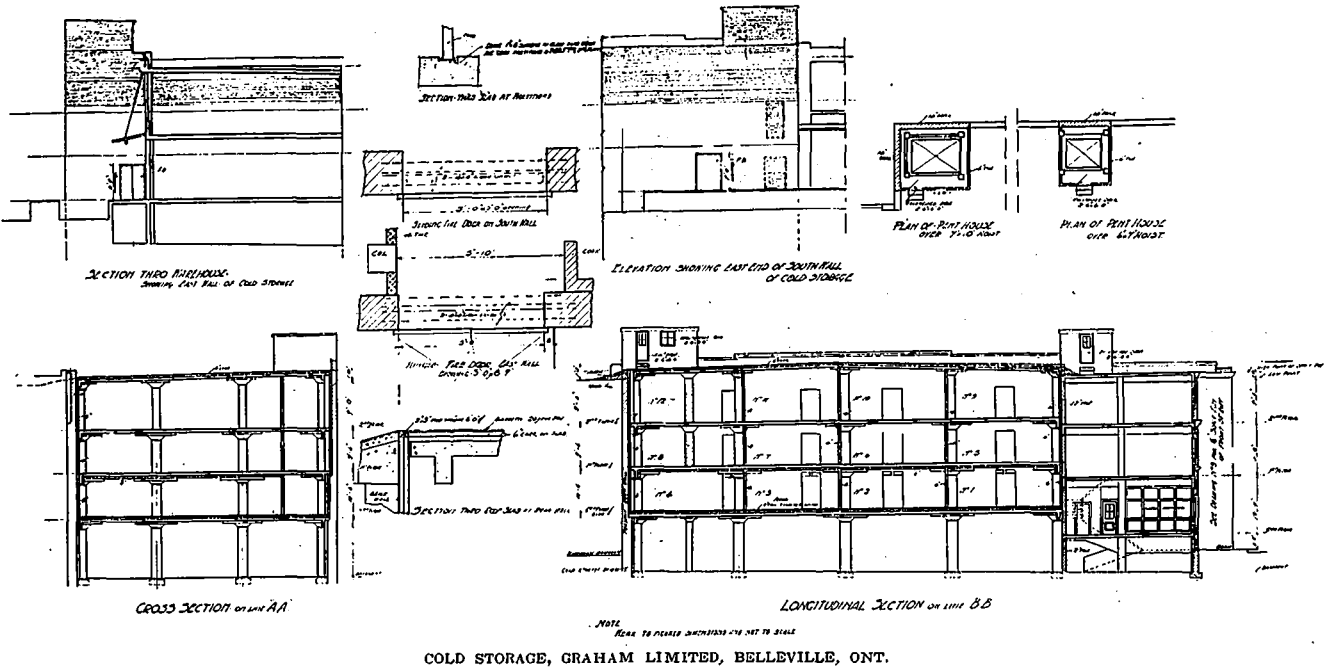
In the cold storage, three storeys and basement, the old walls were re-used to enclose the concrete skeleton which consisted of flat slab structure of 18 x 22 ft. spans, designed for 400

lbs. square foot live load. The various rooms, cooling corridors, floors and the entire skeleton were insulated by varying thicknesses of cork-board. Rooms designed to maintain temperatures from zero to 34 degrees Fahrenheit, are cooled by means of direct expansion; the coils being located on the ceiling and provided with the usual drip pans. The refrigerating plant and boilers are located in the corner of the warehouse adjacent to the cold storage section.

The offices and warehouse are heated with direct steam radiation. All the wiring throughout the buildings is in conduits, with the exception of the cold storage which is wired in open knob and tube work according to the usual



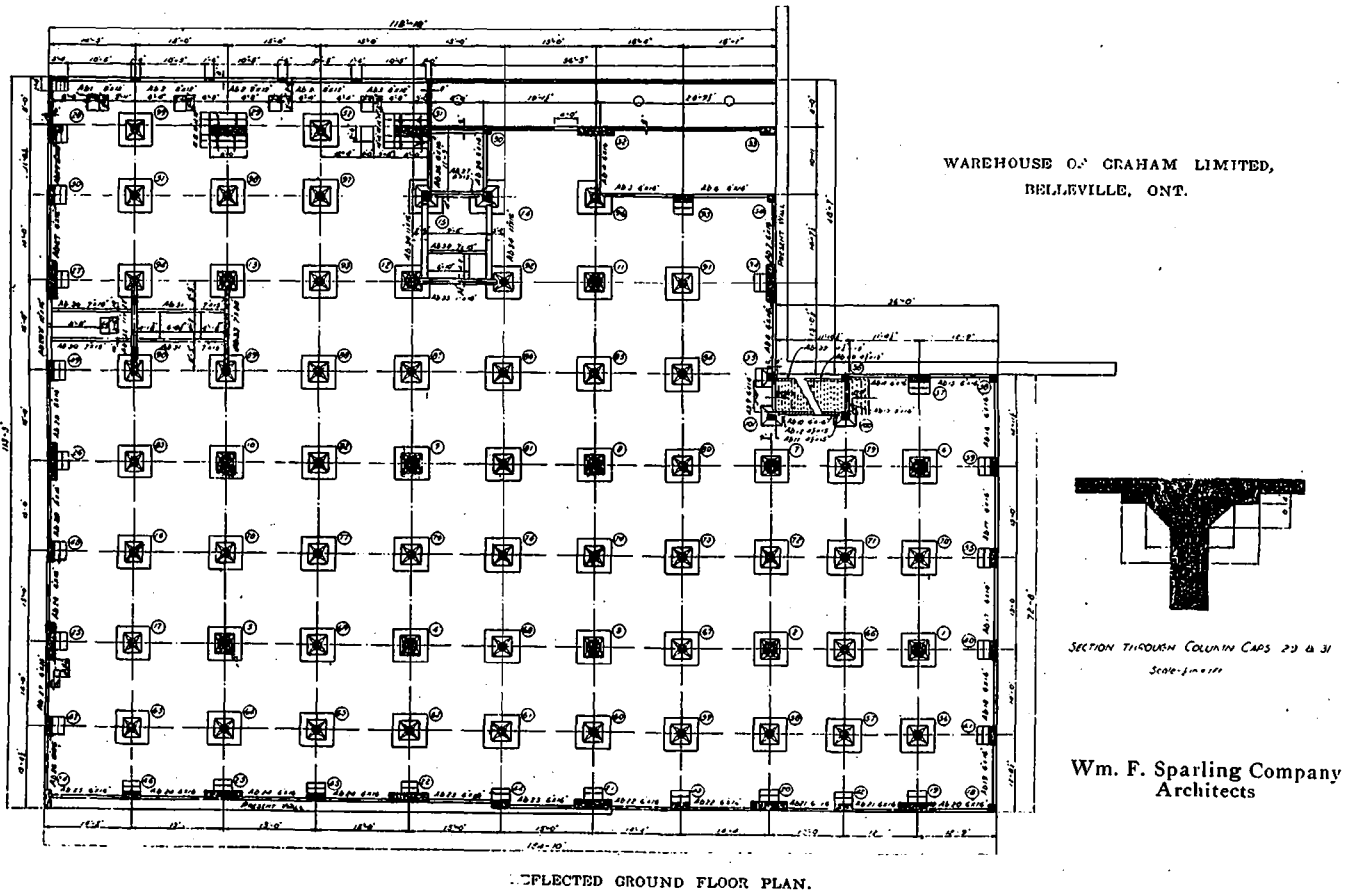
GROUND FLOOR PLAN.

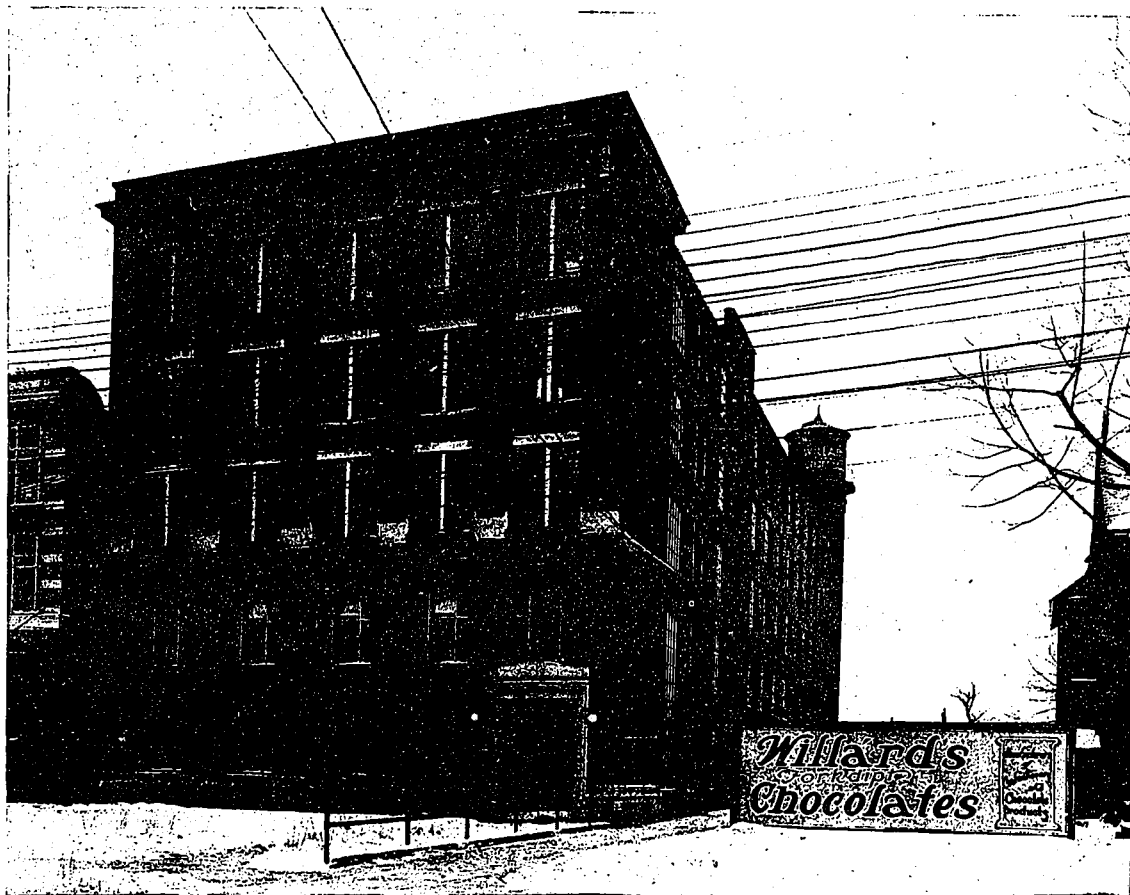


cold storage practice. The architectural treatment of the offices is after the Italian Renaissance style, using tapestry brick relieved with Indiana limestone string courses, cornice and base. Elevators are installed in all three structures, and first class plumbing consistent with the character and requirements of the plant forms a part of the modern equipment which is used throughout.

Vancouver's Progress

Vancouver's building total for 1918 was practically double that of the preceding year. Permits were issued for improvements valued at \$1,440,384 as against a total of \$768,255 for the entire twelve months of 1917. Operations started in the final month amounted to \$81,653 as compared with \$56,295 in the previous corresponding period.





WILLARD CHOCOLATE COMPANY'S FACTORY. TORONTO.

Willard Chocolate Co's Premises

Several of the structures illustrated in this issue relate to developments in one particular vicinity of Toronto, and reflect a steady expansion of industrial and commercial requirements which is characteristic of most of the principal Canadian cities. The Willard Chocolate Company's factory, on Wellington street west, Toronto, one of the subjects presented, is quite representative of a certain class of buildings being erected. It is of mill construction, 56 x 200 feet, providing altogether approximately 56,000 square feet of floor space, the plan and equipment being of a character in keeping with the usual features in a building of this type.

"Cob Houses"

In a recent issue of the London Daily Mail, Mr. T. C. Bridges writes interestingly on the subject of "cob houses" which correspond to the "adobe" on this continent. This method of building was discontinued in England about sixty years ago, but now an attempt is being made to again bring it into use to meet the housing needs in certain districts.

"All over Devon," says the writer, "and down around Essex as well, cob walls, cob cottages, and cob outbuildings are everywhere to be seen. Very picturesque they are, too, especially when white or pink washed.

"Cob is a clay mixed with straw, and built up just like modern concrete. A bottomless trough is used, made of two parallel planks. The clay, mixed with chopped straw, is pressed into it, and each course is allowed to dry before the next is put on. The result is a wall of great thickness, considerable strength, and of such durability that cob houses are still inhabited which were built five or six hundred years ago. A cob house well thatched is warmer in winter and cooler in summer than any brick or stone building, and there are no such walls for ripening wall fruit as those constructed in this simple fashion.

