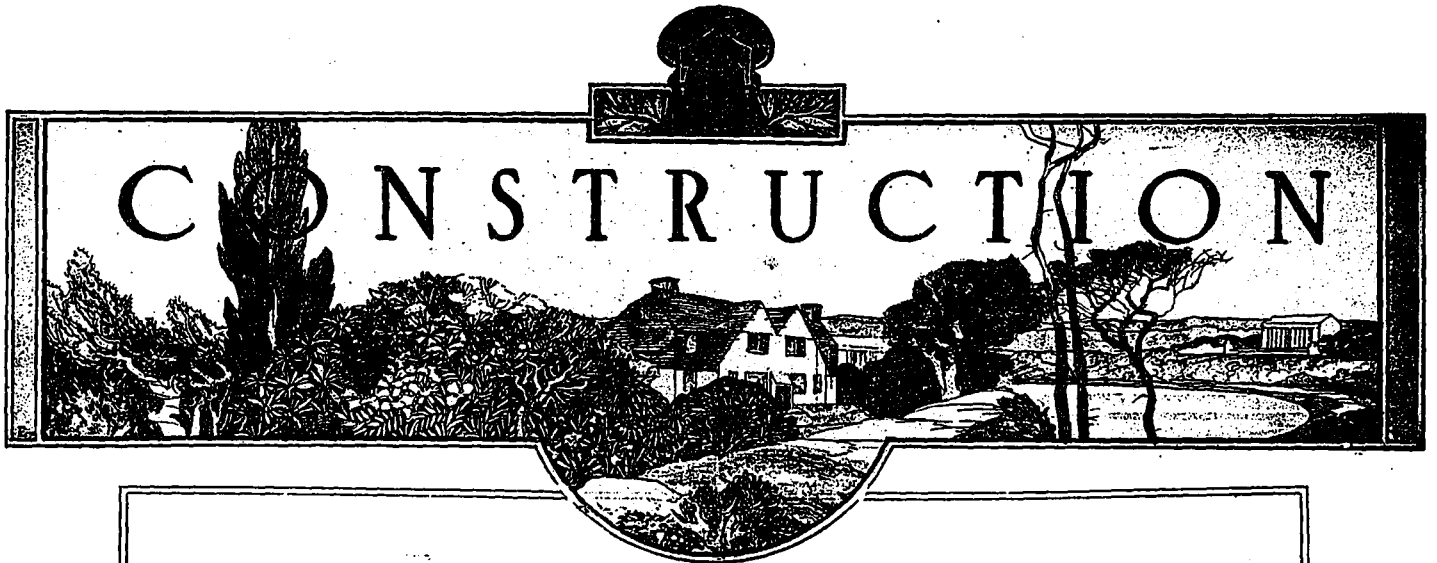


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MONTREAL

BRANCH OFFICES

NEW YORK



GREAT HALL,
HART HOUSE,
UNIVERSITY OF TORONTO



SPROATT & ROLPH,
ARCHITECTS.

Photographs by G. D. Haight.

Hart House, University of Toronto

An explanation of the purpose of the building taken from an address by Mr. Vincent Massey, M.A., at the Opening Ceremony.

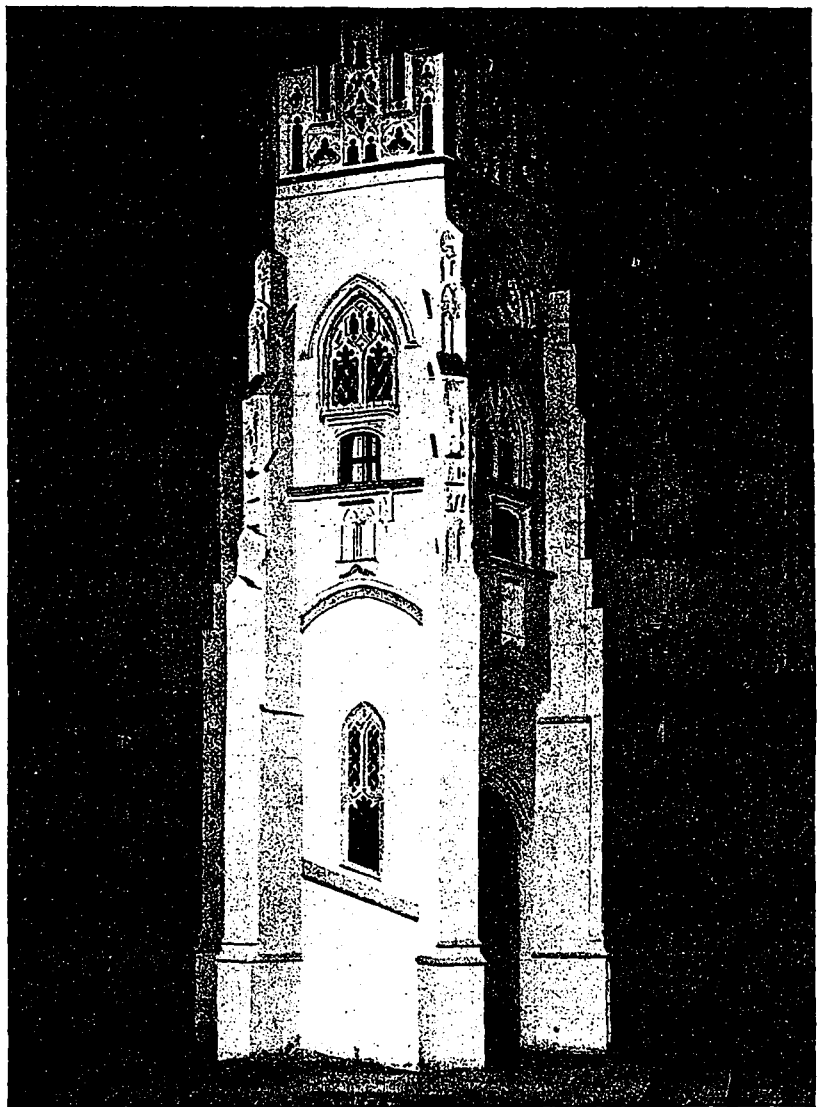
THE project of Hart House was conceived in 1910, when it became evident that the Young men's Christian Association stood in need of better rooms and that the Under-graduate body required quarters in the nature of a club. To meet these needs the Executors of the Estate of Mr. Hart Massey, of Toronto, offered to give to the University a building which would serve as a memorial to the founder of the trust, and bear his name. This offer was accepted and construction commenced in 1911.

Owing to the war, Hart House developed slowly, but the pause in its erection gave an opportunity to widen its scope. It is perhaps not incorrect to say that the House as it now stands is intended to represent the sum of those activities of the student, which lie outside the curriculum. These activities are not unimportant; indeed, I would submit that the truest education requires that the discipline of the class-room should be generously supplemented by the enjoyment, in the fullest measure, of a common life. A common life, of course, presupposes common ground. At this University it happens that but a very small proportion of the students can enjoy the advantages of the community life provided by a college. It is perhaps unlikely that we shall ever see in Toronto a completely developed collegiate system. But even if this were the outcome, there would still be the need, indeed the greater need, for the unifying force which it is one purpose of this institution to introduce into the University.

Hart House, in one sense, may be described as a Students' Club, but the purpose of the House is wider. It is greatly to be hoped that this place from the many angles at which it touches the life of the student, will exert an influence of the most positive nature, in giving him a real sense of membership in an academic family, and in making him conscious of a very noble tradition, which it is his duty and his privilege to maintain.

Furthermore, let us hope that not only will the House serve the interests of the active members of the University of Toronto, teach-

ers as well as undergraduates, but that it may help to bridge the gulf of time and space which too often separates the graduate from his University. Here will be a place where the present and the past generations may meet, and here, let us hope, may be fostered the lasting loyalty



STAIR ENCLOSURE: GREAT HALL.

and the *esprit de corps* which are essential to the welfare of any seat of learning.

This House has been built for the men of the University, and save for special occasions will be reserved for their use. May I explain here, lest misunderstandings arise, that this condition was due in no sense to a lack of appreciation of the benefits of the co-educational system—a system which is so firmly established and vindicated as to require no defence—but entirely to the fact, quite as little in need of explanation,



GENERAL EXTERIOR VIEW.
HART HOUSE, UNIVERSITY OF TORONTO
SPROATT & ROLPH, ARCHITECTS.

that the purpose of this building could not be achieved were it to be occupied jointly by men and women.

It is a source of profound gratification, to anyone associated with Hart House, that the building during the years of the war, was able to make some contribution to the cause which, at the time, stood of paramount importance. From the autumn of 1914 until a few months ago, the structure was used for military purposes, and for some years when construction was all but suspended, it was almost entirely occupied by Military Training Schools. On the south facade are carved the devices of the principal units which occupied the building; the Officers' Training Corps and Overseas Training Company of this University, the District School of Musketry, a Cadet School of the Royal Air Force, and a unit of the Canadian Army Medical Corps. Of those who passed through these schools there were many who, had they returned, would have enriched the life of this place. We may remember them along with the great company to whose memory we do especial honor to-day.

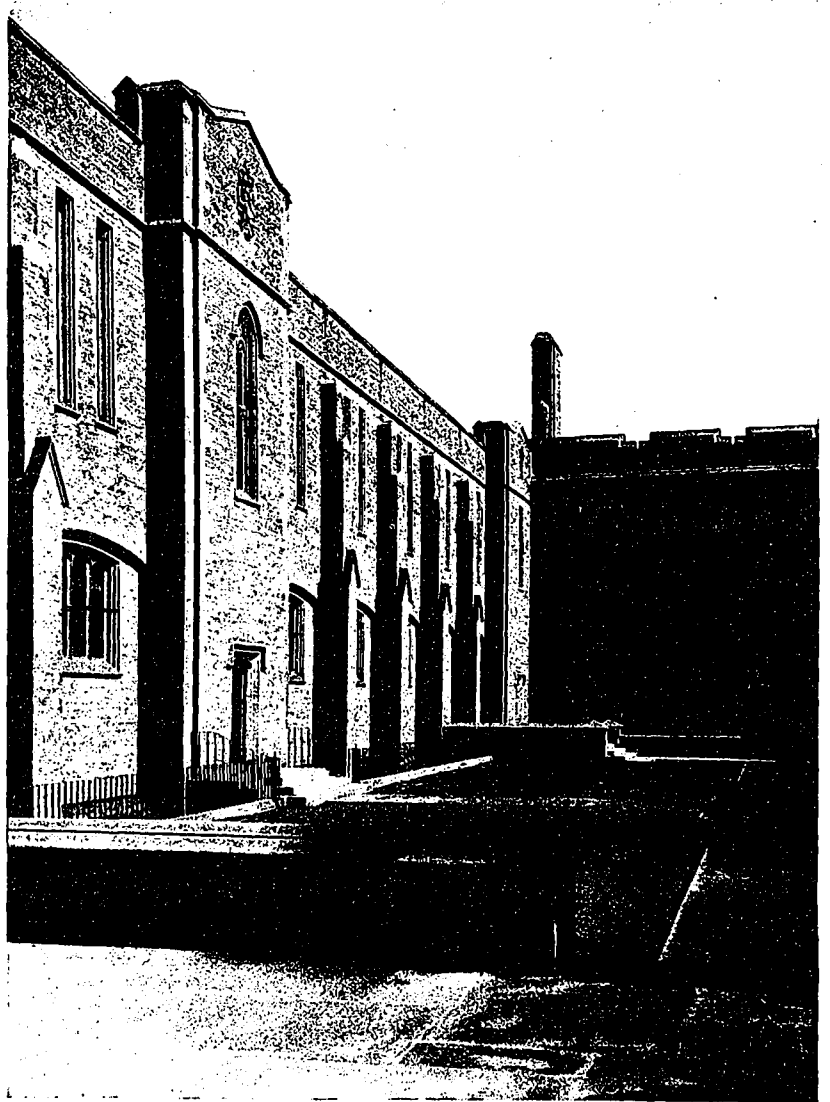
It is a very great pleasure to be able to pay some small tribute to the work of the architects, Mr. Henry Sproatt and his colleague Mr. Ernest Rolph. One finds it difficult to overstate the idealism and the devotion which both these gentlemen have applied to their task. Their object was the creation of a work of art in the true sense, but they never failed to strike that fine balance between beauty of design and utility of purpose, the achievement of which is one of the major problems of architecture. Their enthusiasm, energy and patience in this work have been unbroken.

I would not forget, too, to refer to those individuals and firms who have sympathetically co-operated with the architects, and under their inspiration, have produced the actual fabric. On the imaginative, as well as on the purely structural side, the execution of this work has been most painstaking and entirely conscientious.

If the direction of the building was sincere, the workmanship has been no less so. It too often happens in these days that the pleasure of self-expression has passed from manual work. On this structure, due both to the length of the period during which it was in process, and to the nature of the work itself, it was pos-

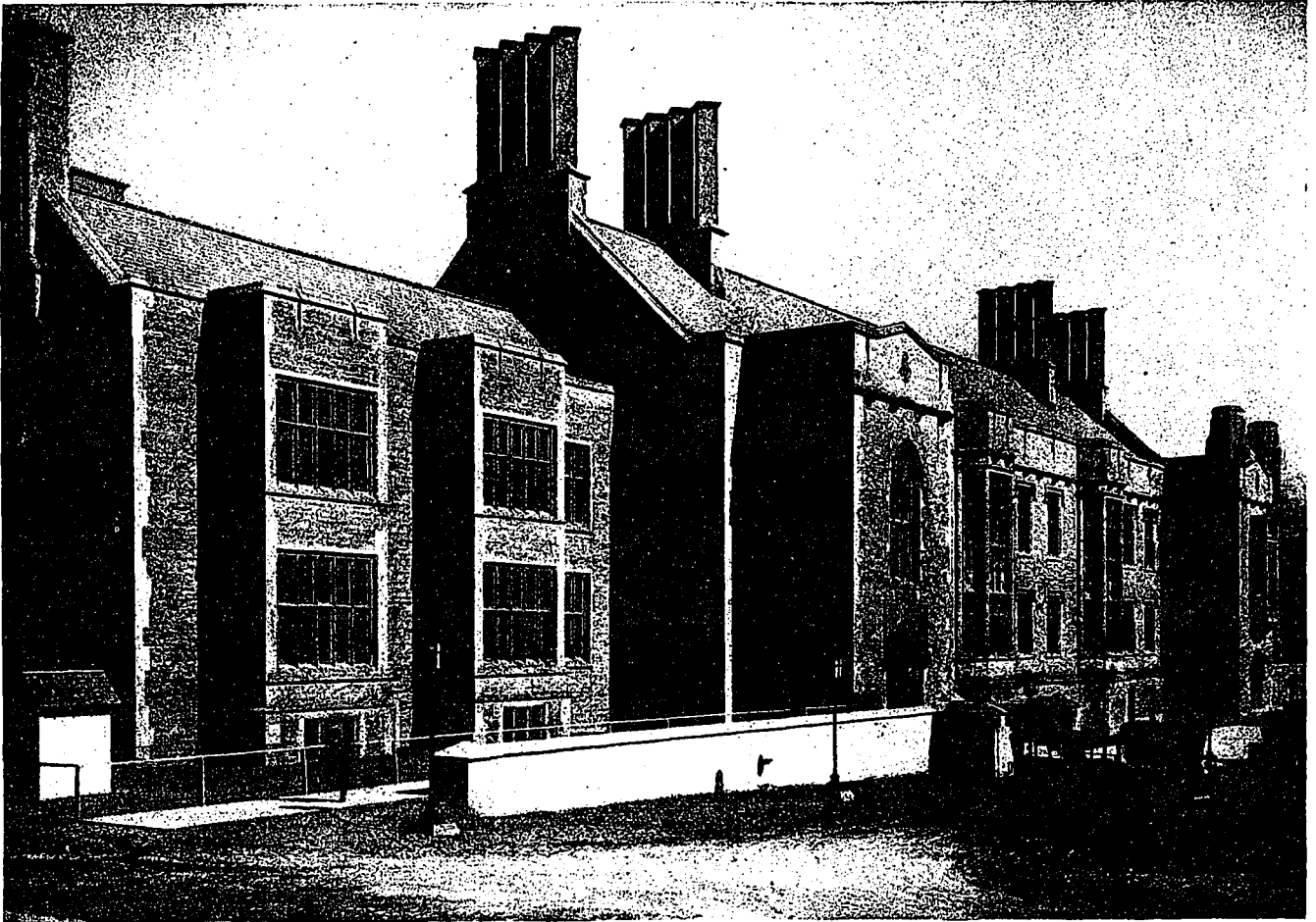
sible to preserve something of the spirit of individual achievement, which is associated with another age. The craftsmen on the building, and I use this honorable term advisedly, have shown both corporately and individually, that the mediaeval joy of creation has not entirely passed. It is a satisfaction to know that, save for one or two instances, they were all Canadian citizens.