"Nor is 'cob' confined to Devonshire. There are cob walls in Somerset, in Northamptonshire, and probably in other parts of the country as well; while in Mexico, Texas, Arizona, and in Southern California many of the great ranch houses are 'cob' all through, only they call it 'adobe.'

In view of the crying need for new cottages in the near future, the writer suggests that in "cob" may be found a cheap and satisfactory substitute for brick or stone. He then explains that "cob" is far drier than most of the building stone used, claiming it to be one of the most picturesque of building materials, and concludes, with a strong plea that an effort should be made in England to resuscitate this almost forgotten method of construction.

Reconstruction and Development in Canada

By Dr. A. B. Macallum, Administrative Chairman of the Canadian Council for Scientific and Industrial Research.

"Reconstruction and development" in Canada in the new era of international girding for supremacy in the arts of peace means to the Canadian Honorary Advisory Council for Scientific and Industrial Research much in so far as "development" is concerned, but little in regard to "re-construction." Reconstruction postulates the building up again of what existed before; and up to the outbreak of war there was constructed in Canada no national organization for research work. The glowing path of Canada's opportunity for industrial development runs wide and far, but the Council's research path has to be blazed through a comparatively unexplored forest. It is almost entirely new ground to be covered.

Where Germany and, though perhaps in lesser degree, the United States had builded before the war great organizations for industrial research founded on wide-visions realization of the commercial value and necessity of applying science to industry, in Canada, as in Great Britain, state encouragement and individual enterprise had, until the war started, been content in the main with a *laissez-faire* policy. Germany had her trained technologists and research workers by the thousands in every field of industry, and, through the organized application of science to industry, was winning her trade victories in every foreign mart.

In the United States, which early took a leaf from Germany's book, the great universities like Harvard, Yale, Chicago, Columbia and Cornell had staffs and equipments in pure and applied science, which kept pace or almost kept pace with the demand from great American industrial establishments for trained scientific investigators, chemists, electrical engineers, metallurgists, etc., to solve industrial research problems. The annual budget of the Massachusetts Institute of Technology, for instance, exceeded before the war, and still exceeds, the total of the annual expenditures of all the Faculties of Applied Science in Canada. There are some two thousand research laboratories in connection with large industrial concerns in the United States, and each of more than fifty individual firms expend annually sums ranging from \$25,000 to \$50,000 for research.

In Canada, in a score of years, less than twenty students have received the advanced (Ph. D.) degree in science from the University of Toronto and fewer still from McGill. Not two per cent. of Canadian firms have research laboratories and only about ten per cent. have

routine laboratories, chiefly for the testing of materials. If Canadian industries were to seek for a supply of trained technical men capable of applying the most advanced scientific knowledge to industrial processes sufficient to meet even their most ordinary needs, the number of adequately trained men available would not be sufficient to satisfy five per cent. of the demand.

That, briefly put, is the situation with regard to the needs in Canada for equipment and men for research work. That is the situation which has confronted the Research Council since its creation in December, 1916. And that has been, and is, the crux of all the problems of scientific and industrial research in Canada, handicapping the carrying out of the large research programme planned for the past year and for the coming year, jeopardizing Canada's position in the international rivalry for export trade and demanding prompt remedy if the full measure of our opportunity is to be grasped. In resources of capital and materials, in all the natural advantages for industrial supremacy we are in an enviable position as compared with our trade competitors. But in regard to the vital question of scientific organization of our industrial processes of finding new uses and, hence, new markets for the raw materials and the by-products of manufacture, and of keeping pace with the advances made in other countries through research, we have as yet hardly touched the fringe of opportunity.

Confronted with this situation and with a slowly awakening public and individual realization of its portent, the main task of the Council this past year has been, "while carrying on the immediate needs of research work with the means at hand, to pave the way for meeting adequately the urgent needs of the future." The goal has been a supply of trained men for research work, adequate equipment and facilities for research and the enlistment of industrial organizations in co-operative effort to solve common problems, the solution of which lies in the application of science to industry. The great forward step taken has been to promote the establishment of a Central Research Institute at Ottawa, combining the functions of the Bureau of Standards at Washington and of the Mellon Institute at Pittsburgh.

The proposal for such an Institute, submitted to the Government in November last, was the result of many months' careful investigation by the Council.

In view of the situation above outlined, the argument advanced in support of it is so ob-

vious as to need no restatement here. There has been a prompt and appreciative response to the proposal by the Government and by all the public interests concerned. There is good reason to believe that the Institute will be established without any unnecessary delay. It will involve an expenditure of \$500,000 for a four storey building, having initial provision for fifty laboratory rooms and with plans so drawn as to provide for expansion as the needs develop. The cost of the scientific equipment is estimated at \$100,000, and the cost of maintenance, salaries, etc., at about \$100,000 per annum for the first few years.

The establishment of the Institute is the necessary first step towards placing industrial research work in Canada upon an adequate and permanent basis and towards enabling the Dominion to keep abreast of similar progressive methods in the United States, Great Britain, Japan, France, Australia and our other trade competitors. It will, doubtless, be followed by the organization of trade guilds or associations for research in each branch of industry, formed to pool resources in solving common problems and to take advantage of the laboratory equipment and opportunity offered, under the Council's proposals, by the Government-maintained Institute.

A further necessary step will be the working out of the Council's plans for more adequate provision by the universities for the training of qualified scientific workers. In the more generous investment of state funds for this purpose, starting, say, with Toronto, McGill, and L'École Polytechnique in Montreal, lies the hope of securing for the ensuing years of the world's strenuous and pitiless trade warfare the nation's leaders in scientific and industrial research.

Apart from these crucial phases of the work and aims of the Research Council, space permits of only passing reference to some of the many research problems already undertaken.

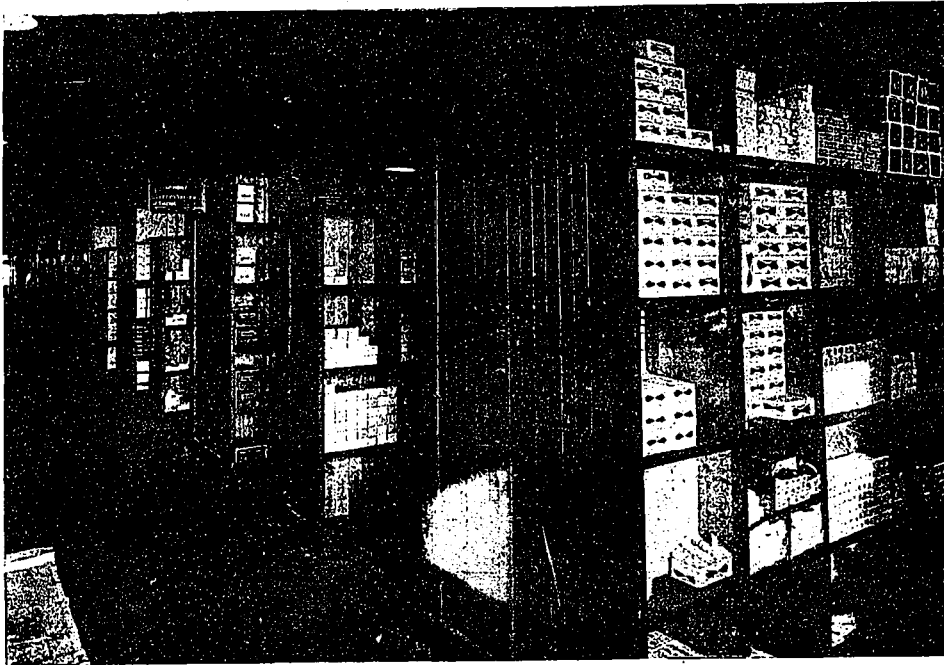
As a result of the Council's initiative, Governmental action was taken in June last to secure federal co-operation with the Governments of Saskatchewan and Manitoba in establishing a demonstration plant in Souris coal areas of Southern Saskatchewan, to prove the commercial feasibility of carbonizing and briquetting the Western lignites for heating in domestic furnaces. This year will see a plant established with an outlay of \$400,000 and an annual output of 30,000 tons of coal equal to the Pennsylvania anthracite and marketed in Regina or Moose Jaw, at least, two dollars per ton less than the imported anthracite is now costing. The success of the initial plant, about which there can be little doubt, will lead eventually to the

development of the immense and little realized latent lignite resources of Saskatchewan and Alberta, relieve for Ontario and Quebec the present coal famine through limited American supply and save to Canada the five or six millions of dollars now annually going to the United States for coal for the prairie provinces.

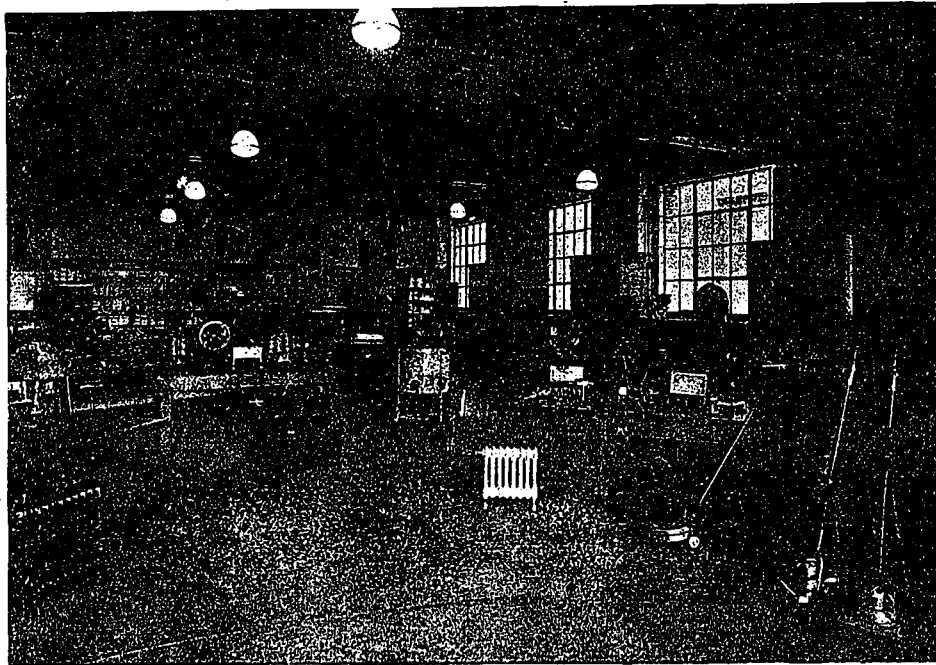
A systematic study of the rate of reproduction and growth of Canadian forest trees of the commercial species has been undertaken through scientific survey of some eighty square miles of an old cut-over lumber district on the Petawawa Military Reserve. The data being secured, will in the course of a few years give, for the first time, the essential definite information enabling the Dominion and Provincial Governments to inaugurate on a scientific and practical basis a scheme of reforestation paralleling the best results obtained in the past in Europe. Our forest wealth, now in danger of exhaustion through reckless waste and disregard of adequate conservation systems, can only thus be preserved as a great and permanent national resource.

The tar fog research, initiated in 1917, has been continued with satisfactory practical results which will doubtless lead in the near future to the application to various plants in Canada of a new electrical process for the recovery of valuable by-products now lost in the destructive distillation of coal, wood, etc. The research on sound measurements and fog signalling conducted in 1917, by Dr. Louis King of McGill has made further progress this year and forecasts a new type of sirens for use in the St. Lawrence River and Gulf. Research work connected with the recovery of industrial alcohol from the enormous sulphite liquor waste of our Canadian pulp mills points to the installation of recovery plants and the production in Canada, at decreased cost to consumers, of the alcohol increasingly needed for industrial purposes and as a substitute for motor fuel.

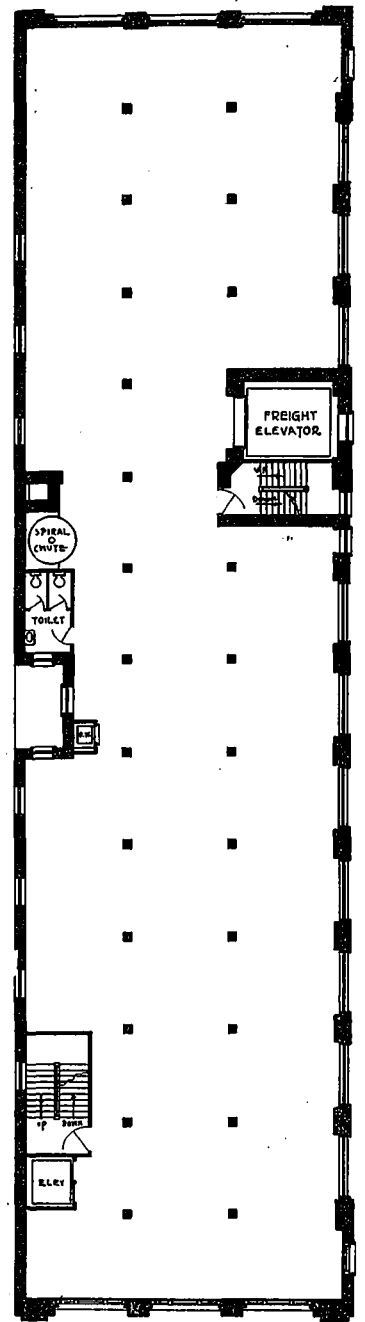
There have been a score or more of other phases of industrial research initiated or continued during the year, each having a practical bearing on some branch of national production. More should and could be done, were trained men and money available. The Council's budget for the year has been under \$100,000. In Great Britain, Parliament has recognized the need and the opportunity by creating a separate Department of Scientific and Industrial Research and has voted one million dollars per annum for five years to be expended by the Research Council. In Canada, we, too, are learning the obvious lesson taught by Germany and already adopted by British industry. The path has been blazed for replacing rule of thumb methods in Canada by scientific investigation.



STORAGE BUNKS, 4TH, 5TH, & 6TH FLOOR.



SECTION OF SALESROOM, NEW BUILDING OF THE CANADIAN GENERAL ELECTRIC COMPANY, TORONTO.



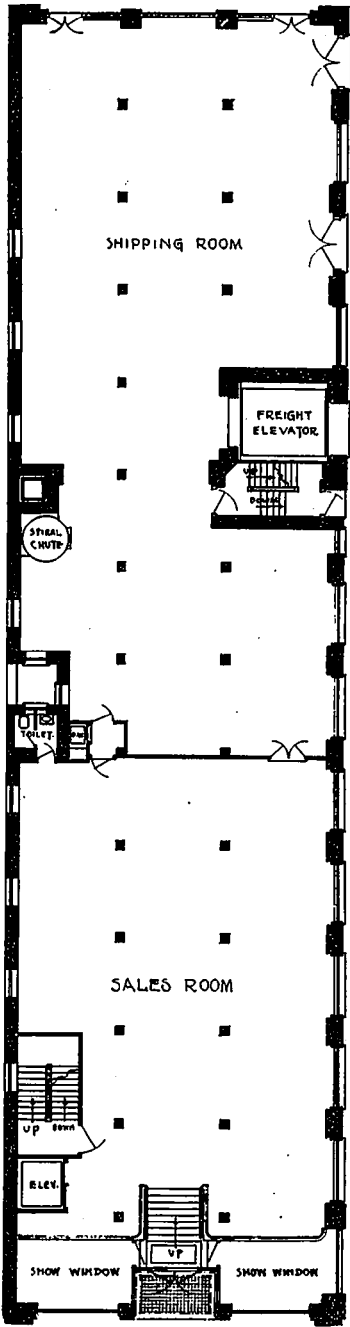
TYPICAL UPPER FLOOR PLAN.

Recent Warehouses

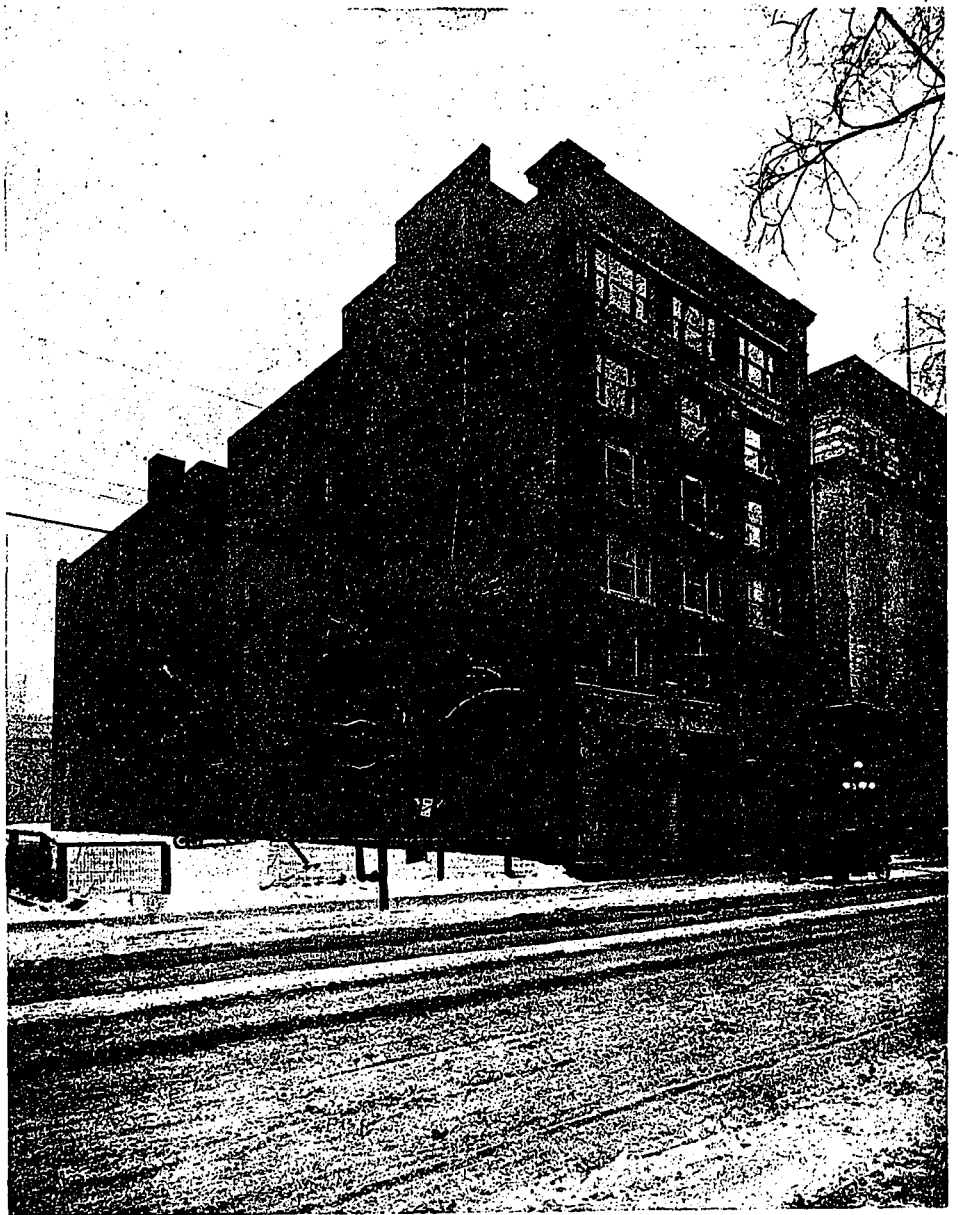
The several buildings illustrated in the following pages are quite representative as types of recent warehouse and factory work.

The new Canadian General Electric building, King St. W., near Simcoe St., is devoted to warehouse purposes except a salesroom, large show windows, etc., in front portion of first story and offices in front part of second and third stories for the use of the departments which control the stock carried in the warehouse. The building is of "mill" construction and British Columbia Fir was used throughout for posts, girders, plank flooring, etc. The

floors are designed to carry a live load of 225 pounds. The building has a complete sprinkler system with a 20,000 gallon gravity tank on roof, and has also two lines of fire hose on each floor. The heating is arranged on the vacuum steam system and the steam is supplied at present from the Canadian General Electric Office building on the corner of King and Simcoe Streets. A smoke stack and other requirements have been installed in the new warehouse, however, so that a separate heating system may be put in at any time if desired. All goods are received and shipped from the private lane



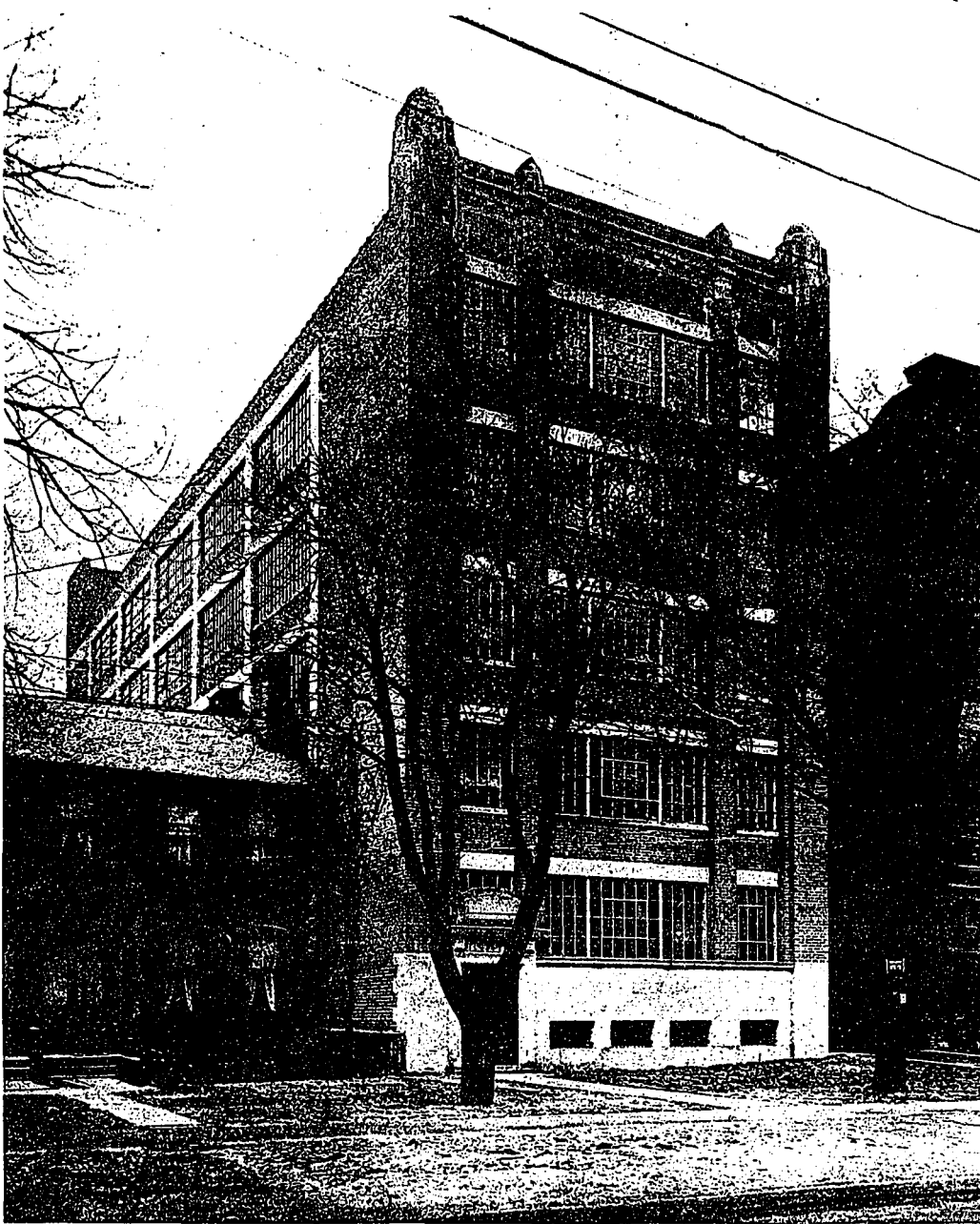
GROUND FLOOR PLAN.



NEW BUILDING OF THE CANADIAN GENERAL ELECTRIC COMPANY, TORONTO.
BURKE, HORWOOD & WHITE, ARCHITECTS.