Hart House passes to-day from the phase of preparation to that of accomplishment; from the period of anticipation to that of fulfillment. The work is done and the House stands a com-



QUADRANGLE.

pleted thing. But with the last blow of the hammer the building is finished in only one sense. The bricks and mortar are but the bones; the community of Hart House must provide the spirit. But I have no fear for what may be called, in its widest sense, the spiritual side of the House. The institution has been organized on an ordered plan; presiding over its fortunes is a gentleman, on whose appointment as



VIEW ALONG SOUTH FRONT.

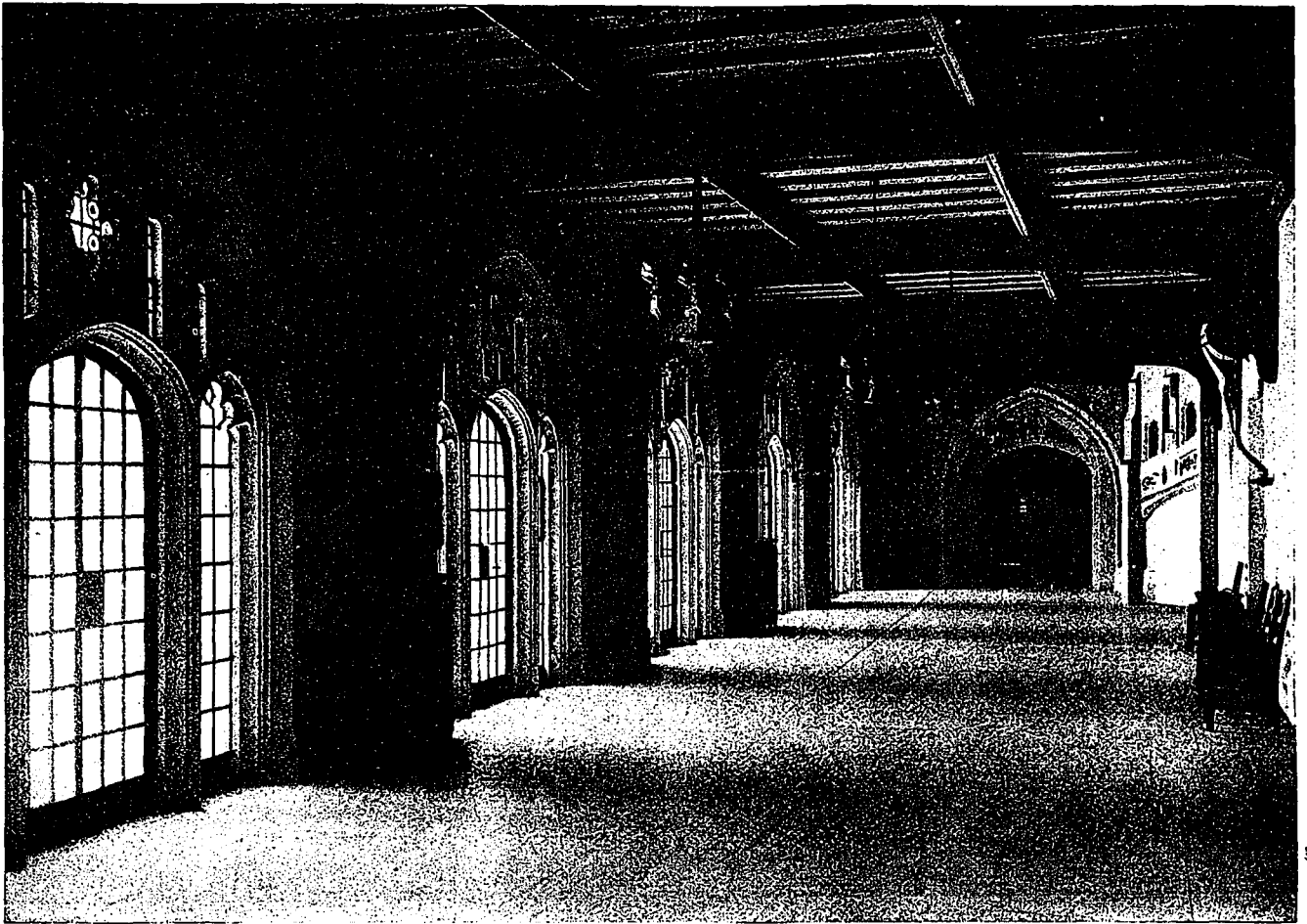
Warden of the House, the University is to be congratulated; and associated with the Warden, in his task of administration, are a group of men, whose leadership in many departments of student life, will give the fabric coherence, symmetry and a genuine purpose. I make no doubt that the building through the personalities which alone can give it vitality, will take its part in what must perhaps be the supreme function of a University, the development of individual character.

Perhaps in closing I can do no better than to quote from the commemorative inscription shortly to be unveiled by His Excellency, which sets forth in formal terms the purpose of this place:

"The Prayer of the Founders is, that Hart House, under the guidance of its Warden, may serve, in the generations to come, the highest

interests of this University by drawing into a common fellowship the members of the several Colleges and Faculties, and by gathering into a true society, the teacher and the student, the graduate and the undergraduate; further, that the members of Hart House may discover within its walls the true education that is to be found in good fellowship, in friendly disputation and debate, in the conversation of wise and earnest men, in music, pictures and the play, in the casual book, in sports and games and the mastery of the body; and lastly, that just as in the days of war, this House was devoted to the training in arms of the young soldier, so in the time of peace its halls may be dedicated to the task of arming youth with strength and suppleness of limb, with clarity of mind and depth of understanding, and with a spirit of true religion and high endeavor."





LOWER GALLERY.

Hart House: A Description of Its Plan

By W. A. Langton.

THE name of Hart House makes it a memorial to Mr. Hart Massey, of Toronto, by whose executors the building was given to the University, as part fulfilment of the aims of the Massey Foundation of which they are trustees.

The idea of such a building appears to have originated with Mr. Vincent Massey, who, as an undergraduate of the University, saw that the importance of the students' activities, outside of the curriculum, were in the way of suffering for want of proper housing, and, on the other hand, were worth fostering by being given a proper building. It is the combination in one building of proper accommodations for all the students' social requirements that makes Hart House unique. In other universities there are gymnasiums, club rooms, dining halls, etc., but they are in separate buildings. This is a good thing for the architect but, as Mr. Vincent Massey's address at the opening of Hart House seems to suggest, is not quite so good for the student as a single building, where men of different pursuits have opportunities of meeting one another, instead of being further separated

by the accident of frequenting separate buildings.

There is no doubt, however, that so far as the architects were concerned, Mr. Massey's idea presented a tough proposition. The problem was to combine, in one building, of a dignified collegiate appearance, proper accommodations for the following requirements:

A Dining Hall with the most modern appendages.

Several Common Rooms.

Several Rooms for Officers and Committees of Students' Associations.

A Library.

A Reading Room.

A Music Room.

A Drawing or Painting Room.

Photographic Dark Rooms.

A Lecture Hall.

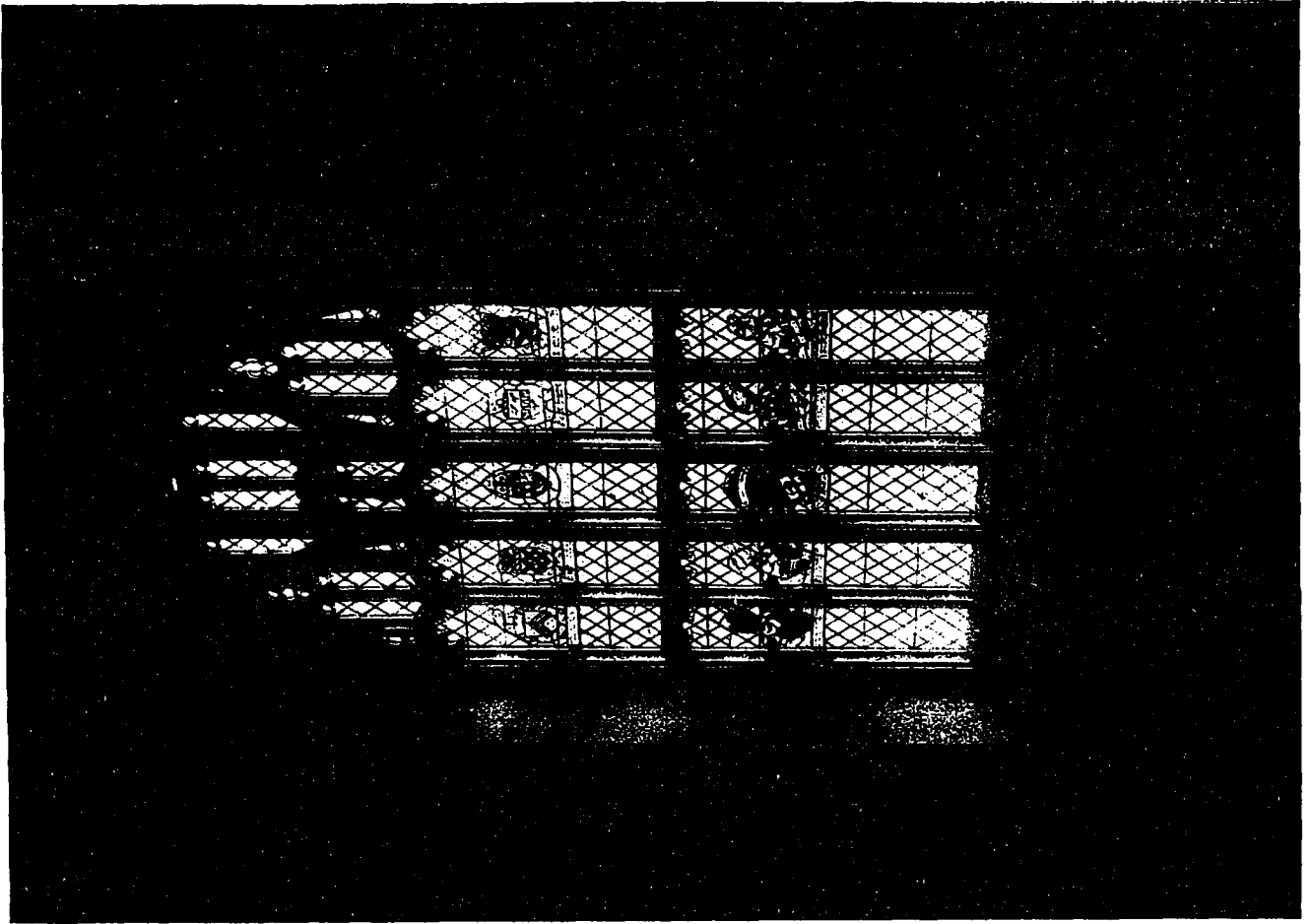
Y.M.C.A. Offices and Library.

A Chapel.

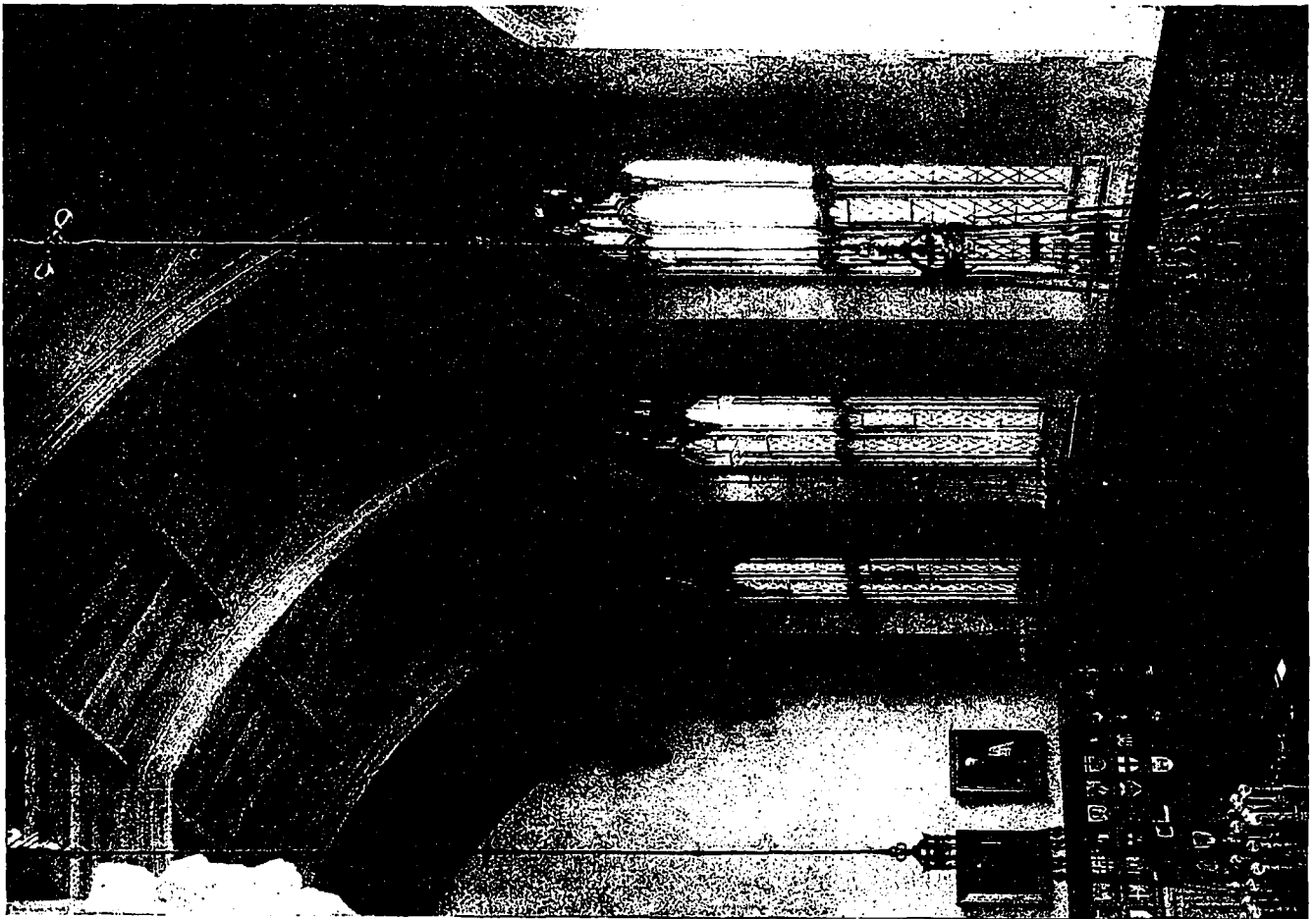
Billiard Rooms.

Athletic Rooms for boxing, fencing, wrestling, basketball, etc.

Squash Racquet Courts.



SOUTH WINDOW, GREAT HALL.



CORNER OF GREAT HALL.

HART HOUSE, UNIVERSITY OF TORONTO.
SPROATT & ROLPH, ARCHITECTS.

Locker Rooms and Dressing Rooms.
 A Gymnasium.
 A Running Track.
 A Swimming Pool.
 A Theatre with dressing rooms,
 green room and complete appointments.
 A Barber's Shop.
 Residential quarters for the Staff.
 Residential quarters for the Warden.
 Bedrooms for guests.

The rooms in this list should be called, for the most part, departments rather than rooms, for there are minor rooms in connection with most of them. In particular there are cloak rooms and lavatories, in large number, dispersed throughout the buildings where they are convenient for either the habitués of the building or their guests.

This complex problem is what the architects had to face. It is at the bottom severely practical. There is but one department, the Dining Hall, that lends itself to external architectural treatment in a recognized way. There is among the other important departments too much of athletics, one would think, to suggest for the architects a happy course along the broad and flattering road of conventional architecturalism.