DETAIL OF LOWER FACADE

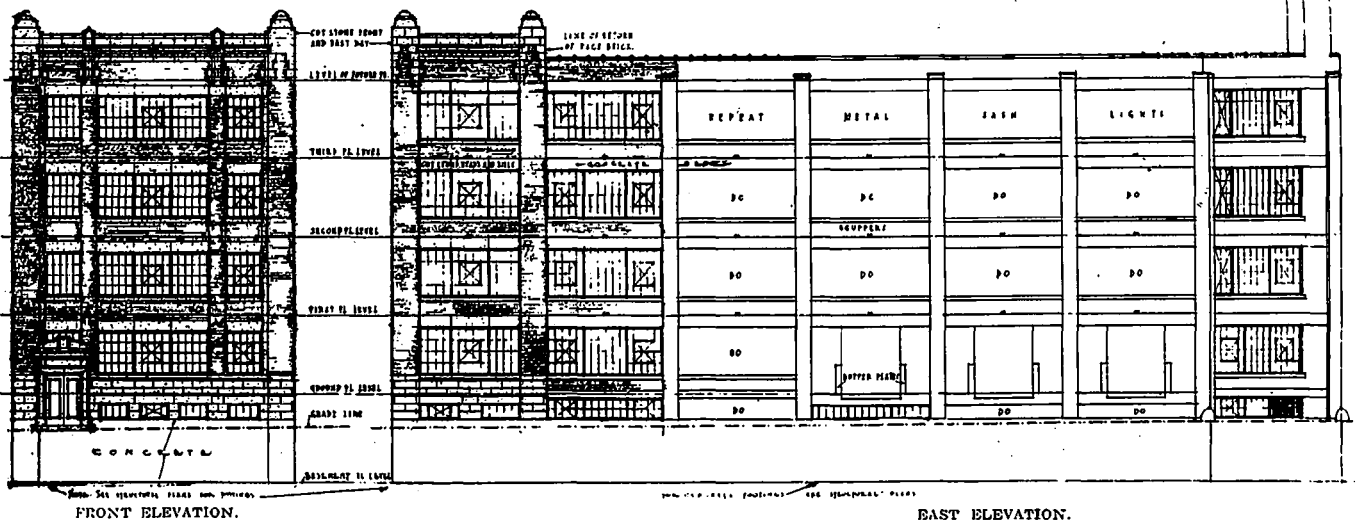


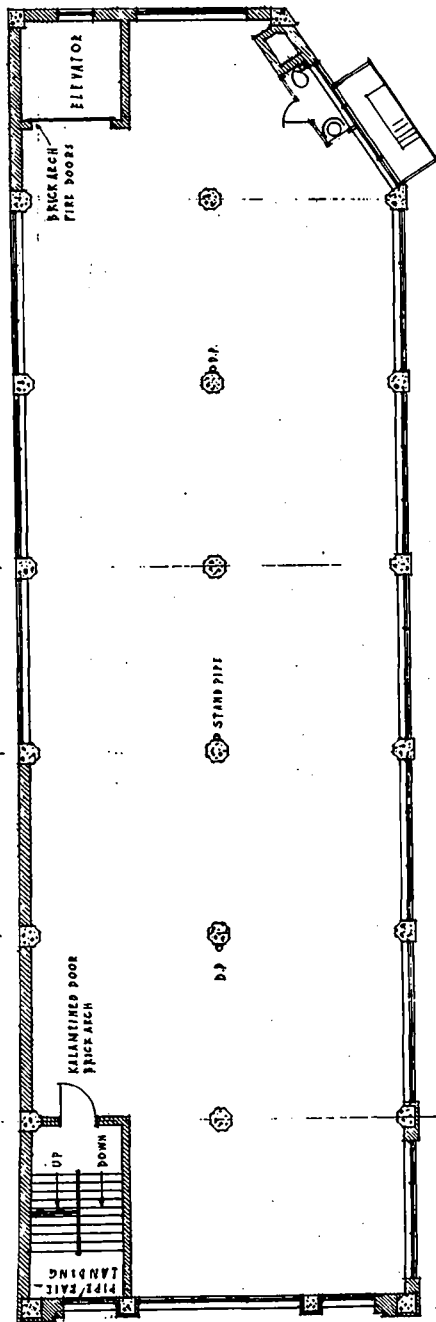


WAREHOUSE OF M. GRANASTEIN & SONS, TORONTO
 HYNES, FELDMAN & WATSON, ARCHITECTS.

at the rear of building which faces on Pearl Street. There is a package chute on the Pearl Street front, also a large hydraulic sidewalk hoist. The other elevators are electric and the dumb waiter is arranged with automatic push button control. The spiral chute extends from the first to sixth storey and all goods assembled from the various upper warehouse floors are sent to the receiving and shipping room by means of this chute.

The Granastein building, located at 488 Wellington St., West, Toronto, is of flat slab reinforced concrete construction, being built according to the revised Toronto by-law as adopted from the Chicago code. The design provides for a live floor load of 150 lbs. per square foot, and for the addition of an extra floor to the

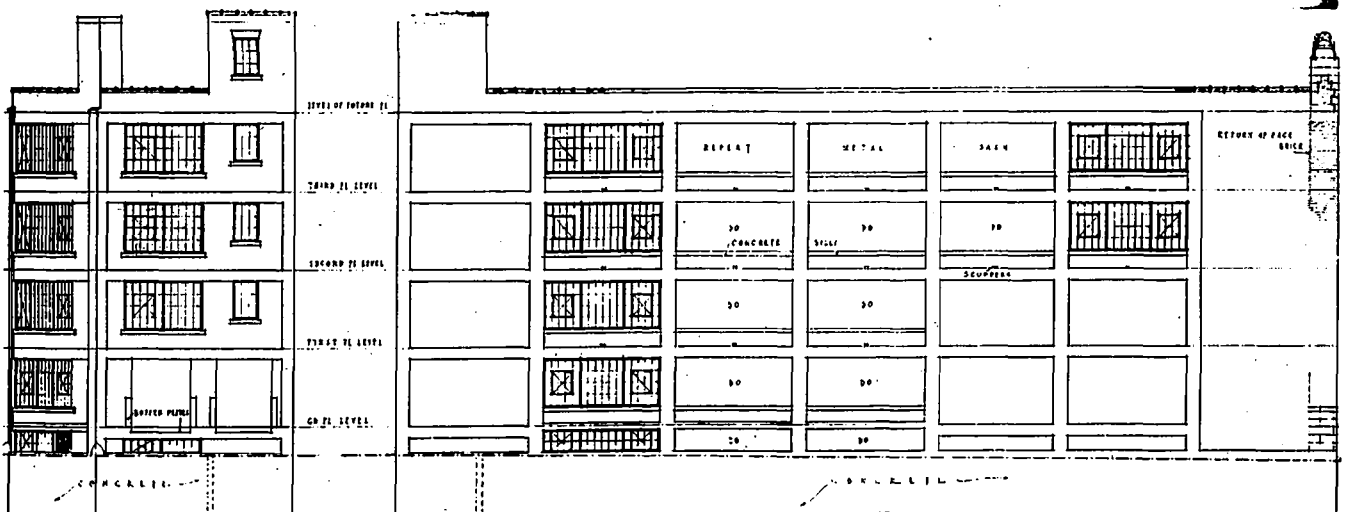




TYPICAL FLOOR PLAN.

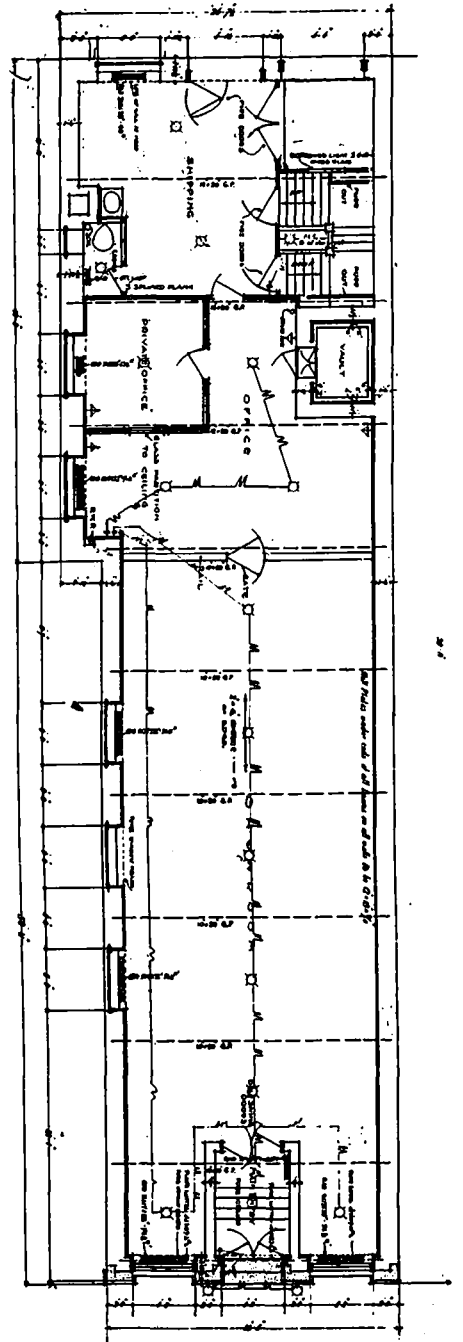
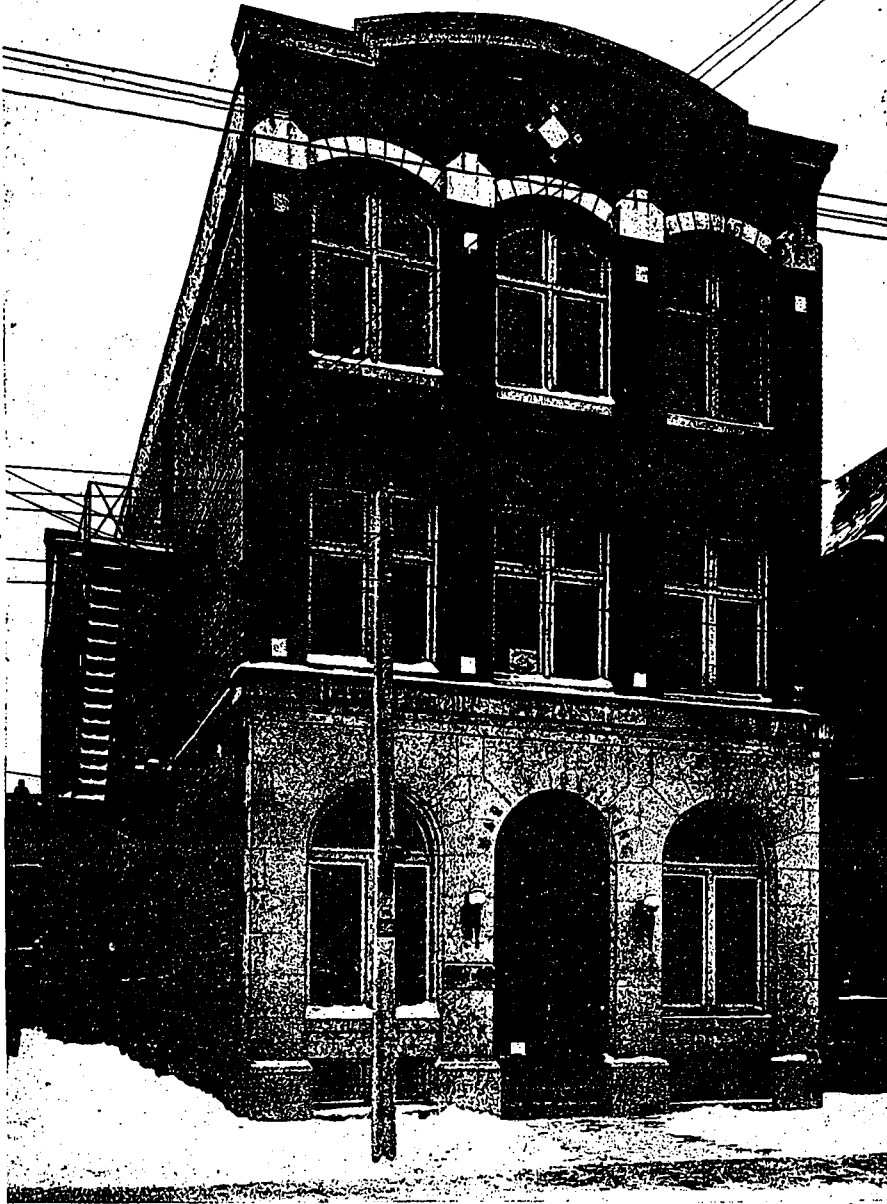


DETAILS OF ENTRANCE.



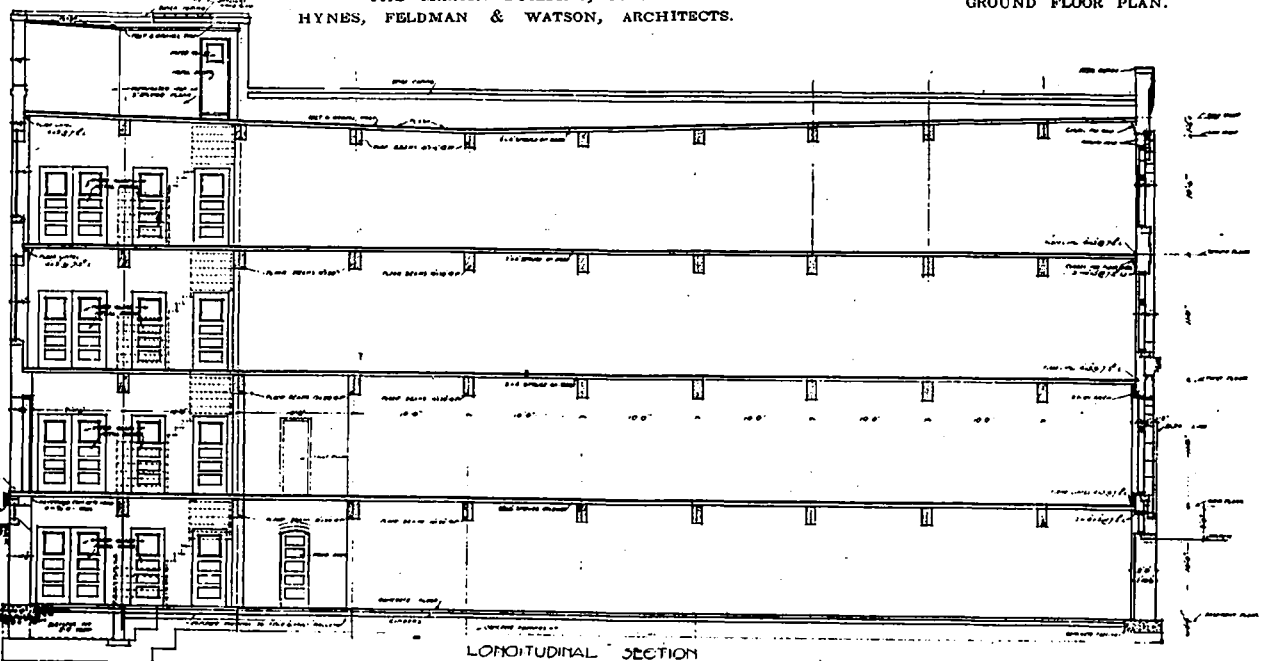
REAR ELEVATION

WEST ELEVATION.

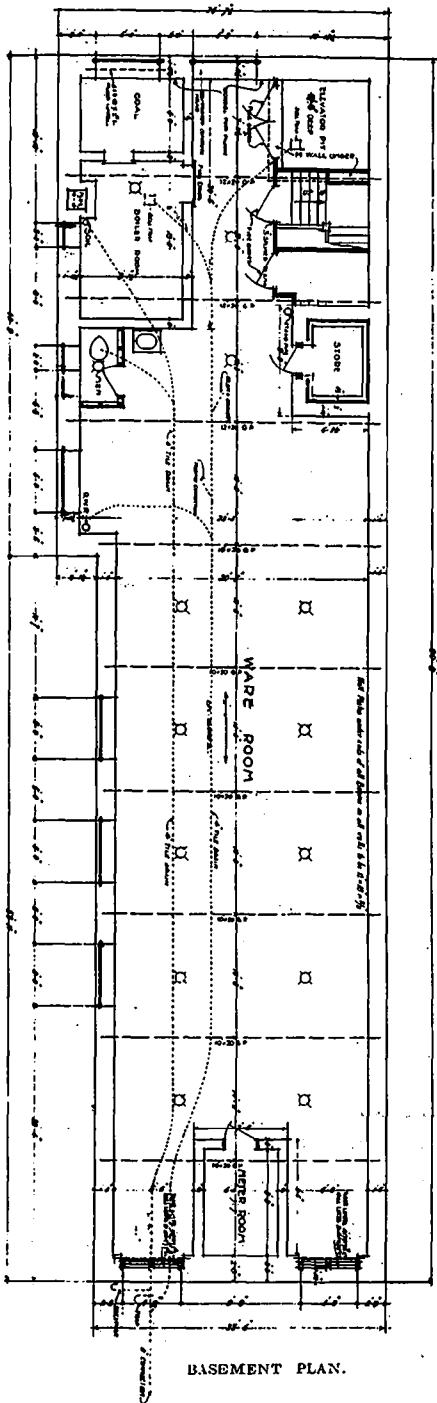


THE MARTIN BUILDING, TORONTO.
 HYNES, FELDMAN & WATSON, ARCHITECTS.

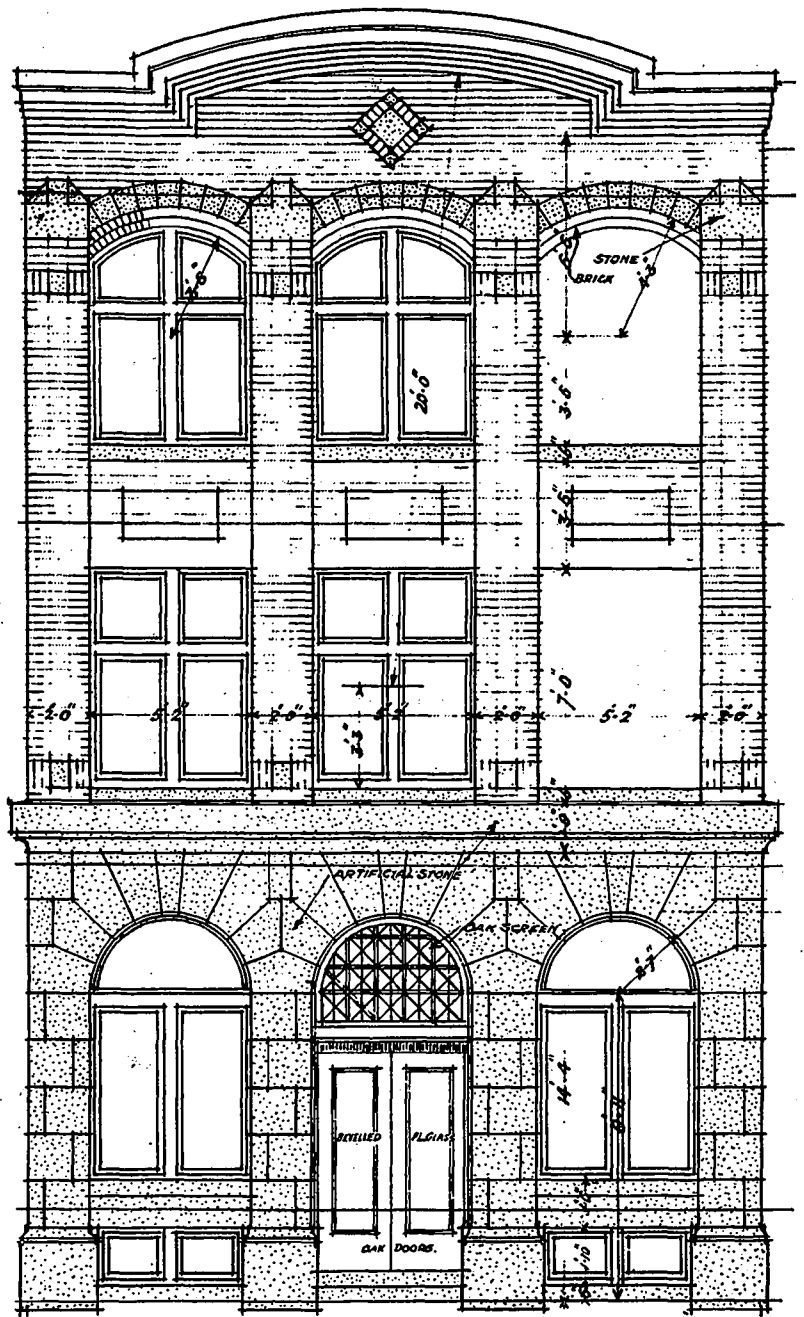
GROUND FLOOR PLAN.



LONGITUDINAL SECTION



BASEMENT PLAN.

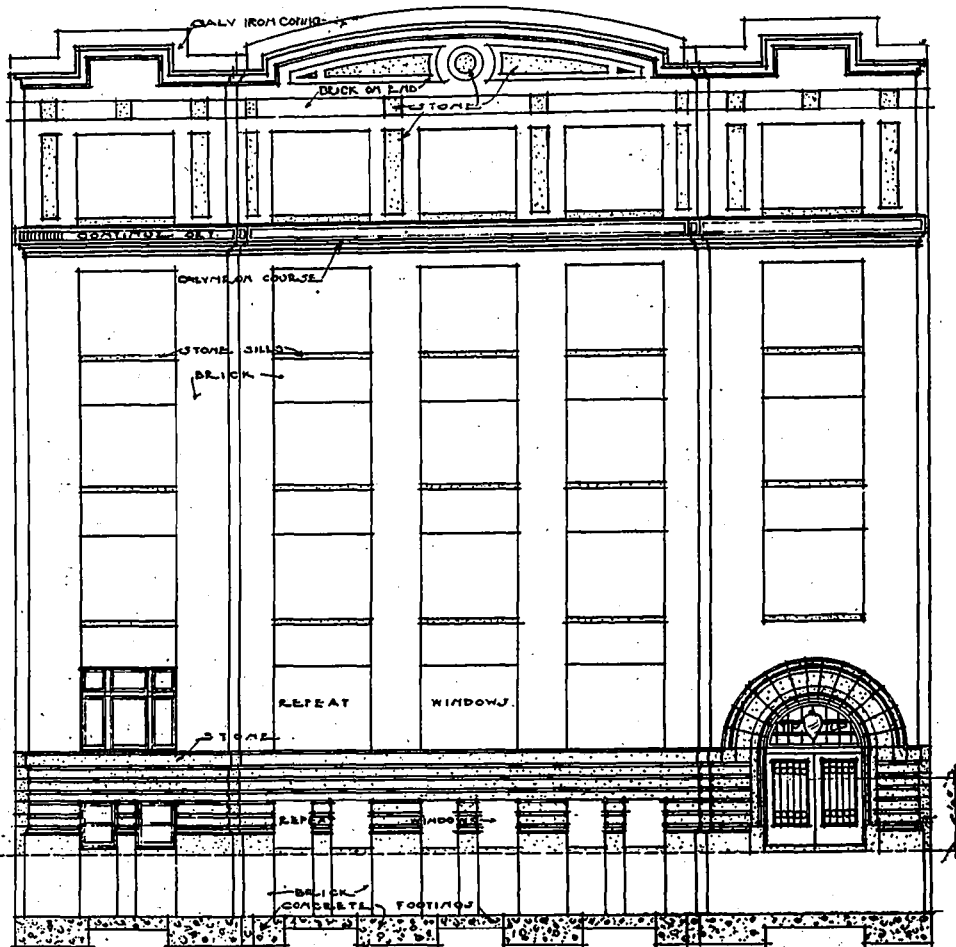
FRONT ELEVATION, THE MARTIN BUILDING, TORONTO.
HYNES, FELDMAN & WATSON, ARCHITECTS.

present five storeys at such time as future space is required. As in most cases of buildings of this character, the layout involves no special feature of plan, following a simple open interior arrangement with separate offices and the usual service features. All floors are exceptionally well lighted by steel sash windows occupying the entire space between the piers along both sides and the rear of the structure. The heating is done by steam from an exhaust off two tubular boilers which heat two adjoining buildings owned by the same firm. An electric elevator service and other up-to-date features makes the equipment modern throughout. Red stock brick with Indiana stone trimmings, is used for the front of the structure, a detail of

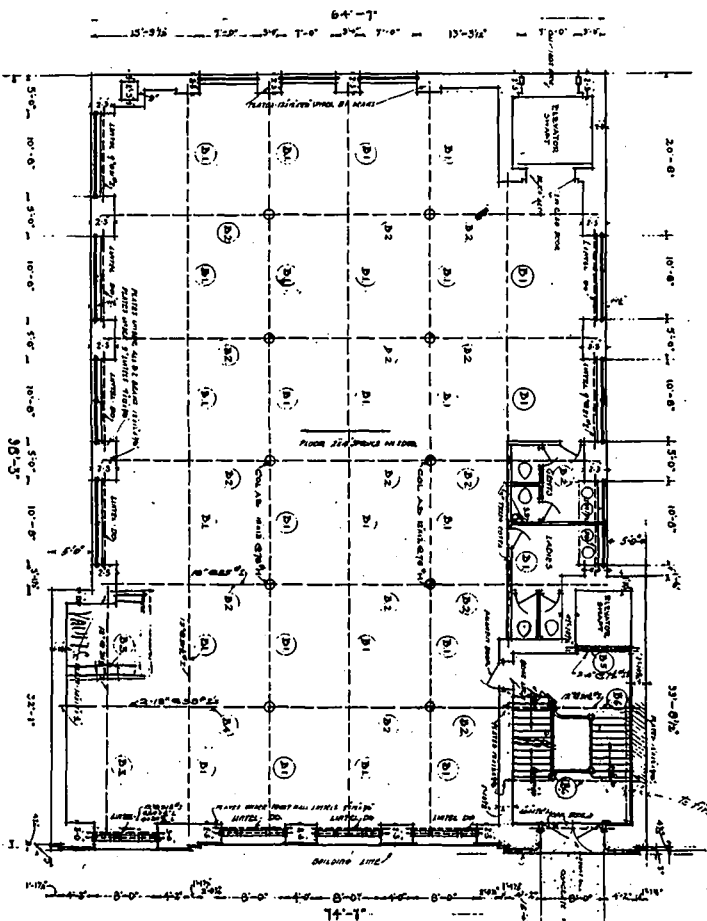
the doorway being shown in an accompanying illustrations. The dimensions of the building are 40 x 130 feet, and the cost of its erection complete was \$80,000.

The Prest-O-Lite Building, Centre Avenue and Elm Street, Toronto, is of beam and slab reinforced concrete construction, 70 x 120 feet. It is of the typical modern factory type, flooded with light and having modern service features. The equipment includes an electric elevator, and a single pipe gravity steam heating system. The floors are designed for a live load of 150 lbs. per square foot, and rug brick having a pleasing textural character is used for the spandrels and parapet.