It is to the credit of Messrs. Sproatt and Rolph that they have not thought of mitigating the purely scientific treatment of a modern gymnasium by giving a pseudo-architectural appearance to any part of its construction. The severely practical character of all the athletic rooms is an excellent testimony to the truth of the maxim of architects that the true artist is most truly a practical man. In the case of the architects of this building, there has been the additional advantage that both members of the firm are artists. Though Mr. Rolph addicts himself to superintendence and Mr. Sproatt to design, Mr. Rolph was originally a designer too; and both members of the firm are distinguished as men of taste.

The solution of the athletic problem is very simple; it is, in one word, skylights. The skylight roof, if it does appear, is quite seemly; but as the athletic department is kept to the north, where there is rather close proximity to Wycliffe College, the glass roof is not easily seen, if at all. The wall elevation is admirable; too good to be so little in sight. The long narrow windows of the upper part of the gymnasium and the buttresses of the roof, make a char-

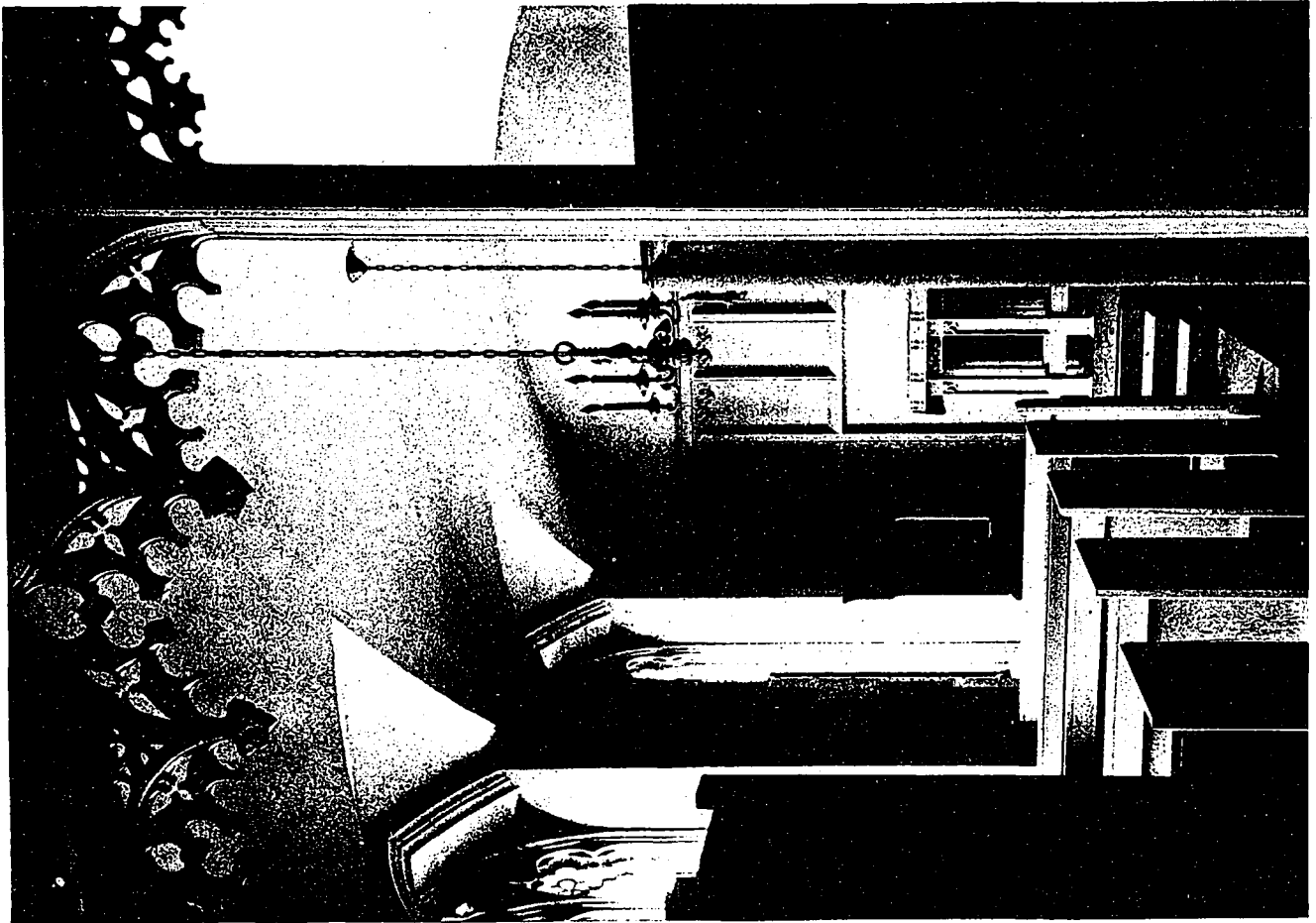


STONE STAIR OF LOWER GALLERY.

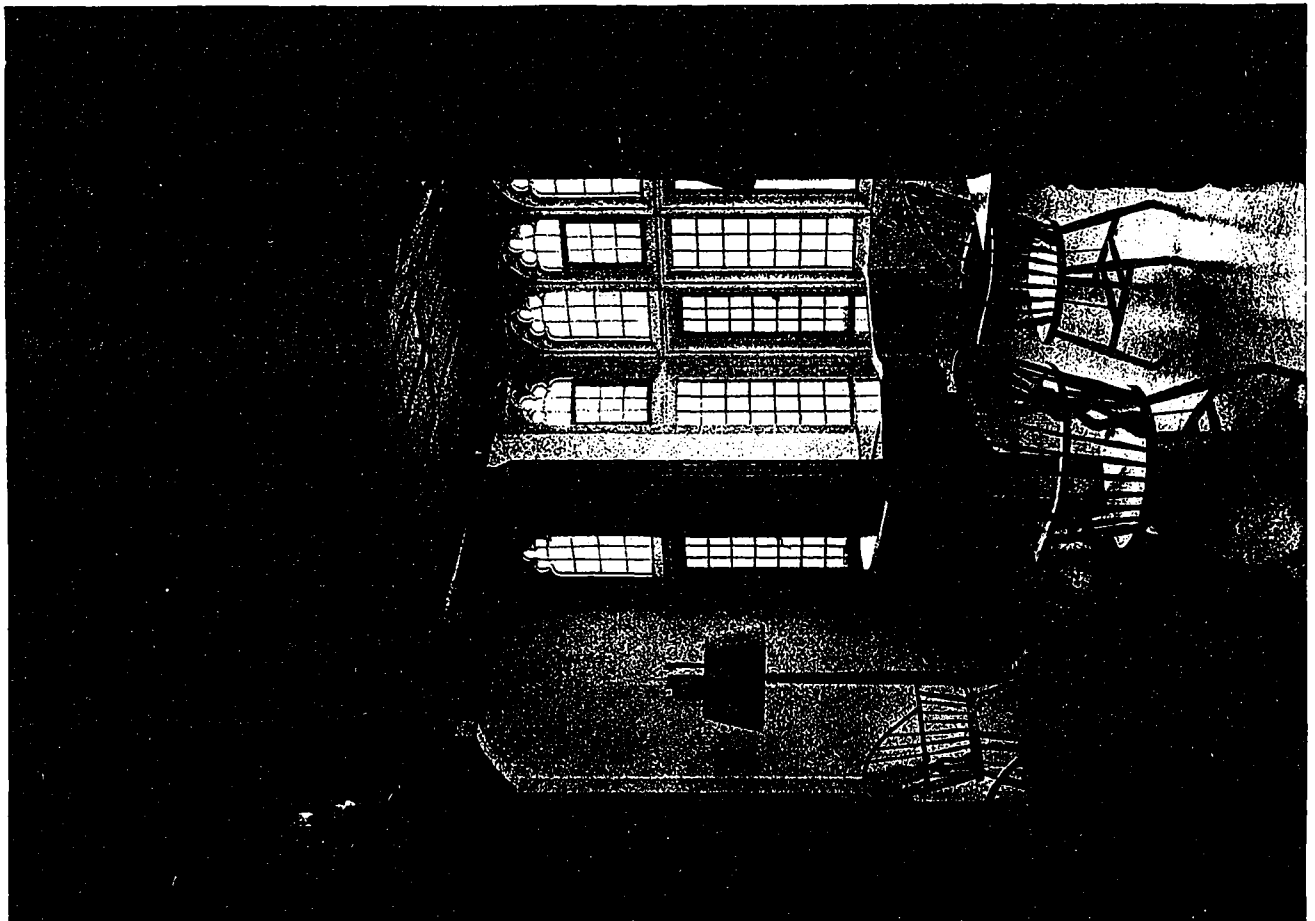
acteristic northern elevation, quite as beautiful in its way as the more expansive southern front.

The gymnasium must have an open roof because of the numerous attachments that are necessary for the gymnasium apparatus. In the swimming pool, which has no need of this kind, the steel roof is enclosed in a segmental plaster ceiling, carried by substantial rectangular piers, and penetrated, between the piers, to combine with the ceiling of the gallery. Lighted from this graceful ceiling by a skylight with a slightly blue tinge that gives color to the water, the swimming pool is a beautiful place.

On the same level as the pool, neatly screened, as the plan shows, from a possible public in the galleries over the pool, is the main bathroom, with various showers, rubbing rooms, and other requirements of the athletic behind-the-scenes. The locker room adjoins. By the tote-box system 1,000 lockers can serve 2,000 persons. The athletic clothes are kept stored and attended to in a small box, which, when these clothes are wanted, is taken out and carried to one of the lockers. There the change of clothes is made,

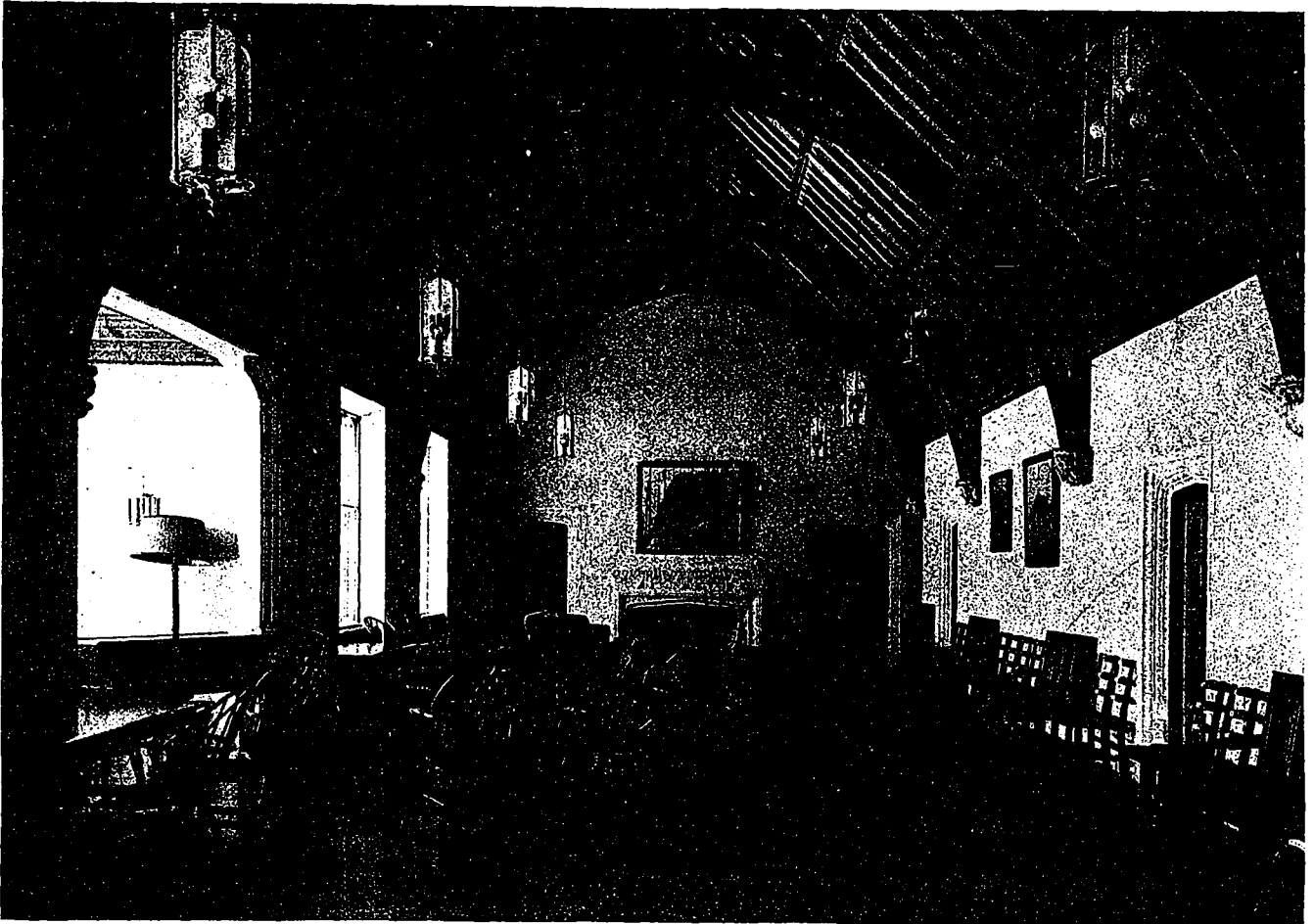


CHAPEL.



HART HOUSE, UNIVERSITY OF TORONTO
SPROATT & ROEPH, ARCHITECTS.

MUSIC ROOM BAY.



MUSIC ROOM.

and the lockers get thus only temporary use, to hold the clothes that are locked up during the period of exercise.

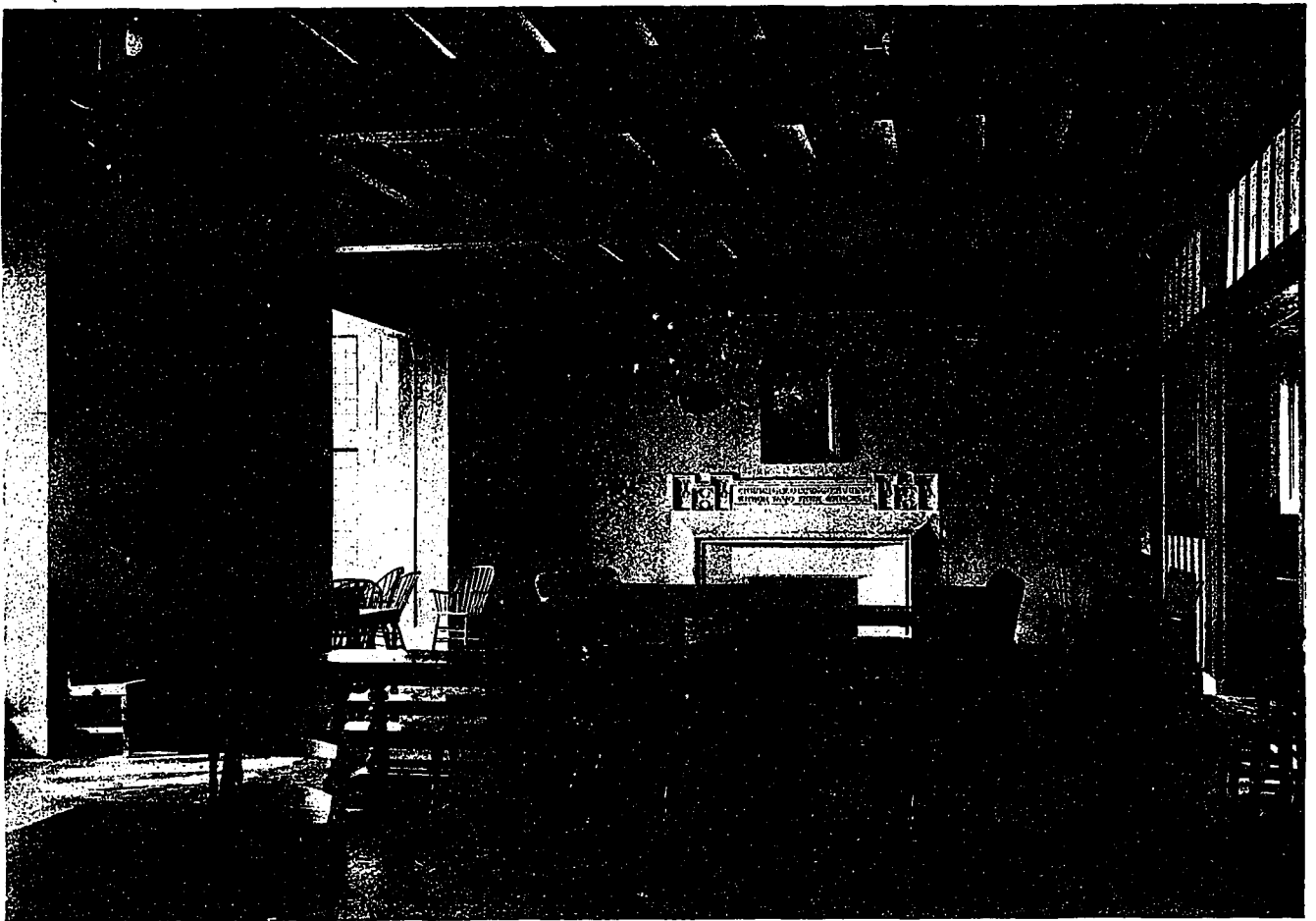
A look at the plan will show the provision made for various athletic pursuits, including a rifle range in the sub-basement.