The Martin Building, 340 Richmond Street,



FRONT ELEVATION.



GROUND FLOOR PLAN. TIP-TOP TAILORS' BUILDING, TORONTO

W., Toronto, is a three storey building of mill construction devoted entirely to warehouse purposes with general and private offices, vault and shipping room occupying the rear portion of the ground floor. The lower portion of the facade is carried out in artificial stone with tapestry brick above having square sunk joints $\frac{3}{8}$ inch thick. Goods are received and shipped through a private lane at the side. The building is heated by a single pipe steam gravity system with a cast iron boiler, and was built at a cost of \$20,000.

The Tip Top Tailors' Building, 256 Richmond Street, W., Toronto, is of steel frame type with mill floors. It is a comparatively recent example showing the use of terra cotta in the

architectural treatment of work of this character. Indiana limestone is used for the base to the ground floor window sills in front. The entrance hall is in marble, and the offices finished in quarter cut oak. Electric passenger and freight elevators and ornamental iron stairs afford means of communication to the upper floors. All equipment including the plumbing and heating service, is up-to-date throughout. The building cost \$75,000.

The Advantages of Amalgamation

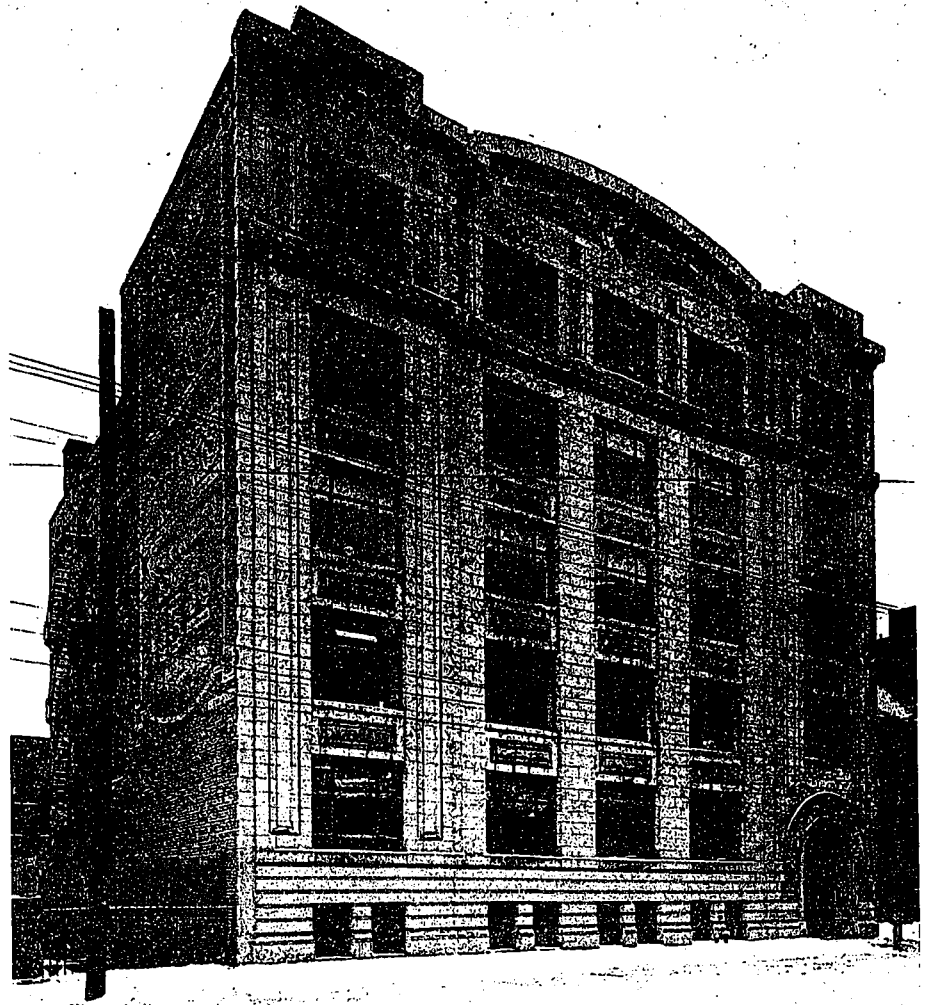
The following editorial from the "Architect and Contract Reporter" (London, England) makes interesting reading, even though architectural opinion in this country is not perhaps ripe to endorse altogether the proposal the writer sets forth. With allowances for the reference to the surveyor as a competitor of the architect, which applies particularly to England, the conditions mentioned are not dissimilar to those existing in Canada, which in certain respects have on previous occasions been given thought and attention.

Most of the architects' difficulties, say our contemporary, arise from the fact that architects are not as an organized body sufficiently in touch with the commercial world in which

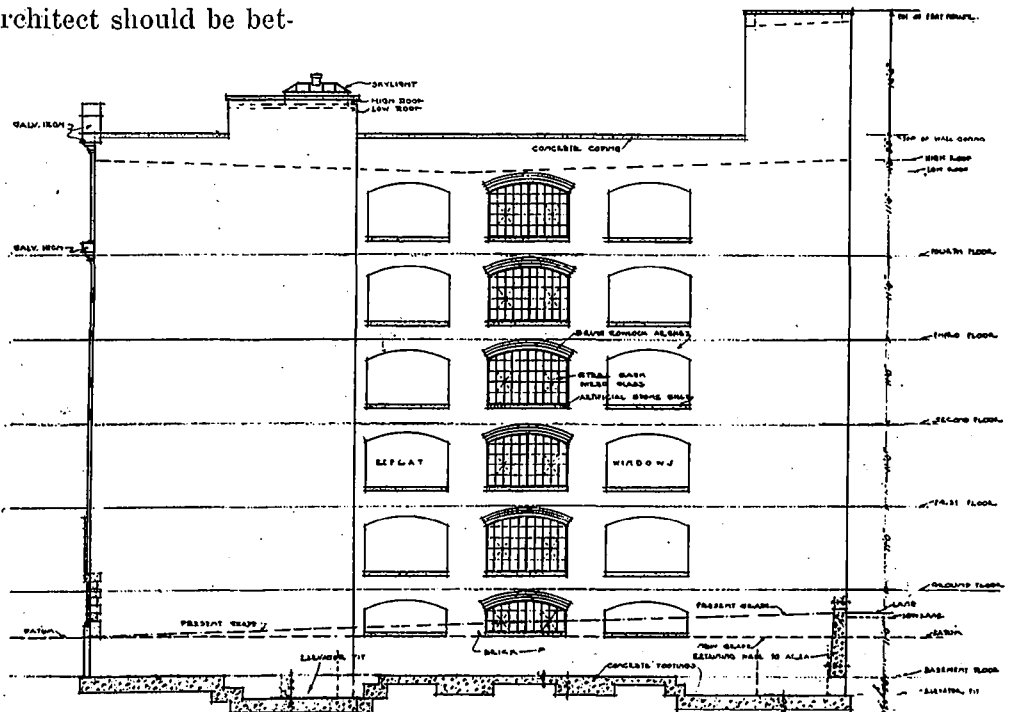
they live, while men of other professions are, and the amount of work they will as a body obtain in the future will be largely governed by their success or failure in adjusting themselves to modern conditions.

There are many directions in which they should work with, instead of apart from, men of other callings. So-called professional etiquette should be simplified so that its prohibitions simply forbid what is obviously dishonest and unfair, and every man should be left free to exercise his calling under conditions which appeal to his temperament.

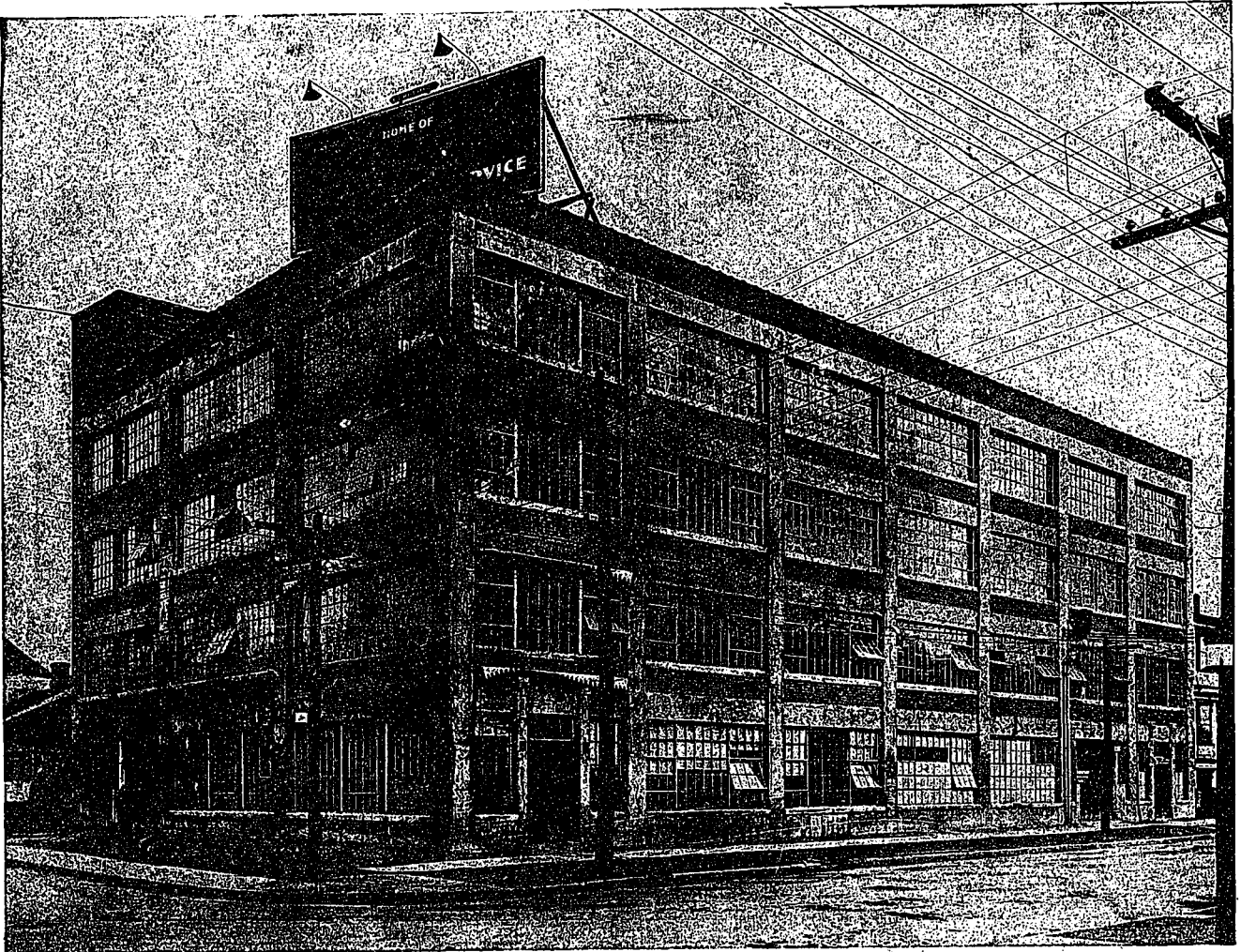
The great bulk of domestic architecture is at present carried out by speculative builders, because the average man prefers to buy what he can see rather than what is shown to him on paper. Knowing nothing about the technicalities of building, he very humanly reduces the element of chance to its smallest proportions. And yet, if a district is to be developed by building, a good architect should be better able to provide what the public wants than any builder. We believe there are very wide opportunities open to those architects who are willing to build and sell on their own account, and also room for working combinations between builders and architects for the same purpose. The architect who made such an arrangement would be freed from the difficulties he sometimes has to contend with in the case of the individual client, for he would be dealing with an average demand, and his work



TIP-TOP TAILORS' BUILDING, TORONTO.



EAST ELEVATION



PREST-O-LITE BUILDING, TORONTO.