The Dining Hall comes next in importance. It stands alone as the principal feature of the east front. A dining room cannot, however, stand altogether alone. The consumption of food is an incident, occupying about three hours of the day, while all day long there is a hive of workers preparing and cooking the food, and cleaning up the mess that food leaves behind it. The basement plan shows the number and variety of the departments and appliances required by a first-class modern kitchen of this kind. All this busy life below ground reminds one somewhat of the hold of a ship, except that there is here no "overboard." We may see, in the spaces marked "dry garbage" and "garbage refrigeration," the care that is taken to meet this difficulty. It is needless to observe that white tile forms the wall linings of this department and that light and ventilation are, in spite of appearances, abundant.

Above this hum of things below stands the Dining Hall, in solemn dignity above. The oak of the roof and dado is left in its natural color. The roof, which was up first, is already a little

deeper in tone than the dado. It would have degraded the oak to stain it, but age will improve its color. At the present time when the hall is lighted up, the harmony of the lighted tracery and the roof is exquisite. The scale of the tracery in proportion to the window opening is perfect; and the heavily leaded quarries of glass are part of the scale. The view looking north, towards the end opposite to the high table, gives the best idea of the beauty of the windows. The same harmonious proportion is to be seen in the Faculty Union dining room, which occupies the gallery on the west side of the hall and is shown on the second floor plan. It will be seen that the windows of the gallery are on axis with the windows of the hall; and, on the east side of the Faculty dining room, the opening is the same as that of the hall, while on the west side the opening is much smaller; yet there is no impression given of a change of scale. The groining carries over the spacing to the gallery windows, and the long narrow windows compose with the groining in a delightful way.

It is worth noting at this point that the chandeliers throughout the building are not, as so often, an injury to the design, but are actually a help. The so-called "sanctuary lights" of the Faculty Union dining room are a case in point. The eye is pleased to dwell, not only on the perspective effect these pendants give, but on the



READING ROOM.

pendants themselves. It is the same with the lighting of the hall; the beautiful effect of the lighting at night, spoken of above, is helped rather than hindered by the beauty of the pendants that give the light. These fixtures, it is a pleasure to know, are of Canadian design and manufacture.

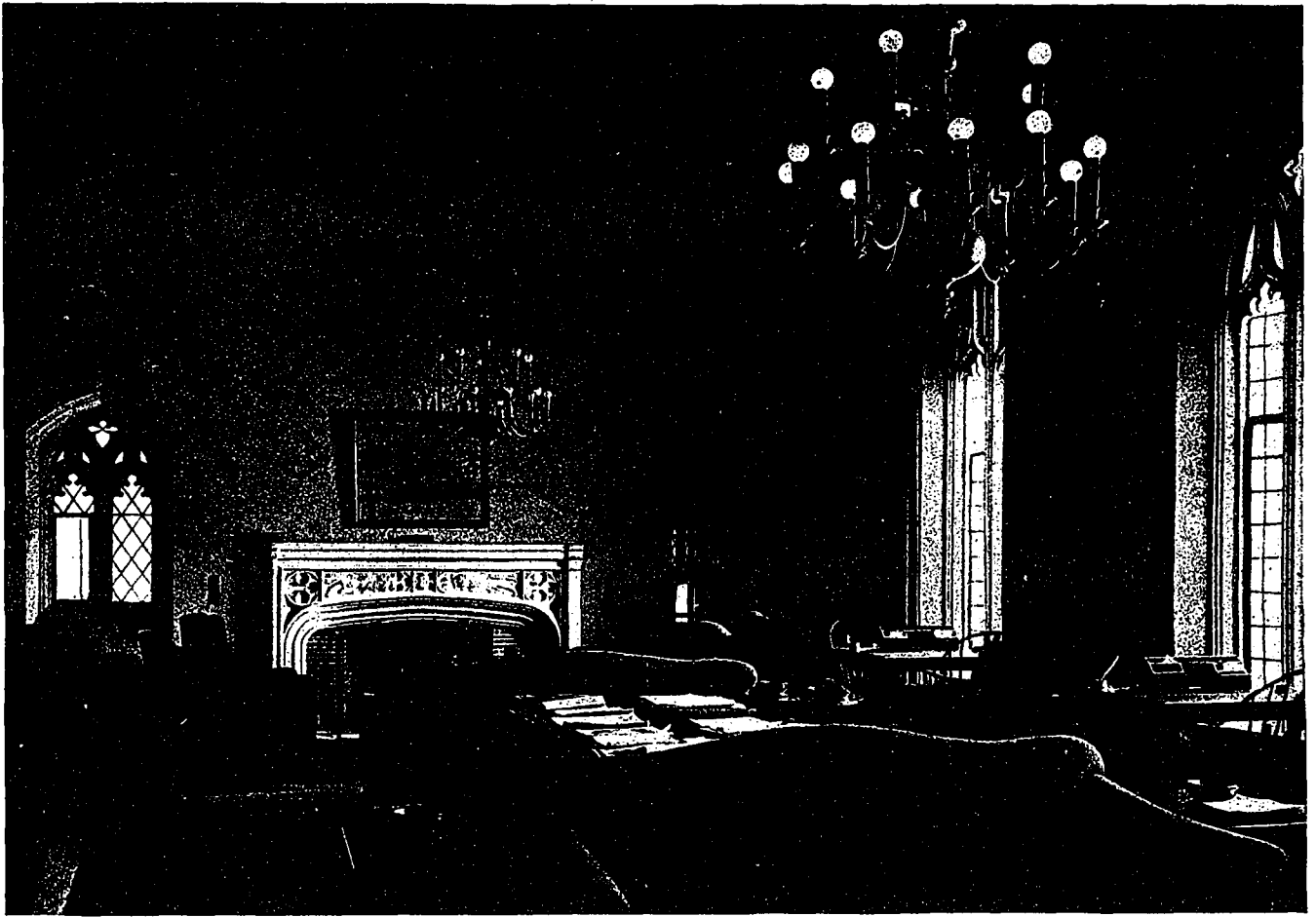
There are two remarkable features of the Hall which may require explanation. The heraldic panels, which are to be seen at each end of the hall, are in reality a memorial of the war. They display the coats of arms of the universities of England, France, Italy and the United States. The idea was conceived early in the war, before

the United States came in, and there were then just enough coats of arms to fill the top panels of the dado all round the hall. Then came in America and upset everything. The painted panels have to be massed at each end somehow. This necessity, at any rate, brings the panels nearer to the eye, so that Mr. A. Scott Carter's beautiful work on them in paint and gesso may be studied the more easily.

The upper member of this proposed colored topping to the dado, a frieze of painted lettering below the cap, has survived the alteration in the scheme. It is a pas-



READING ROOM INGLE,



FACULTY UNION COMMON ROOM.

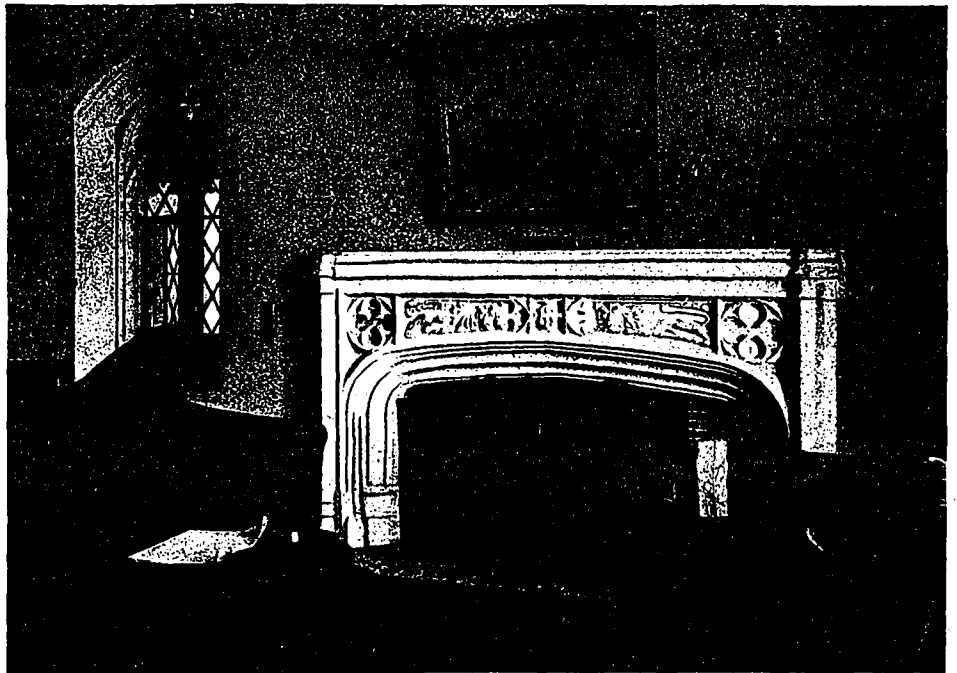
sege from Milton's *Areopagitica* which extends all round the Hall and envelopes the occupants in noble thought.

The other remarkable feature is the stone staircase which projects into the Hall at the upper end and connects the High Table with the Faculty Union Common Room. It is a stone stair with a vaulted ceiling, and exhibits some marvellously delicate stone cutting on the exterior. The entrance to it is to be seen in the out of the Faculty Union Common Room on the right hand side of the fireplace.

There is another staircase of the same kind at the other end of the hall. This, which leads to the serving room of the Faculty Union dining room, does not project into the hall but into what is called on the plan the lower gallery. The cut of it, called Stone Stair of Lower Gallery, shows an interesting bit of

original mediævalism from Mr. Sproatt's hand, in the miniature tower which runs through the handrail string under a canopy.

This Lower Gallery is a gallery only in the parlance of architectural history. It is on the ground floor, too wide and dignified to be called

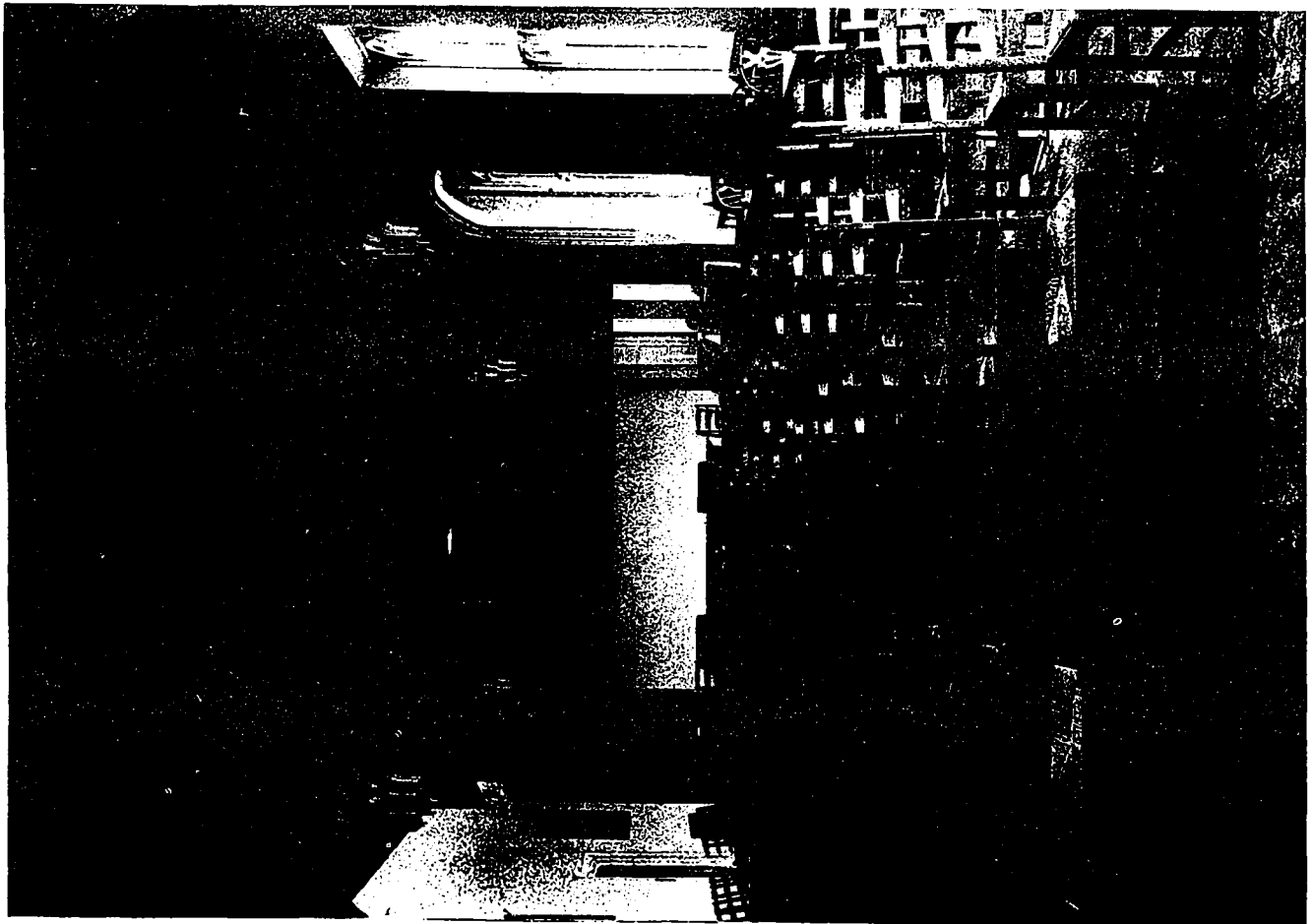


DETAIL OF FIREPLACE.



LECTURE ROOM BAY.

HART HOUSE, UNIVERSITY OF TORONTO
SPROATT & ROLPH, ARCHITECTS.



LECTURE ROOM.

a passageway. It is, in fact, a lobby to the Hall, and has, besides its own beauty, the advantage of looking upon the quadrangle in the middle of the building. At the present time, when the grass in the quadrangle is green, and the doors to the south are open as well as the passageway on the west, there are beautifully pictorial views to be seen looking from the centre of the gallery in either direction.

The quadrangle grows grass with great success upon the roof of the theatre which lies below. The lower area on each side of the grass plot is devoted to pavement lights, which give a brilliant lighting to the corridors on each side of the theatre.

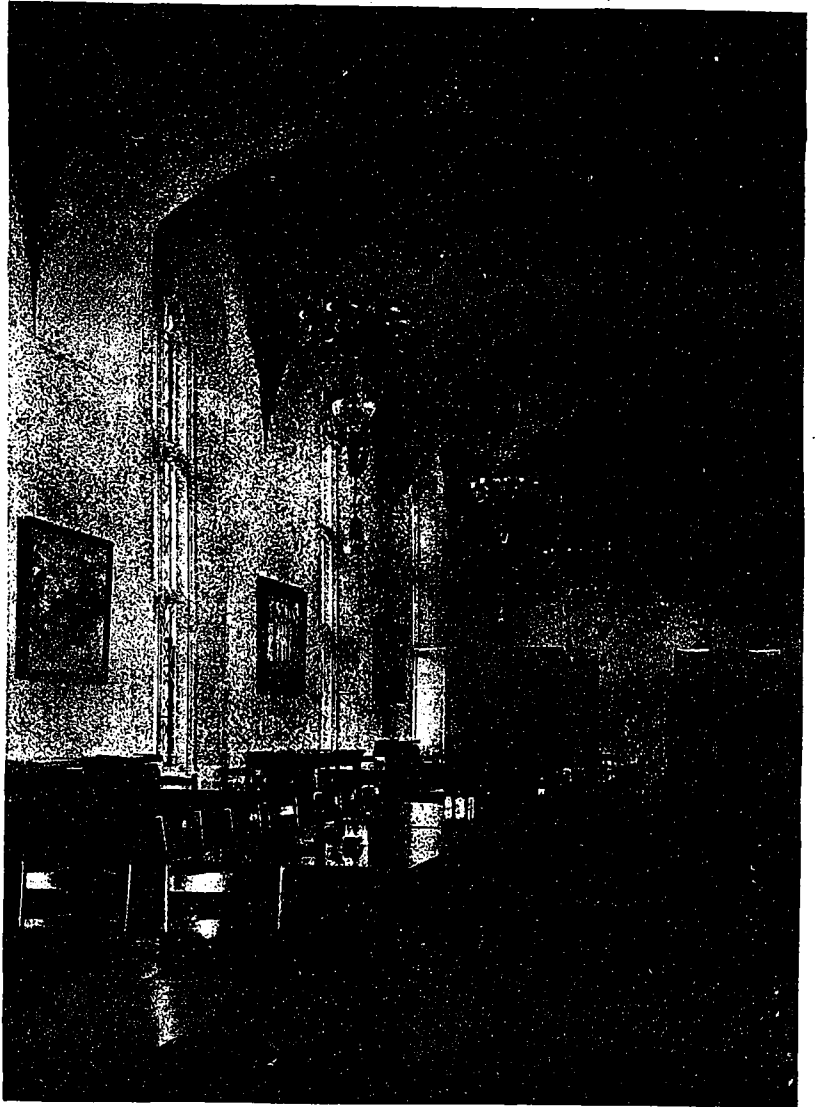
It is a question whether the theatre is not the most wonderful piece of planning in the whole building. In neither the theatre itself nor in its approaches is there any suggestion of its subterranean position. The vaulted ceiling of the theatre springs low, but rises sufficiently to give the stage all the height it wants. The appointments of the stage, under the direction of Mr. Roy Mitchell, the theatre director, are as perfect as the latest knowledge can make them. Mr. Mitchell will have all necessary facilities for accomplishing his interesting function of creating intelligent audiences for the theatre in Canada.

There is a wonderful amount of room behind the scenes, in the way of dressing rooms, working rooms and a green room, called "Long Room" on the basement plan. The cut entitled Theatre Promenade, representing what is called on the plan the foyer, gives some idea of the spaciousness of this part, but does not fairly represent its beauty. The "black and gold" marble trim, for the foyer and the pretty little passage which leads to it from the entrance, has the effect of touching the design with richness.

The chapel is not intended to compete with Convocation Hall as a place for holding general services or preaching sermons. It is a small room, but has considerable dignity, due mainly to the scale of the windows. The penetrations for the windows are repeated along the inner wall, and give interest to the ceiling. The woodwork is of oak-filled white, and the effect of the whole is a little on the white side at present. If the panels over the Communion Table were to be painted in proper subjects, and the room

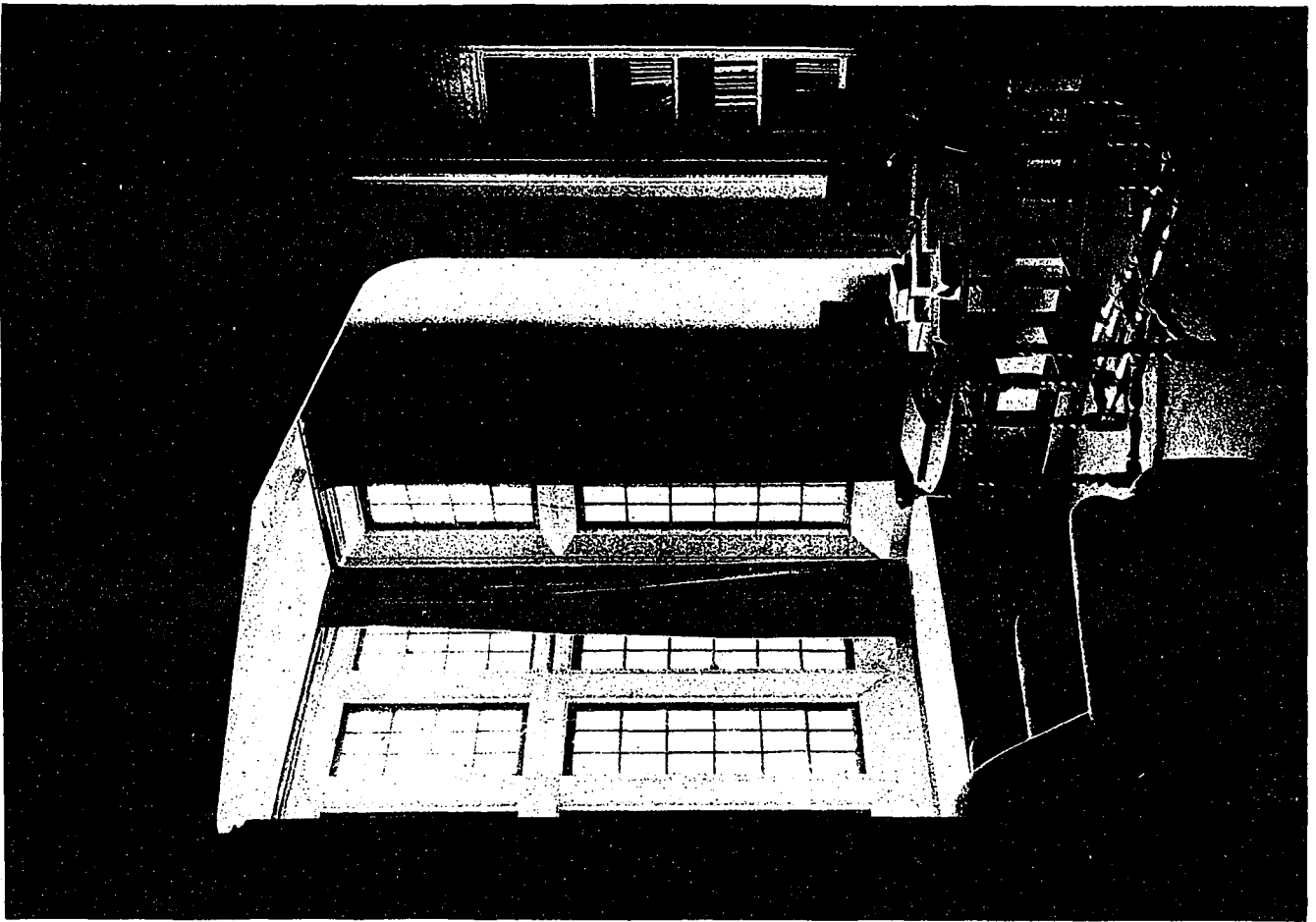
touched elsewhere by color—by the right hand—there are possibilities of wonderful beauty.

How can one do justice to the rest of the building in the remaining space that is available. Fortunately there are, in this number of CONSTRUCTION, good cuts of the principal rooms, and complete plans to study in connection with them. The common rooms and entertainment rooms are ranged along the two principal fronts

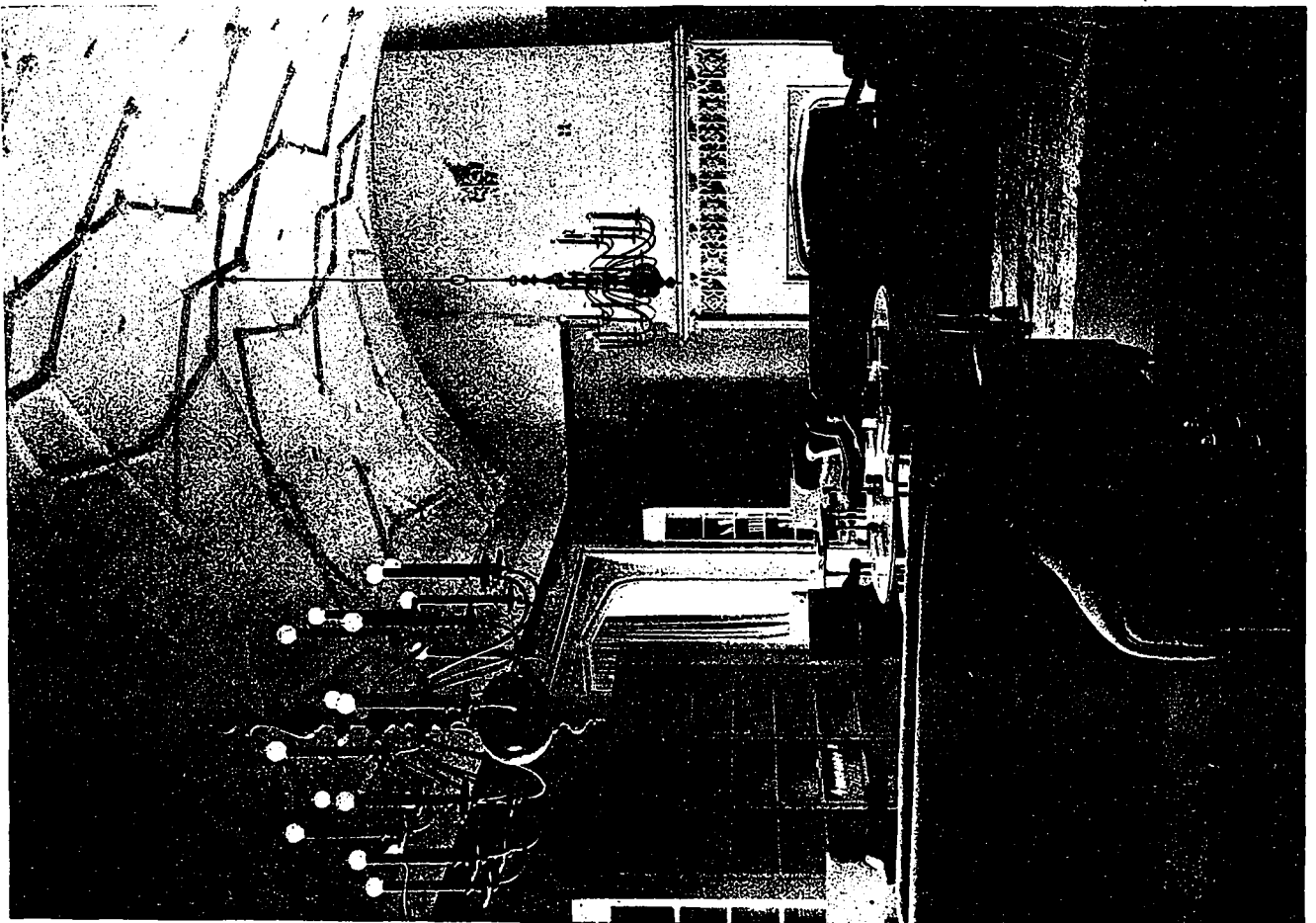


FACULTY UNION DINING ROOM.

and have a place in the sun. Their extent invites the breadth of treatment that gives such dignity to the southern front. The large rooms are in the upper floor where they can be given height. The roof of the building is their ceiling and, except in the case of the library, the roof timbering makes their finish, all similar but different in detail. The music room, which is in the western wing, is somewhat lower than the others, and has the charming effect of a Tudor gallery. The roof, in this case alone, is of British Columbia cedar. It is untouched by a finish



LIBRARY BAY.



HART HOUSE, UNIVERSITY OF TORONTO
SPROATT & ROLPH, ARCHITECTS.

LIBRARY.

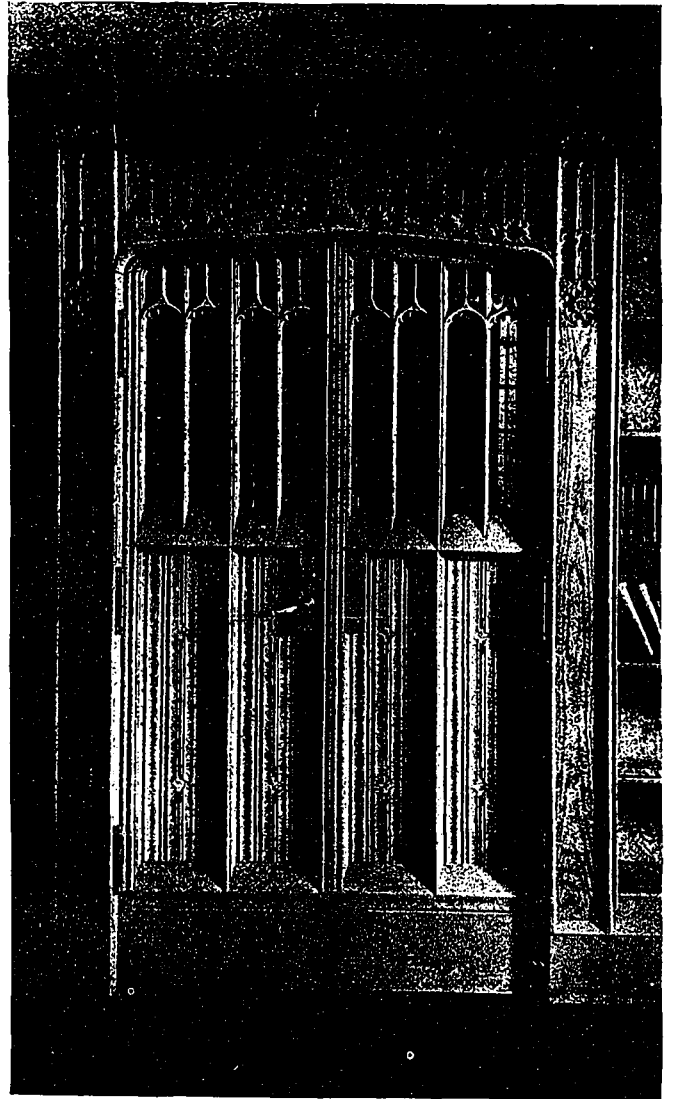
One advantage of the lower roof is that the carved stone corbels are brought nearer to the eye. Mr. Johnson, the carver, has the mediæval conception of carving, and his chisel has the Gothic touch. It is not that his designs imitate any ancient model, but that he has the same playful fancy and freedom of expression, and, if an appearance of "joy of creation" is the evidence of an artist at work, the evidence is to be seen in his corbels throughout the building.

The flooring of these rooms is worth mentioning, for it has something to do with the harmony of scale that is part of their beauty. The flooring, of oak, has boards that are, comparatively to the trade idea of flooring, wide. The boards are pinned with oak pins. The cut of the lecture room shows this flooring best.

All the halls, and the dining hall also, are floored with travertine, because of its noiselessness. The stairs are of stone.

The two great stairs are similar. They share among other things a two-storey bay window looking north into the quad. The upper floor of the staircase crosses the bay as a gallery, with a handrail. This device, which adds to the beauty of the stair hall, greatly increases the light; and the stairs are well lighted.

Here we may let ourselves out, having first descended, for our coats, to one of the cloak rooms which is situated at the bottom of the south-east stair, to be in readiness for public receptions in the dining hall. Everything is thought of in this building.



LIBRARY DOOR.