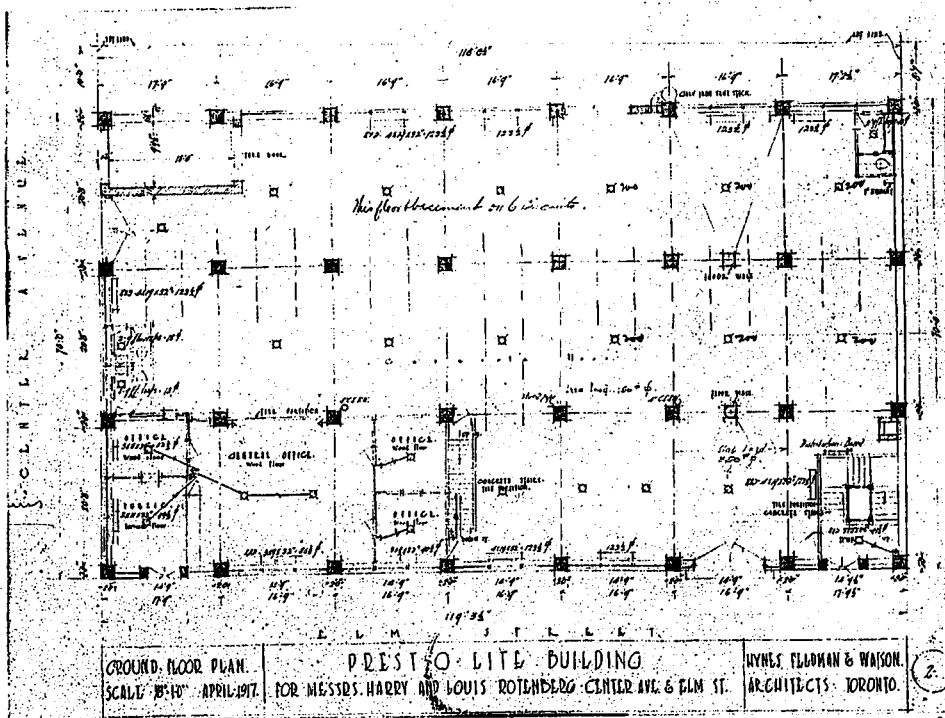
HYNES, FELDMAN & WATSON, ARCHITECTS.

would be taken or left as it stood at completion.

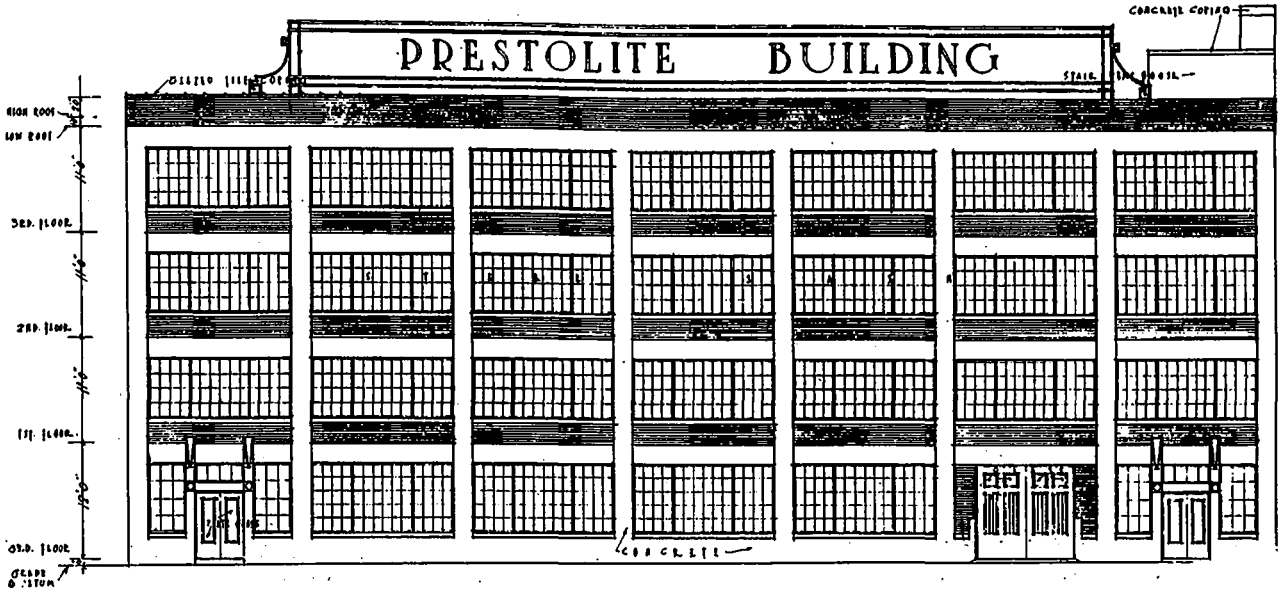
Taking another combination, that of architects and surveyors; we know from experience

that many men obtain opportunities of carrying out buildings because they are recognized by the business community as having experience in

the practical questions which so closely surround and influence building. Once called in to advise on such questions, the surveyor usually can either act as architect for any buildings which results or decide the choice of an architect, and yet a very large number of our profession will state with pride that they do not undertake surveying work, thereby limiting their own chances of employment. The title of surveyor is an honorable and an old one; it conveys a definite meaning that the public is quick to appreciate, and many survey-



GROUND FLOOR PLAN, PREST-O-LITE BUILDING, TORONTO.



MAIN ELEVATION, PREST-O-LITE BUILDING, TORONTO.

ors make lucrative incomes while the average architect lives from hand to mouth, trying to obtain a public recognition which is grudgingly bestowed or altogether withheld from him.

There is also plenty of room in the world of modern building for the combination of architects and structural engineers in one and the same person. Most of the great American architectural firms include structural engineers in their ranks, and the modern business building always makes calls on the expert structural engineer. There are two ways in which this call may be met—by the architect having sufficient engineering knowledge to deal with such problems himself, or by a working combination which gives him the same power and at the same time enables him to devote himself to that branch of the work to which his inclinations incline.

The combination of architect with architect is frequently fundamentally wrong and productive of friction, for no two men have quite the same æsthetic tastes, and such combinations are for this reason frequently short-lived. The combination of architects and structural engineers would result in enlarging the architect's field, while the intercourse involved would broaden the outlook of both architect and engineer, and would result in the production of better buildings. If we rely, as many of us do, on outside help in these matters, we can seldom be certain that there is a community of interest or aim, and if there is not the quality and character of the work must suffer.

Then there is yet another combination which might appeal to many men of æsthetic tastes—that of an architect and a decorative firm. These firms, like the speculative contractor, are willing to undertake the complete direction and completion of what is really an integral branch of architectural work, which frequently suffers

in quality from being divorced from the direction of architects who understand the fuller meaning of decoration.

Our point is that we are too apt to overlook the natural inclination of the public to prefer to buy and pay for the completed work, and to employ those who have the business knowledge and organization which alone enables them to complete it. We urge that our professional societies should encourage and not discourage all those who find they can do better for themselves by making a more commercial use of chances which are open to them. The only real essential is that such work should be done honestly and well by men who are both trained and organized, and that no man should abuse a position of trust. We should like to see the Royal Institute open its doors to all who had knowledge and skill in architecture and the allied arts and sciences, however they chose to put such knowledge and skill to account, and, as a correspondent urged in a letter to us last week, we should like to see the leading body in the profession expressing a definite and corrective opinion on all great questions of public improvements and schemes for building. We should, in a word, like to hear its views before and not after other bodies less capable of giving authoritative opinions had criticized such schemes.

In New Offices

The architectural firm of Banigan, Mathers & Thompson, Toronto, announce that those of its members who were on active and industrial war service have resumed architectural practice. The firm also announce that they are now occupying their new offices at 7 and 9 King street east, fourth floor.

CONSTRUCTION

A JOURNAL FOR THE ARCHITECTURAL
ENGINEERING AND CONTRACTING
INTERESTS OF CANADA



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CONTRIBUTIONS.—The Editor will be glad to consider contributions dealing with matters of general interest to the readers of this Journal. When payment is desired, this fact should be stated. We are always glad to receive the loan of photographs and plans of interesting Canadian work. The originals will be carefully preserved and returned.

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WESTON WRIGLEY, Business Manager

FRED. T. HOLLIDAY, Advertising Representative

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Ontario Government Housing Scheme

According to a circular recently issued by the Ontario Government, municipalities and companies incorporated under the Housing Accommodation Act will, as soon as necessary legislation is enacted, be empowered to acquire land and construct houses for returned soldiers and working men and women of small means. A fund for this purpose will be available through the recently-announced Dominion Government loan, which will be reloaned by the province to municipalities for a period not to exceed twenty years at an interest rate of 5 per cent. The conditions will also carry certain restrictions in reference to the laying out of land, the plan and construction of the houses, and the location of the land to be developed, which shall be approved by the Director of the Bureau of Municipal Affairs, or such person or body as shall be designated for that purpose.

Loans will be made to the extent of the full amount required in cases where municipalities acquire land and build houses on their own accord, and to the extent of 85 per cent. of the value of the land and improvements in the case of housing companies. The type of houses are not to exceed twenty-five hundred dollars in cost for the construction of each house. Individuals desiring to build for themselves can secure a loan through the municipality for the full value of the building, providing they own their own land and intend to erect houses for their own occupation. This privilege is also to be extended to farmers owning their own land and desiring to build for themselves, and also to any person for the erection of a house on municipally-owned land, providing he contributes in cash the value of the lot, or 10 per cent. of the whole cost.

The scheme is not without features to recommend it. In the first place, it will make money more readily accessible to both municipalities and individuals for the purpose of relieving the housing situation. In the second place, it offers money at a rate of interest considerably lower than that demanded by private loan companies. In the third place, it gives an opportunity to the individual to become possessor of his own home at a small outlay spread over a given period. Repayment will be made at the rate of 8 per cent. per annum, which will cover both interest and reduce the principal. Thus, on the basis of a total investment including land and building to the value of three thousand dollars, the amount to be paid out annually by the owner would not exceed the sum of two hundred and forty dollars (\$240), which is equivalent to twenty dollars a month, an amount at the very least the individual nowadays would be required to pay for rent.

Considering the present rate on private loans, which is at least 7 per cent. on the loan itself without any regard to the reduction of principle, the Government's plan offers a decided advantage, especially to that class whom the scheme would particularly benefit. The advantage mainly lies in the fact that the scheme only requires a small initial outlay, while money which the individual would otherwise be required to pay for rent is converted into an equity in a property which eventually becomes his own.

While taxes and insurance must be taken into account, the decrease in liability would in the course of a few years offset this to the extent that the average payment, unless otherwise desired, would not exceed a maximum annual expenditure of the amount mentioned. Of course, the owner would have the option of reducing his debt as rapidly as possible, and the scheme is of a character which would encourage this to a great extent.

Just what character the restriction to be

imposed will assume in reference to the development of land and the erection of buildings thereon has not as yet been announced. It is stated, however, that the Ontario Housing Committee will shortly issue a report recommending various types of houses and providing plans and specifications for same, and perhaps more definite particulars as to conditions will then become known. Already a large number of municipalities have signified their intention of taking advantage of the Act. Whether or not it will adequately meet the situation or work out successfully in a general economic way, it will prove noteworthy as an experiment. It at least shows an earnest effort on the part of the Provincial authorities to deal with a serious and important problem, and perhaps marks the beginning of what will eventually resolve itself into progressive and effective housing and town-planning legislation.

Placing Credit Where it is Due

The principle of rendering "unto Caesar what belongs to Caesar" has been established since early days. Perhaps in a more modern sense it implies among other things a voluntary or optional act of placing credit where credit is due. We say voluntary or optional because as regards newspapers at least this practice is not always enforced, and when it is observed it sometimes happens that an inadvertency occurs which is most unfair to certain individuals and decidedly misleading as far as the public is concerned. The particular reference here is to a rather unfortunate mis-statement made by one of the leading morning dailies in reference to the designing of the Canadian Bank of Commerce at Montreal, and which Sir John Aird, General Manager of that institution, has taken the trouble to correct in the following letter published recently in the Toronto "Star."

Sir: My attention has been drawn to the extraordinary mis-statement made by a morning paper that the fine building of the Canadian Bank of Commerce in Montreal, was built by the late Stanford White. Where this information can have been obtained I do not know, but in view of the injustice done to a local firm of architects I desire to say that the building in question was designed, and its construction supervised, by Messrs Darling and Pearson, of Toronto, also that the stone used in its construction, Stanstead granite, is Canadian stone. Furthermore, I should like to add that the Canadian Bank of Commerce has not in many years employed an architect from the United States. The handsome buildings of the bank in Montreal, Winnipeg, Quebec, Vancouver, and many other places throughout Canada, are the product of the brains of Canadians. The motto of the Bank has been and is—Canadian architects, Canadian workmen, Canadian materials. I write this in order that a local firm may not be deprived of the credit which is due to them,

Yours faithfully,

JOHN AIRD,
General Manager.

Toronto, Dec. 7.

The above letter requires little comment

other than to emphasize the moral it points out as to what can be done by our newspapers in giving correct information as to the designers of our principal buildings. Canada is still a young country passing through a very progressive stage and its accomplishments from an architectural standpoint are quite worthy of note. It is indeed laudable on the part of the newspapers when space in their columns is devoted to illustrations and articles dealing with our more important edifices. The erection of buildings concerns the development of the country, and likewise the names of those responsible for the design of these structures form a related item of public interest.