Mechanical Equipment of Hart House

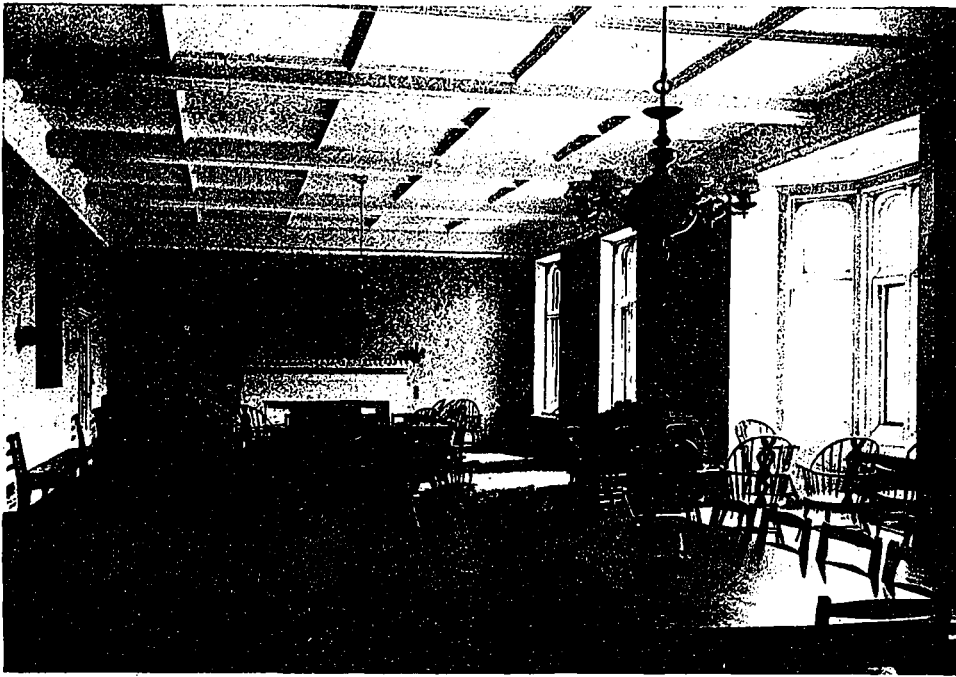
By Walter Kay.

IN such a building as Hart House, forming a social and athletic centre in University life, the matter of mechanical equipment necessarily represents an important installation. When the building was first proposed the principal cities of Canada and the United States were thoroughly searched for ideas, the very best of which only were retained and incorporated in the plan of the building.

The plumbing fixtures are in themselves worthy of individual description, but lacking space only the outstanding features can be touched upon. The showers and douches—a very important part of the equipment of a building of this type—are of the latest design and with their marble enclosures present a very fine appearance. The system of thermostatic control, whereby the temperature of the water to all showers is automatically regulated, while not appearing on the surface contributes perhaps

more than any other feature to the perfect operation of the equipment.

The lavatories throughout with their complete equipment of fixtures of solid porcelain, fine marble work and highly polished terrazzo floors, denote both in the materials used and workmanship a most satisfactory result. One feature of the installation is that with the exception of the urinals, all fixtures are supported from the walls, and on entering the lavatory one is immediately impressed with the entire absence of piping through the floor, so characteristic of ordinary installations. This not only contributes to the appearance of the lavatories, but makes them more sanitary in character. At convenient points throughout the building, especially designed porcelain drinking fountains furnish filtered drinking water at the pressing of a button. The hot water for the plumbing fixtures is drawn from a large steel storage



EAST COMMON ROOM.

tank located in the mechanical room. Along side this tank is a steam tube hot water generator specially designed with brass tubes, on the loose coil principle, by means of which the water in the storage tank is kept heated. A thermostat in the storage tank connected to a regulating valve in the steam line to the generator, permits the temperature of the water to be maintained at any desired degree.

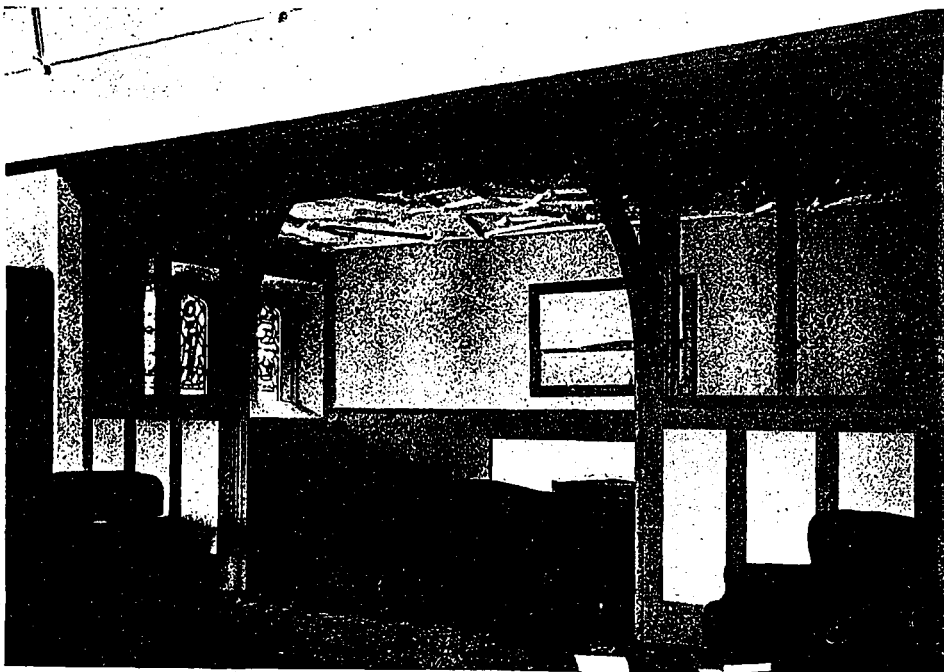
The swimming pool equipment which represents the ultimate in apparatus for this purpose was only selected after a thorough investigation of all existing systems, and is such as fulfills its function in a positive and efficient

mechanical room, is installed in duplicate, thus eliminating the necessity of shutting down the system for cleaning or repairs and ensuring continuous operation under practically all conditions.

Floating scum, which could not be all drawn off to the filters, and heavy sediment lodging on the bottom of the pool had long been a serious problem in swimming pool design. Here it is successfully overcome by means of a suction cleaner which removes both scum and sediment completely and discharges it to the sewer.

Although the Hart House is as nearly fire-proof as any building of its type can possibly be, no precaution for the safety of its occupants is omitted. All through the building at convenient points in the halls and corridors are located fire hose equipments, and like many other features in the building, both the recessed cabinets and the hose racks were especially designed for this installation.

The touch of good engineering is shown in lay out of the various domestic water mains. All mains, both hot and cold, supplying the various sections are taken from a header in the mechanical room, each branch being fitted with



LIBRARY INGLE.

a controlling valve to which is attached a numbered brass tag. By consulting a chart which is suspended near by, the engineer can shut the water off from any portion of the building at will.

In the rubbing rooms, marble tables are installed suitable for both dry massage and shampoo work. In this section of the building there is also located a drying room, containing a sterilizer for sterilizing the bathing suits, and a specially designed dryer for drying them. On the upper floors are located several very completely equipped bathrooms for the use of the professors and staff.

HEATING EQUIPMENT.

Direct heating of the building is accomplished by means of steam radiators operating on a vacuum system. The steam supply to the building is brought from the University central heating plant to the Hart House mechanical room in both high and low pressure mains. The low pressure main is connected directly to the header supplying the heating system, which is located in the mechanical room. The high pressure main is also connected into the heating system through a regulating valve which ensures a constant supply at all times. Each section of the building, as well as the various indirect heating units in connection with the ventilation system, is supplied by a separate main direct from the mechanical room where it is fitted with a controlling valve, and by which means the steam supply to any part of the building may be regulated at will. The condensation from all radiators and coils is drawn back to the mechanical room by means of motor driven vacuum pumps from which it is discharged to a receiving tank located near the ceiling. Here the air is separated from the condensate, and vented off to the atmosphere, the condensate itself passing by gravity through a recording meter directly into a second receiver. This receiver is connected to a duplex unit of motor driven centrifugal pumps, which is controlled by a float switch in the lower receiving tank. When the water level in the tank rises to a given height the pump is set in operation discharging the water of condensation back into the main return line leading to the power house.

No pipes are exposed in any part of the building; the steam mains which run in the basement are all located in concrete tunnels with openings at fixed intervals to give access to the various drip traps, etc. The temperature of the mechan-

ical room is kept down and the appearance improved by a thorough system of pipe insulation. All high pressure steam mains are covered with magnesia covering and all low pressure mains here and throughout the building with asbestos covering in canvas with brass bands at regular intervals. All hot water heaters and storage tanks are similarly treated, and their neat white appearance lends an attractive touch to the whole installation.



THEATRE FOYER.

VACUUM CLEANING SYSTEM.

The ease with which the building is cleaned and maintained in that condition is due to the highly efficient vacuum cleaning equipment which is installed. The vacuum producer, which is located in the mechanical room, operates on the turbine principle, and is equipped with a separate tank which acts as a dust receptacle. A system of piping extends throughout the building, with outlets located near the floor level in sufficient numbers that every portion of the building may be reached with the hose equipment furnished for each floor. It altogether represents a most complete installation in which every detail of the system has been carefully worked out.



THEATRE VIEW.

VENTILATION.

The problem of furnishing an adequate supply of fresh air, and the constant removal of foul air was one which received the most care-



GYMNASIUM CORRIDOR.

ful consideration, and which resulted in the installation of a ventilating and air conditioning equipment remarkable for its completeness and efficiency in operation.

There are three individual supply units located in a central fan room, one for the swimming pool, one for the theatre and one for the dining hall. The theatre and dining hall supply units are identical as to equipment, although varying slightly in size, each consisting of a special width, full housed, multiblade fan direct connected to electric motor. These fans draw

air from out of doors, first through a series of steam coils to temper the air, then through an air washer where by a series of sprays and metal eliminator plates all dirt and dust is removed, and finally through a second series of steam coils where it is heated to the desired temperature and discharged through a system of metal ducts to outlets located in the various rooms.

By an ingenious device in the air washer the humidity of the air supply to the building is maintained at a constant point, regardless of the humidity of the outside atmosphere.

The swimming pool supply unit is designed along similar lines to these with the exception that the air washing apparatus is eliminated.

A special feature of the equipment for the theatre is that the fresh air is supplied through outlets located under the seats and in the aisles and drawn off from the upper portions of the room, the current of the air always being in an upward direction. This eliminates the feeling of a draft sometimes present in a well ventilated room in which the current of air is from the back to the front.

To exhaust foul air, smoke, and kitchen odors, six ventilating units have been installed, individual units exhausting from the swimming pool, the theatre, the billiard room, dining room, kitchen and the servery at a combined rate of seventy-five thousand cubic feet per minute. These units are all designed along similar lines although

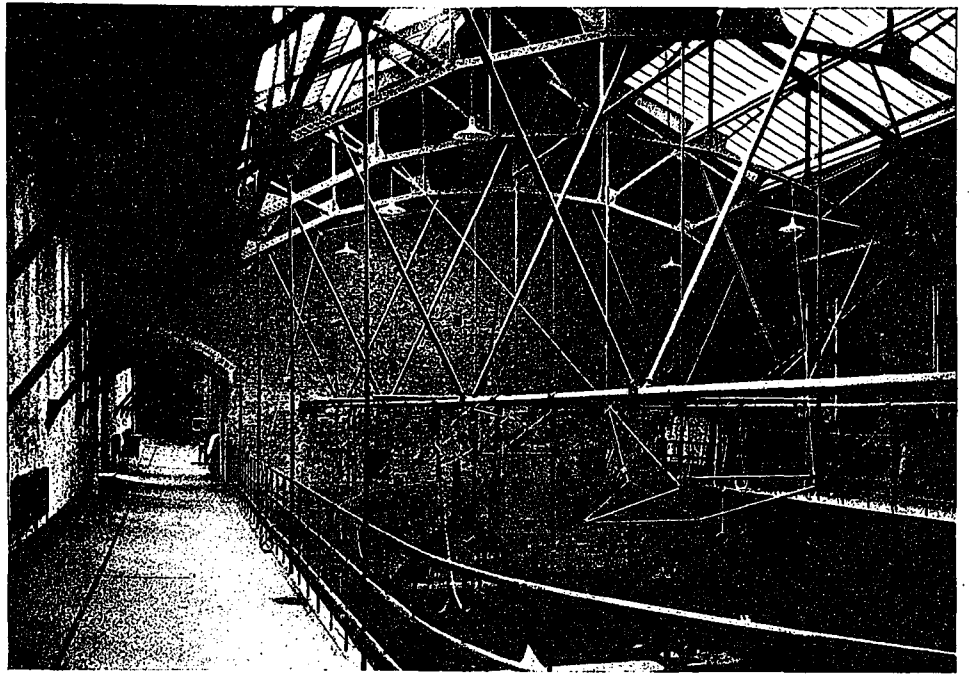
differing somewhat in size, and consist of a full housed multiblade fan connected directly to electric motor. The foul air is taken from convenient points in the walls or floors of the several rooms and drawn to the fans through separate systems of metal ducts and discharged to the atmosphere at a point sufficiently remote from the fresh air inlet to avoid any possibility of the contamination of the fresh air supply.

These various equipments deliver into the building forty-two thousand feet of pure warmed air every minute and exhaust therefrom foul air, smoke and kitchen odors at the rate of seventy-five thousand cubic feet per minute, and maintain a standard of purity in the air of the whole building not excelled by any building of any type in the Dominion of Canada.

Hart House Theatre

The underground theatre of Hart House was an afterthought incorporated into the scheme of the building as originally proposed. It was suggested by a depression in the site formed by an old creek bed in which in the early days the upper classmen of the University used to duck the freshmen. By turning this to advantage the architects have not only succeeded in developing a most unusual and interesting feature in their plan, but one which adds to the function of Hart House as a students' social building.

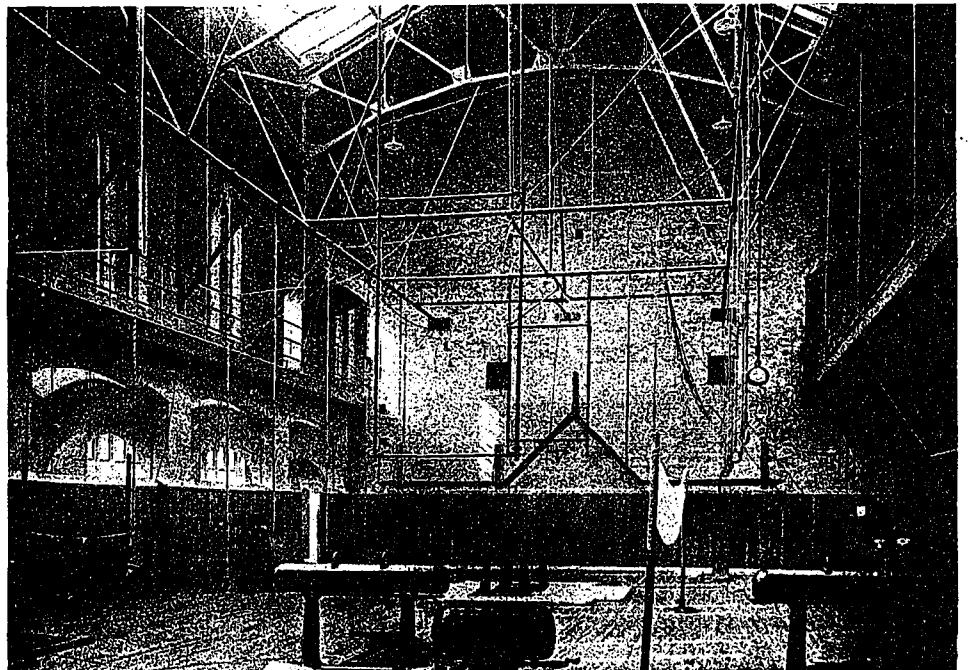
The designing of the auditorium, which is immediately beneath the ground level of the quadrangle, involved an important engineering problem which was described in detail in the May issue, 1914, of CONSTRUCTION. The distance between its side walls is fifty feet, which owing to the nature of its pur-



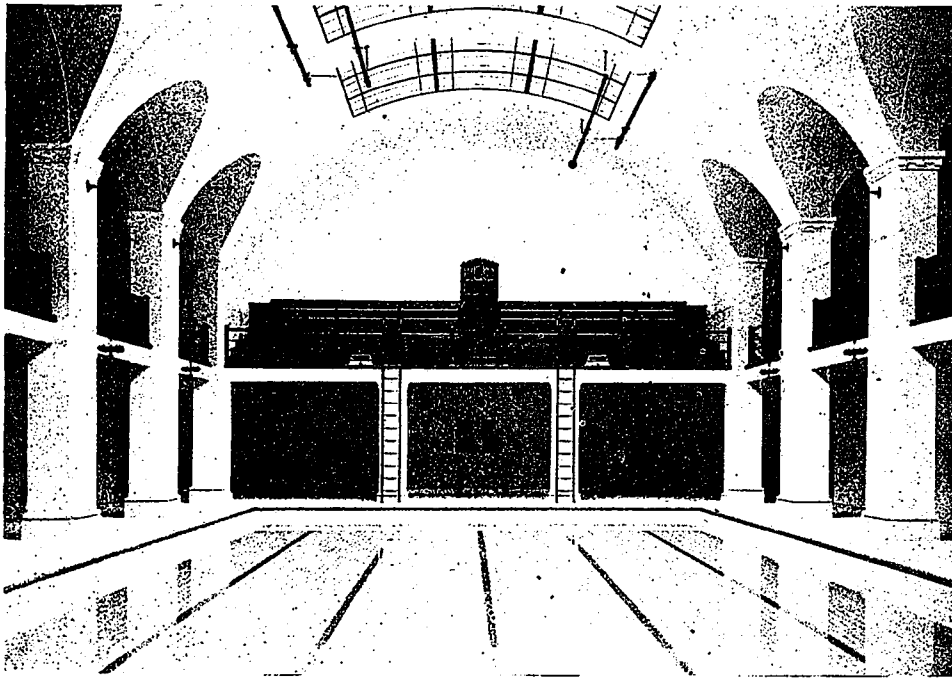
GYMNASIUM RUNNING TRACK.

pose could not be divided by intermediate supports. The solution naturally suggesting itself for the support of a roof of the kind was the use of steel trusses. These, however, it was found, would be far too deep for the available head room, and also that steel or concrete beams would prove impracticable. It was necessary that the ceiling height should approach as nearly as possible to the ground level of the quadrangle above, and this led to the adoption of a concrete arch of elliptical form with the springing line well up on the side of the wall.

The abutment is made in the form of a hollow rectangle. The two vertical sides are pilasters



GYMNASIUM.



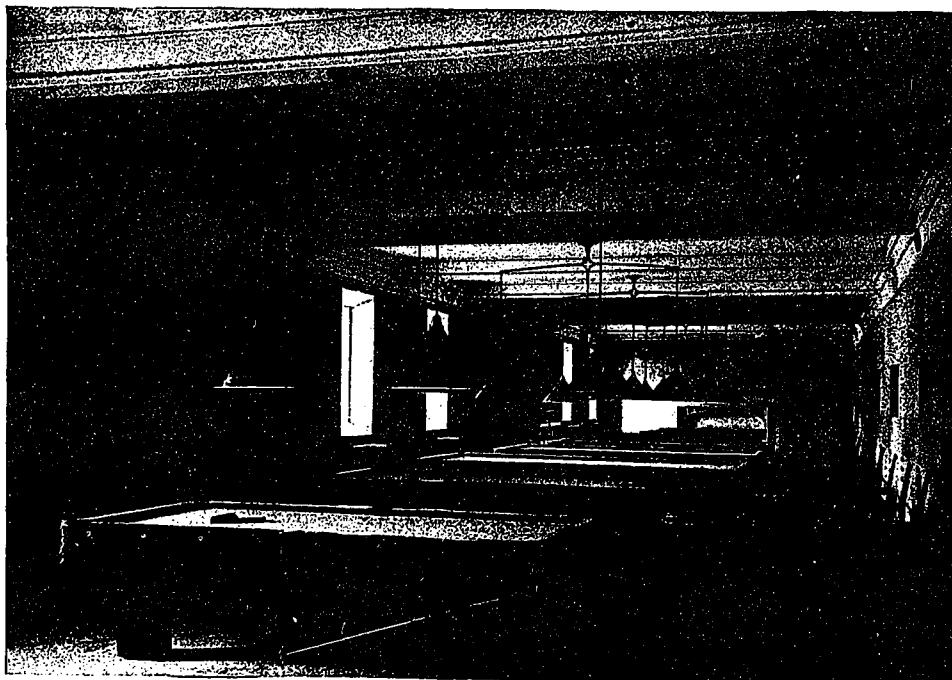
SWIMMING POOL.

in the walls in either side of the corridors which parallel the auditorium. The top is the arch over the corridors and the bottom is the footing. The four sides and corners of this rectangle are reinforced so heavily that the line of thrust from the arch can pass across and through it without causing greater stresses in the concrete or reinforcement than those used in ordinary practice. In this way the line of thrust is brought through the corridors in diagonal direction and passes into the rifle range at a distance only slightly above the floor. This is assisted in no small degree by the fact that the load on the walls on both sides of the corridor tend to turn the line of thrust more sharply toward the vertical. In spite of this, however,

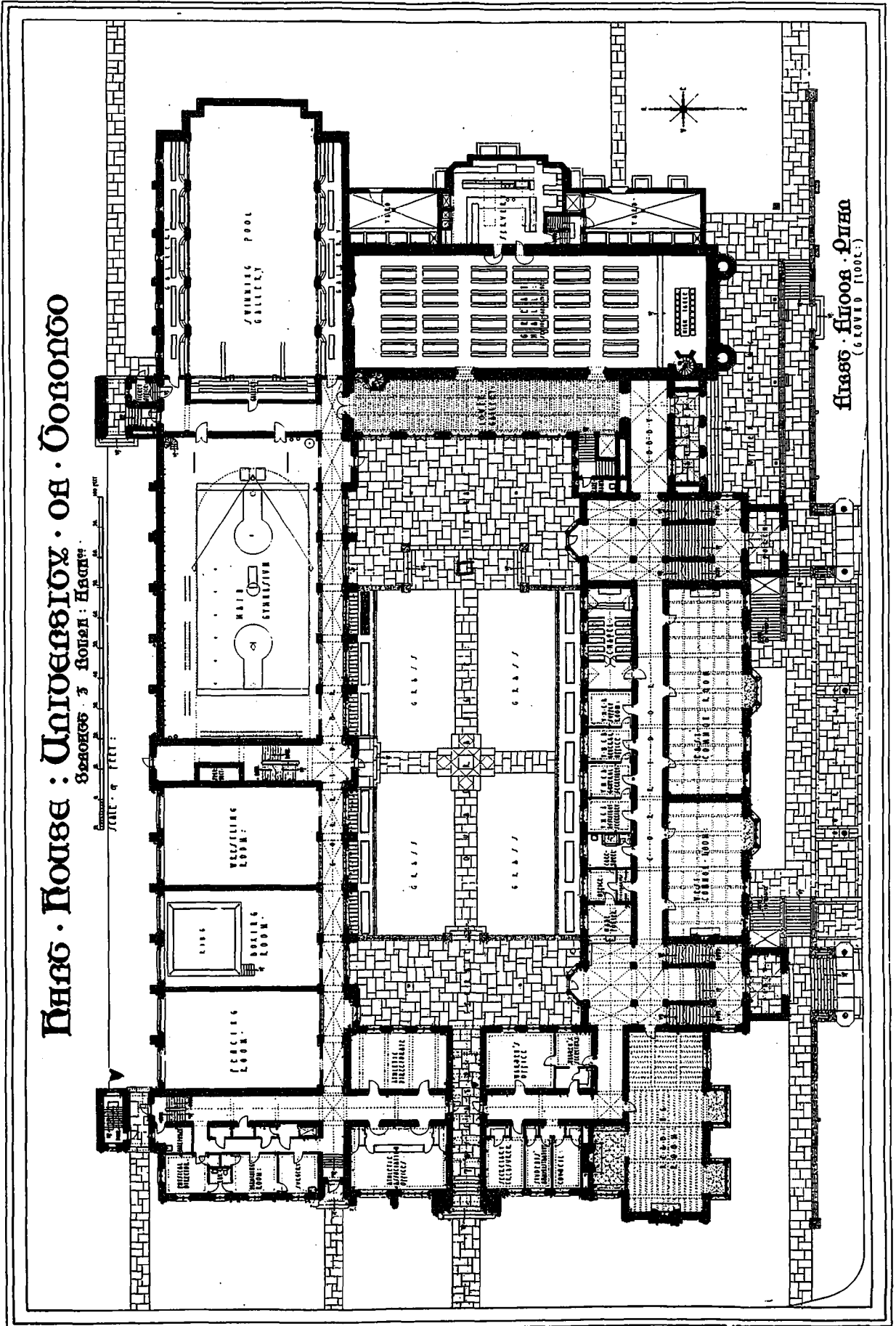
meet the requirements of the building by-law, however, it was found necessary to widen the arch to five feet. This increase of forty per cent. in the weight of the arch had the natural effect of greatly increasing the horizontal thrust at the spring point, and consequently make a second solution of the abutment necessary. This second solution, on account of the greater horizontal stresses involved, was considerably more difficult than the original solution.

Utilize Canada's Resources

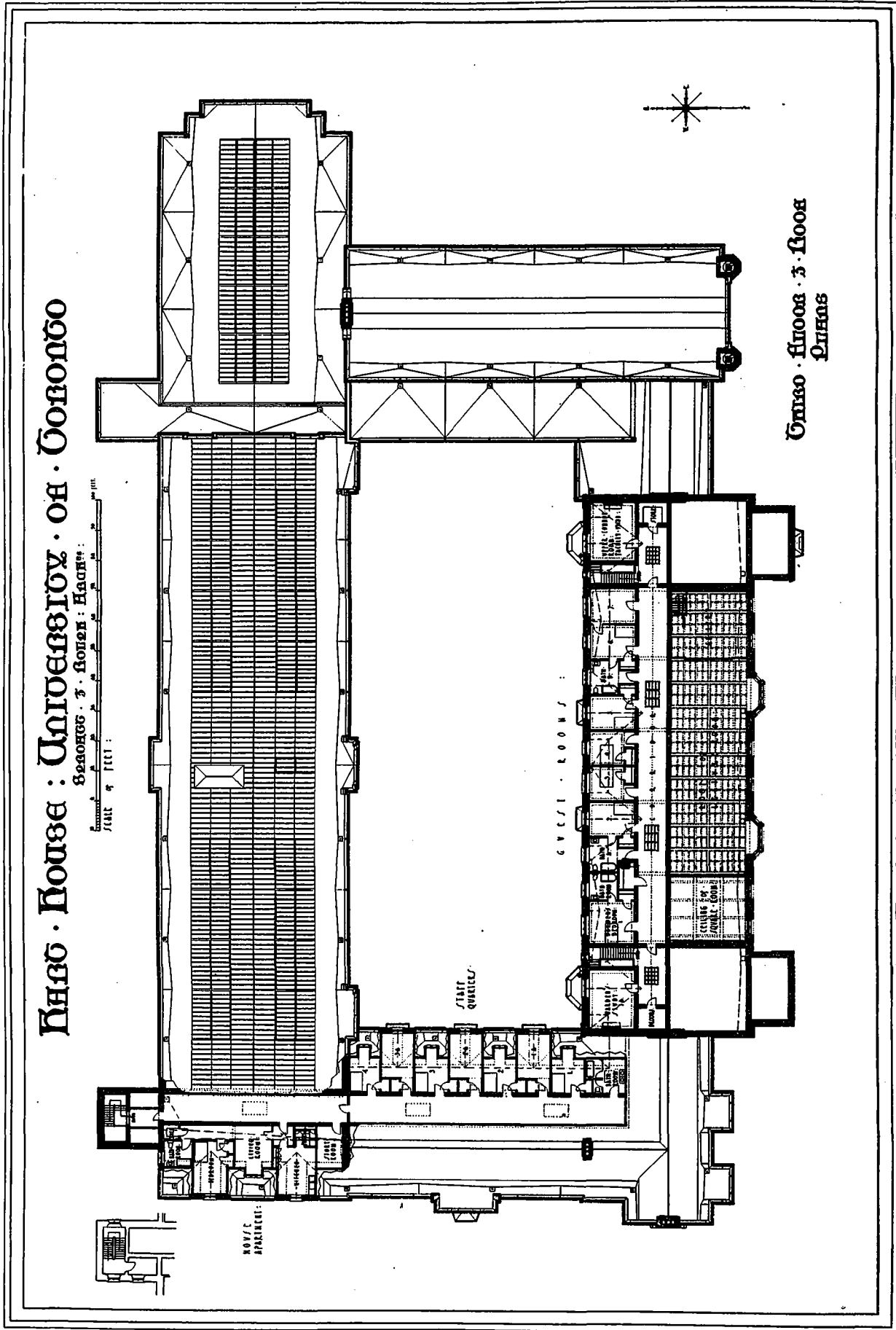
Canadians are justly proud of their structural timbers—red pine, western soft pine, tamarack, hemlock, Douglas fir, etc. That the qualities of these timbers may be well known to Canadian builders, so that the importation of no better or even inferior timbers may be reduced the Forestry Branch of the Department of the Interior has issued a publication known as Bulletin No. 59, "Canadian Woods for Structural Timbers," giving the facts about these woods. This has been followed by Bulletin No. 60, "Douglas Fir: Its Mechanical and Physical Properties," which deals with this wood from every point which is of interest to the structural engineer and builder.



BILLIARD ROOM.



GROUND FLOOR PLAN.
 HART HOUSE, UNIVERSITY OF TORONTO
 SPROATT & ROYAL, ARCHT.



Хартъ · Хаузе : Университетъ · Оу · Торонто

Възвѣщенъ · 3 · Янв · 1920 · Населенъ :

SCALE IN FEET :

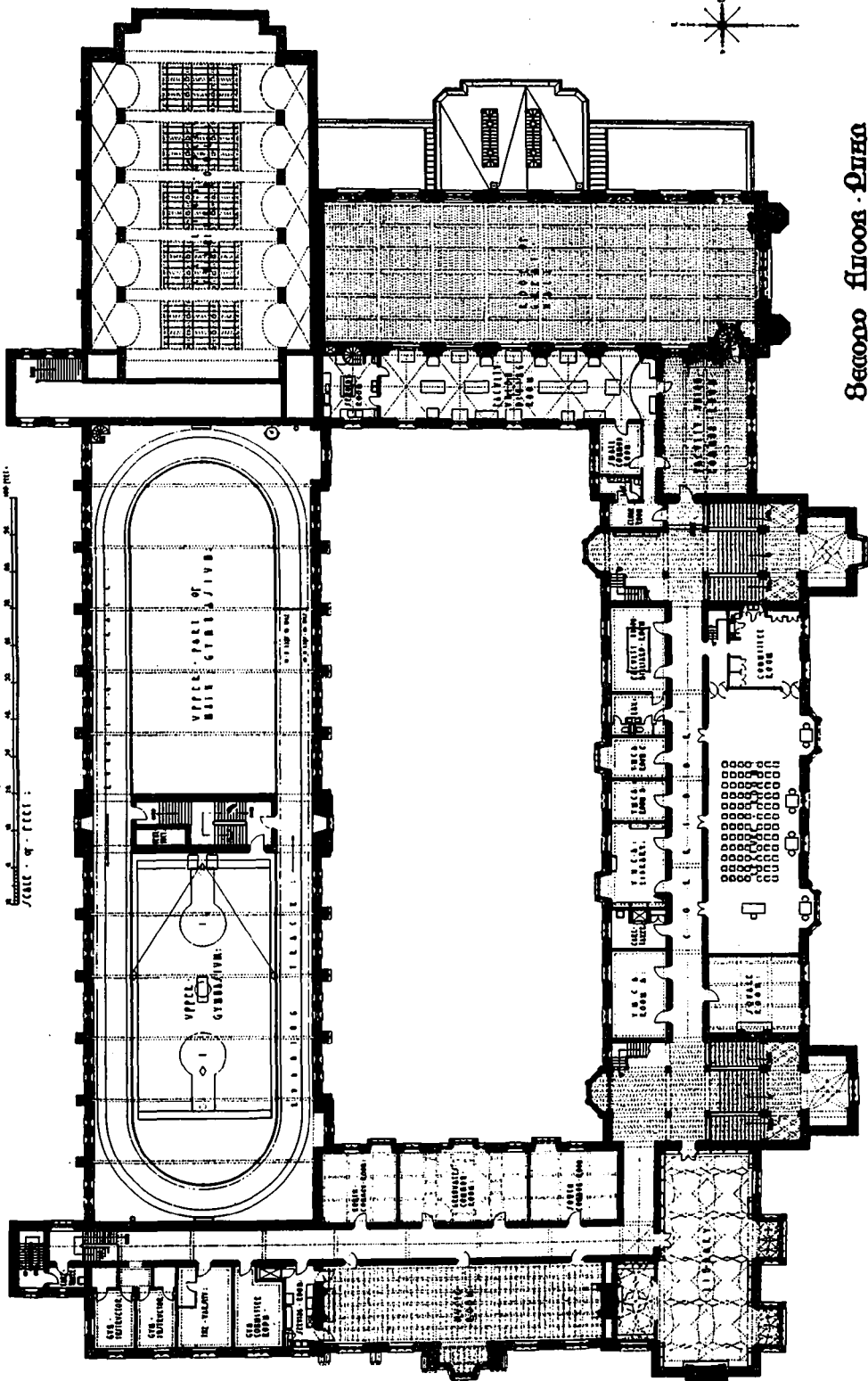
Третий · этаж · 3 · Этаж

THIRD FLOOR PLAN,
HART HOUSE, UNIVERSITY OF TORONTO
SPROATT & ROLPH, ARCHITECTS.