While the mistake mentioned was evidently an unintentional oversight, it was nevertheless unfortunate that the real authors of the building should be obscured in a confusion of names. Sir John Aird's letter is therefore much to the point, and it denotes a spirit of patriotism on the part of the Canadian Bank of Commerce which other institutions might emulate with credit to themselves and much general good to the country. As Canadians we should recognize our own handiwork and place credit where it rightfully belongs. It is surprising the small number of men even at the head of our financial and business institutions, who are aware of the authorship of our best designed buildings. Few in Toronto alone have knowledge that the four office buildings at the corner of King and Yonge streets, are the work of Canadian architects, and this is typical as regards the better class of architectural design in practically every Canadian city. It is a state of unconsciousness regarding our own achievements which is to be regretted. Public recognition is always an incentive to higher efforts, and newspapers can more completely fulfill their functions by informing their readers of such interesting and related facts. To do so is to render a better news service and to stimulate public interest in Canadian capabilities and accomplishments.

Saskatchewan Association Elect Officers

The Saskatchewan Association of Architects have elected the following officers for 1919: President, Captain David Webster, Saskatoon; Vice-Presidents, Norman Thompson, Saskatoon, and W. G. Van Egmond, Regina; Secretary-Treasurer, Francis B. Reilly, Regina. Member of Council: Prof. Greig, Saskatoon University; R. G. Bunyard, Moose Jaw; M. W. Sharron, Regina.

The Association is at present preparing an honor roll of all its members who served in connection with the war, which will be ready shortly.

A NEW CONCRETE HARDENER.

Frederick Reed, former editor of CONSTRUCTION, now associated with Sturgeons, Limited, 31 Church Street, Toronto, has been spending the past two years in perfecting the made-in-Canada "Flintex," a chemical hardener for concrete floors. This material, after severe tests by the authorities on concrete relative to its hardness, wearing qualities and impermeability to water, oil, acid, etc., has proven eminently successful in making concrete floors proof against the hard usage to which they are subjected.

CONTRACTORS and SUB-CONTRACTORS

As Supplied by the Architects of Buildings
Featured in This Issue.

WILLARD CHOCOLATE COMPANY'S FACTORY, TORONTO.
Fire Alarm System, Dominion Messenger Company.
Fire Doors, W. E. Dillon Company.
Flooring, Seaman Kent Company.
General Contractors, Yolles & Rotenberg.
Hardware, Canada Hardware, Limited.
Heat Regulating System, C. A. Dunham Company, Ltd.
Ornamental Iron, Dennis Wire and Iron Works Company.
Refrigerating Equipment, Canada Ice Machine Company.
Radiators, Dominion Radiator Company.
Sprinkler System, A. Welch & Son.
Water Tank, Goad, Shapley & Multi Company.

GRAHAM BUILDING, BELLEVILLE.

General Contractors, W. F. Sparling Co.
Brick, Don Valley Brick Works.
Electric Wiring, Bennett & Wright.
Hollow Tile, Sun Brick Co.
Steel reinforcing, Trussed Concrete Steel Co.
Refrigerating plant, Canadian Ice Machine Co.
Vault Doors, J. & J. Taylor.

CANADIAN AEROPLANES, LTD., BUILDING.

General Contractors, Jackson Lewis Ltd.
Brick, Don Valley Brick Works.
Cement, Canada Cement Co.
Carpenter, Jackson Lewis Co.
Electric Wiring, Bennett & Wright.
Plumbing, Bennett & Wright.
Roofing, A. Matthews, Ltd.
Steel Sash, Steel and Radiation, Ltd.
Steel Sash, Trussed Concrete Steel Co.
Structural Steel, McGregor & McIntyre.
Waterproofing, Michael Waterproofing Co.

PREST-O-LITE BUILDING.

Concrete Engineers, Trussed Concrete Steel Company.
Concrete Contractors, Raymond Construction Co.
Metal Sash, A. B. Ormsby, Ltd.
Elevators, Turnbull Elevator Company.

GRANASTIEN BUILDING.

Concrete Engineers, Trussed Concrete Steel Co.
Elevators, Turnbull Elevator Company.
Structural Steel, Reid & Brown.

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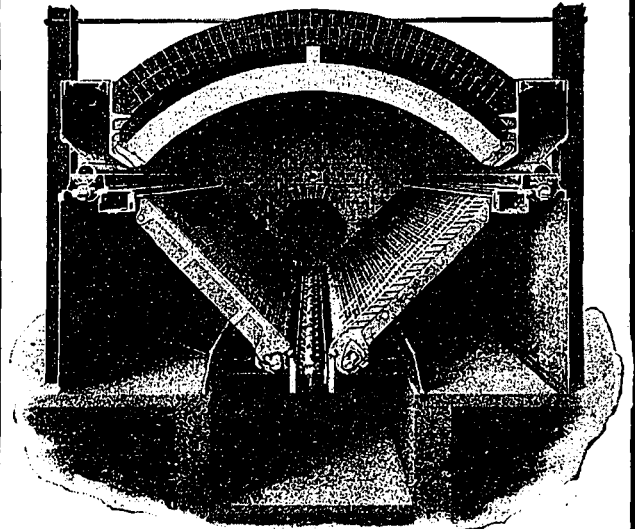
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Canadian Kask Co.	Lake Superior Paper Co., Ltd.
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Laurentide Company, Ltd.	McClary Mfg. Co.
Belgo-Canadian Pulp & Paper Co.	Canadian Cottons Co.
National Cash Register.	General Chemical Co.
University of Toronto.	Regina Municipal Plant.
Montreal Steel Works.	Toronto Electric Light Co.

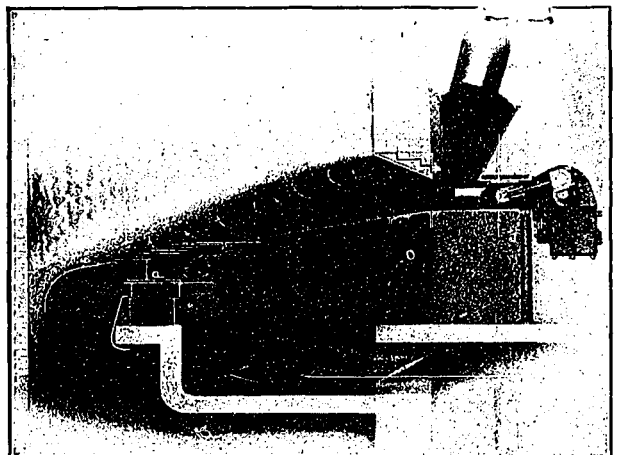
Catalogs: 10 R on Riley Stokers

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Sanford Riley Stoker Co., Worcester, Mass.

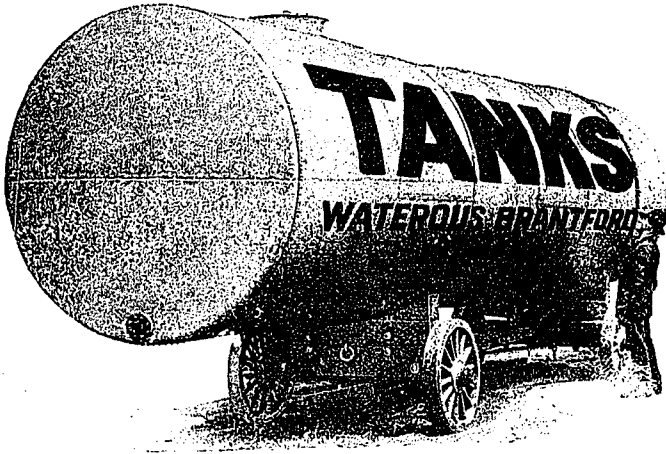
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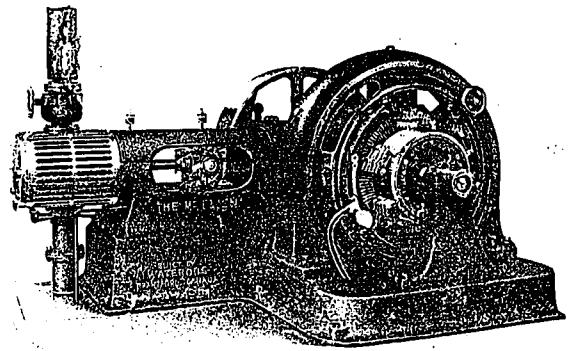
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BRANTFORD, ONTARIO, CANADA

Shadows Cast by Skyscrapers

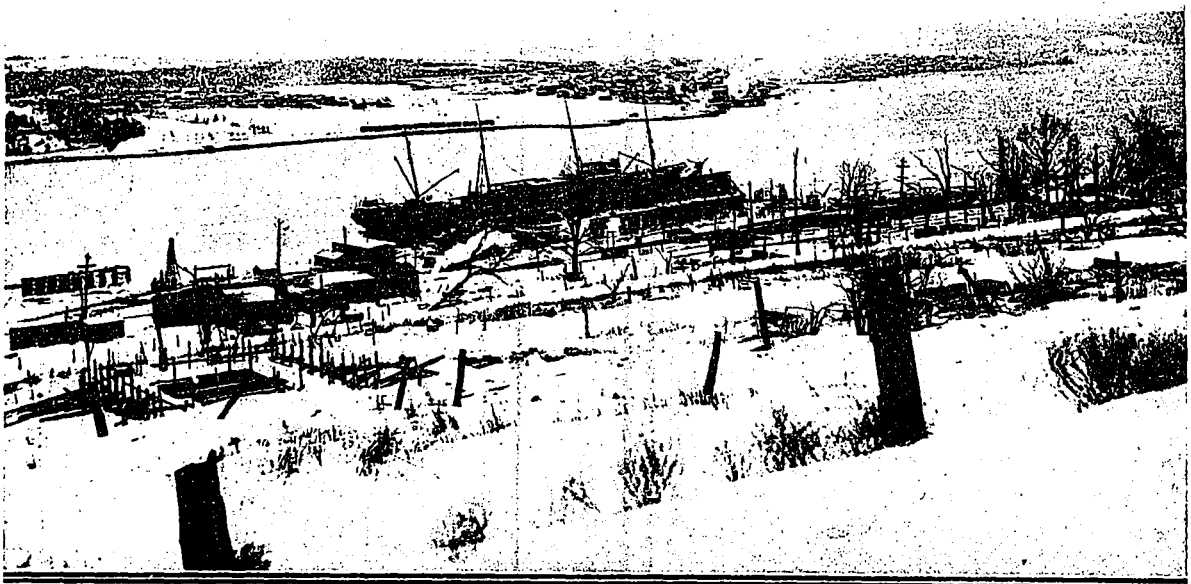
At noon, on the shortest day of the year, the shadows of different skyscrapers envelope large areas, states *Building Management*. The Adams Express Building, New York, which is 424 feet high, casts a shadow 875 feet in length; the Equitable Building, which is 493 feet high, one 1,018 feet in length; the Singer Tower which is 540 feet high, one 1,127 feet in length; and the Woolworth Tower, which is 791 feet high, one 1,635 feet in length.

The effect of skyscrapers casting shadows from a sixth to a third of a mile in length on surrounding property is well illustrated in the case of the Equitable Building. Its shadow which at noon on December 21 is about one-fifth of a mile in length, completely envelops an area of 7.59 acres. The ground area of the Equitable Building is only 1.14 acres.

The shadow cuts off all sunshine from the Broadway facade of the United States Realty Building, which is twenty-one stories high. The New York Title & Mortgage Company Building, fourteen stories high, and the Washington Life Insurance Building, nineteen stories high, are both completely shaded. The south side of the Singer Tower is shaded to a height of twenty-seven stories. The nearest part of the City Investing Building, 400 feet away, is in shadow for twenty-four of its twenty-six stories. Even part of the New York Telephone Building north of Cortland Street is shadowed by the Equitable Building.

Cedar Street, the street immediately north of the Equitable Building, has an average width of 34 feet between Broadway and Nassau Street. The height of the Equitable Building is fourteen and a half times the width of this street. On a north and south street of this width in New York, uniformly improved on both sides with buildings having a height equal to that of the Equitable Building, only 9.31 per cent. of the windows would receive any direct sunshine at noon on the shortest day in the year. On north and south streets only the windows nearest the top for a distance equal to 1.35 times the width of the street would receive direct sunshine at noon on December 21 at New York (40 degrees North Latitude). The windows in the first thirty-four stories nearest the ground would receive absolutely no direct sunlight. Direct sunlight would only enter those windows in the four stories nearest the top. Not a single window within 447 feet of the street level would receive a ray of direct sunshine.

The Equitable Building is, of course, an extreme case. But even in much lower buildings a considerable number receive absolutely no direct sunshine at the winter solstice. Up to a height equal to 1.35 times the width of such a street all the windows receive some sunshine. If the street, however, is improved with buildings one and one-half times the street width in height, only 90 per cent. of the windows obtain direct sunshine.



SHIP-BUILDING INDUSTRY FOR DEVASTATED PORT OF HALIFAX.

The picture overlooks Halifax Harbor in a section which was ruined by the great explosion of December, 1917. The buildings along shore are the beginnings of a new government shipyard. The town of Dartmouth is seen in the distance.