Князь · House : Университет · Ов · Toronto

Здание · 3 · Доль · Доль · Доль

Scale bar with markings from 0 to 100 feet.



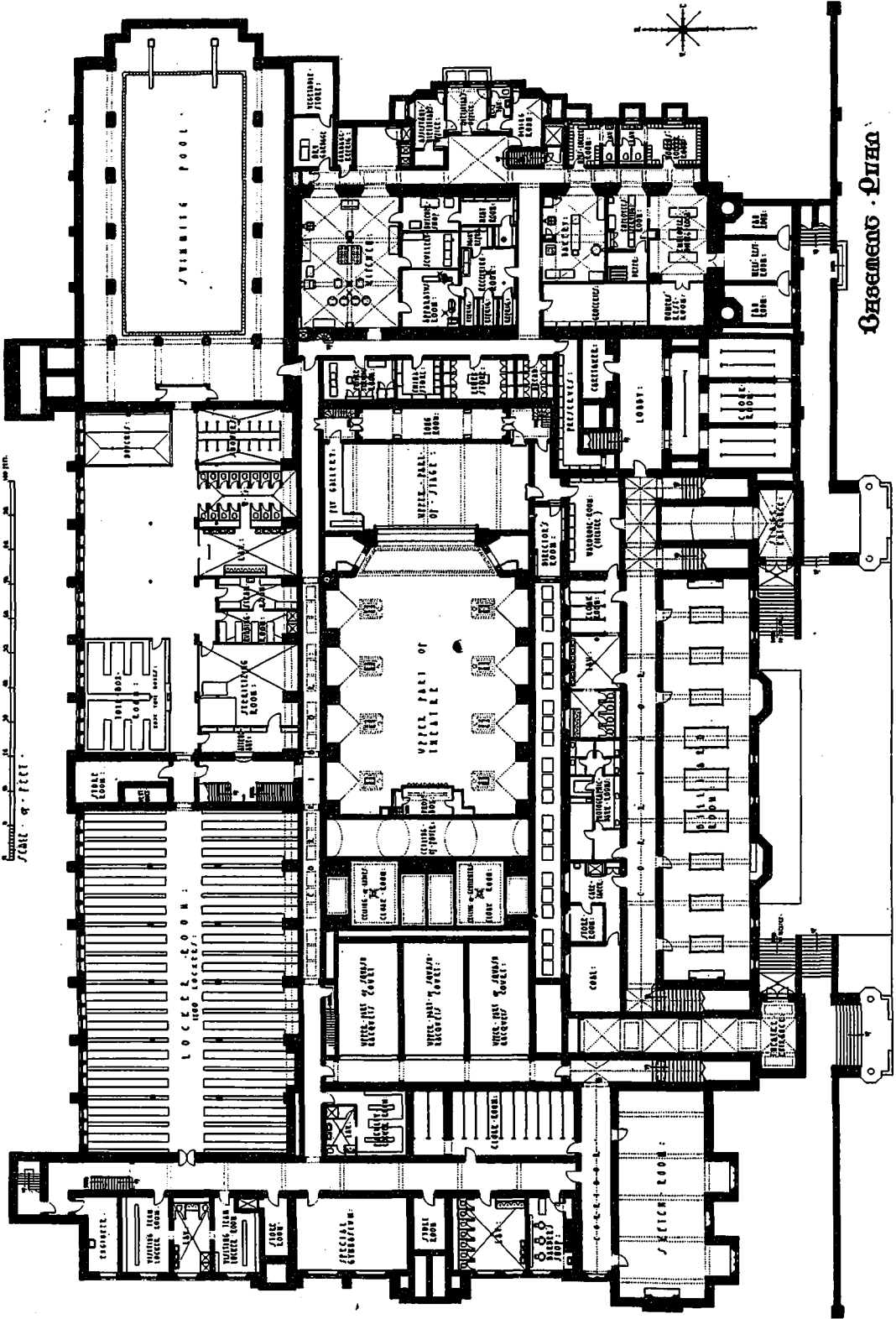
Второго · Доль · Доль

SECOND FLOOR PLAN,
HART HOUSE, UNIVERSITY OF TORONTO
SPROATT & ROLPH, ARCHITECTS.

Харт Хаус : Университет Торонто

Базисен : 3. Южен : Харинг

1:100



Базисен : Южен

BASEMENT PLAN,
HART HOUSE, UNIVERSITY OF TORONTO
SPROATT & ROLPH, ARCHITECTS.

Concrete, Its Use and Abuse*

By Irving K. Pond, F.A.I.A.

I HAVE written so much abstractly on architecture and architectural principles that it is good again to get down to hard and fast matters and fix my hypotheses in the concrete. I say "again," for many years ago as chairman of the Committee on the Allied Arts of the American Institute of Architects I was the author of a widely circulated report from that Committee dealing with concrete as a medium of architectural expression. I have had but slight occasion to put into practice the theories I then advanced, but I have continued to hold, and still maintain them.

Since that time the use of concrete in building operations has grown apace and enthusiasts and specialists have arisen to scatter their words and their works broadcast—sometimes, though not always, the words being more attractive than the works—sometimes the words and works alike bordering on the grammatically atrocious—as, for instance, when the beauties of cast rock-faced-concrete blocks have been urged and the monstrosities themselves have made pitiable what otherwise might have been semi-respectable structures—"semi," mind you, not "wholly," respectable; for the taste which could advocate and incorporate into its product such base imitations could not create or fashion a thoroughly respectable structure. Some two years ago while acting as chairman of a board to adjust, and settle perchance, jurisdictional differences between the carpenters, the architectural iron workers and the sheet metal workers of Chicago, I suggested facetiously that the fabricators of imitations should be penalized by giving over to the trades whose products were imitated the erection of all such imitations. Thus stone masons should erect all tin fabrications simulating stone cornices, architraves or entablatures, and do plastering where plaster simulated Caen-stone—one might put it "con"-stone—on walls and in vaulted ceilings. My pleasantry was met with hearty and strenuous disapprobation—each trade wanted to tell its own little lie and to reap the benefits which each felt certain would accrue to it in a world so slightly endowed with the elements of sincerity or of good taste.

So my first item of advice, if I may be permitted to offer advice to a body of men interested in the development or handling of a comparatively new and altogether worthy building material, is to treat the product with respect, to shun and scorn imitations, to recognize limitations, which attach to all materials, as well as

to all men, and to work within those limitations. This is not saying that because a thing has been done, and frequently and appropriately done, in one material it shall not be done in another or a new material which may be employed with equal propriety; however, the new material should not employ forms which are purely distinctive of the old, but should develop forms which inherently characterize the new.

What these characteristic forms may be is a subject for very searching study and analysis. Possibly through synthesis rather than analysis will the characteristic forms disclose themselves. So was it in the past with the old materials—so probably will it be with the new.

Now concrete is a material which lends itself to many kinds of manipulation. It can be cast, poured, pressed, assembled in the shop or on the job; it can be applied in liquid or in solid form to the work immediately in hand. So many are the possible methods of its application—such a diversity of means may be employed toward its legitimate ends that some of its enthusiastic sponsors see in it a panacea for structural ills and possibly for aesthetic building ills, a substitute for all previously employed building materials—excepting, possibly, door hinges—and a perfect end in itself. Therefore, it behooves those who can impartially survey the entire field to offer both warning and encouragement—encouragement in its legitimate use; warning against its too free employment, especially where other materials may better serve the conditions. The economics of the general situation favor concrete, and through this factor alone there may arise a tendency toward its too general employment; toward its substitution for other materials which, though perhaps costing more in mere money, satisfy the senses and better fulfill geographic and climatic conditions. The cheapness and ease of casting a flat slab of concrete has led certain enthusiasts to advocate the general adoption of a flat slab type of roof in any and all parts of the country (and ultimately of the world). It is advocated for a northern climate because it can very cheaply be made strong enough to hold a load of snow and ice. But that is not what a roof is for—it is to shed snow and ice. The flat slab roof is advocated for a southern climate because the overhang for shade is so cheaply procured. The shade is desired, but not at the expense of ugliness which results from unembellished overhangs—and concrete embellishments are expensive. The factors of ease and economy in manufacturing concrete slabs, whether to be applied

*An address delivered before the National Conference on Concrete Housing, recently held in Chicago.

vertically or horizontally, contribute to a "simplicity" which tends toward stupidity and to a barrenness which begets ugliness. Where the general form is stupid and ugly not much in the way of reclamation can be effected by proportioning of windows or application of superficial ornament. If the mass is interesting and appropriately conditioned, geographically and climatically, slight defects in details will not too seriously challenge the taste, but an ugly mass is fatal.

In spite of the fact that the learned ones will point out that concrete was a favorite building material with the ancient Romans, and that traces of it are found attaching to Greece, Egypt and the ancient Orient, concrete as employed by modern Americans is a new material, the science and art relating to which are not fully developed. Much has been done to satisfy the conditions of its employment—much more remains to be done. The newness of an art, or the suspected newness of an art, is a sufficient cause for criticism or antagonism in the average American eye. We are the most conservative people as regards art and the arts on the face of the earth. We will not accept materials and methods on their merits and attempt to develop their intrinsic qualities or worth. Art is about the only line along which we are conservative, however; that is, we conserve very little along material lines—and we do sling dead art about recklessly and embalm its form in lasting and eternally reinforced concrete in which they appear more dead than heretofore conceivable. The fact that they are embalmed in a vital and vigorous material emphasizes the fact of death. There are those who claim that these dead forms are alive—but only to the dead do the dead live! Concrete is a vital material full of character—let us give it its vital forms.

Because concrete has for so long a time been poured into moulds or forms, and because of the coarseness of its ingredients, one of which was stone which could go through a two-inch ring, the earlier designers, and I fear there were architects among them, coupled in their minds concrete with crudity and coarseness of detail and, being dependent upon precedent, and knowing not where else to look, fell upon the crude Spanish detail and broad masses of the early Spanish Missions as representative of what best might be embalmed in concrete, and so Spanish missions distorted into bungalows and cottages and palaces spread like a rash over the face of the country. As technical and mechanical difficulties were overcome and processes refined, the rash itched to take another form of disease and turned into a classic fever, with now and then a touch of Gothic "pains" noted particularly in the traceries on solids and in voids. The fever still burns, the pains still grip. Ex-

pensive forms are built up and destroyed to produce effects which already, ad infinitum, ad nauseam, have been better achieved in stone. However, this is not always to be.

The waste entailed in the destruction of specially constructed and expensive forms has become apparent to many concrete users and exploiters, and their efforts to prevent the consequent loss, especially in case of the smaller residences and the houses with which this conference is more particularly concerning itself, has introduced an element which may well call for restraint in its application. For the sake of economy, forms are used and reused in close proximity. When such forms are not perfect in themselves and in utmost good taste, monotony in repetition becomes deadly, and woe is it to him whom cruel fate has condemned to inhabit a unit in an environment so constituted. Life and joy and self-respect must be absent from the dweller amid such surroundings. Even where the forms are charming and singly in good taste, repetition robs them of individuality and unfits them for occupancy by anyone possessed of character and personality. Individuality of character and personality are absolutely necessary in the units which go to make up the mass of a civilized and self-respecting society. Consequently another injunction, which I offer by way of advice, is to avoid wastage of forms—but even more to avoid the monotony which must follow the unrestrained employment of any "motif," ugly or charming. Introduce spice into life in the way of variety. The principle underlying this admonition is just as applicable to a mill town as it is to the most highly developed suburb. In point of fact, little or no distinction should be drawn between the mill town and the "swell" suburb. It should exist possibly only in the size of units; it should not exist in the expression of good taste and mental and bodily comfort. Perhaps I am getting ahead of the age and of the present topic. I hope not.

In spite of the manifold and varied means, methods, processes, applications, manipulations, textures, surfaces and colors appertaining to the use and employment of concrete as a medium of architectural expression and embodiment, I am not certain that I should advise its sole and unlimited agency in housing the activities of any one neighborhood or community. Indeed, I am quite certain that I should not so advise; and this not altogether on the ground of a needed variety, but that there are other materials which transcend even concrete as a medium of certain desired expressions of the human spirit in the art of architecture. And I should desire to see no community curtailed of, or denied, the right and power to express the best that is in it in the materials best adapted to that expression.

Thus marble, granite, iron, bronze, brick, slate, each one possesses inherent qualities or characteristics not translatable into concrete even through the agency of base and artificial imitation. In the matter of brick, for example, there is scale to the unit which relates the mass to human desire and experience in an intimacy possible with no other material, while in natural color and texture the range is boundless. But even with all that, brick needs other materials in its neighborhood for contrast and variety, purple-green of slate, soft white of stucco, weathered gray of timbers, with carvings and turnings, and craftsmanship which cannot be imparted by a mould, however exquisitely the surface be wrought by the modeler's hand.

I assume that as an architect I am expected to say that the only way to make concrete an accredited and acceptable building material adapted to all human material and aesthetic needs is to have its essence filtered through the alembic of the architectural profession or its representatives.

If you wish me to say it, of course I will—with reservations. Now the most stupid of anachronisms are perpetrated by so-called architects (they really are untutored archaeologists or, rather, grave-robbers), and the most blatant of modernisms, cut off from all context of history, have emanated from again, so-called architects (they really are unlettered sentimentalists). But I will say that the possibilities of concrete as a medium of aesthetic expression in building may best be apprehended by a sincere architect, with knowledge of modern social conditions and tendencies, working in co-operation with those who know the material at first hand and who also are sincerely working to exploit nothing but to develop the latent and inherent possibilities of a worthy material. Such architects exist, such material men exist. They should come together. It should be a function of such conferences as this to bring them together.

I must say one word here as to what should characterize the architect in whom the material man and the public may well place their confidence, being assured that his will be leadership—real leadership and not selfish and autocratic domination. That architect must not exploit any material or system, but must be able to recognize and free to employ the most effective and appropriate under the individual conditions. He must sense the sociological, including the social, ethical and aesthetic tendencies of his time so as to aid his client in the sympathetic expression of them, curbing wasteful, demoralizing, disintegrating tendencies, and aiding toward social unification; diagnosing present conditions and meeting the situation with skill and clarity of vision rather than in applying for-

mulae learned by routine in the schools. The architect should think in advance of the public and see the goal and the way thereto more clearly. Pity the public which follows, and condemn the architect who pursues the selfish and blind course.

Now, in so far as this paper constitutes a report to be discussed or otherwise sent to oblivion or laid aside for future reference, which amount to about the same thing, its elements may be summarized and augmented as follows:

IMITATIONS.

Concrete has a character of its own; there is no call to torture it into imitations of stone, wood, bronze or other material. Details cast in molds should bear the plastic touch of the modeler and not the chisel marks of the sculptor.

ECONOMY.

Forms suited to the special purpose should be used—and forms extravagant of labor and material should be avoided and should be employed only where duplication can be accomplished without monotony.

MONOTONY.

Even a good thing ceases to be a good thing when used in excess, and two concrete houses from the same forms, placed side by side, as an excess—such treatment is permissible only in barracks where men are in uniform and drilled into the same line of thought, act and movement, all individuality being eliminated.

SLABS.

Flat slab roofs may at times and in places be appropriate. A general use would be deadly unless counteracted by features the initial expense of which would more than offset the element of economy, which alone would seem to call for a wide prevalence of such roofs.

MONOLITHIC FORMS.

This method presents advantages in certain types of structure. The appearance of mass and strength is enhanced by monolithic treatment. Openings and corners can be characteristically and ornamentally treated at slight or no additional expense. Houses pre-cast from monolithic forms and transported as slabs or as units are to be looked upon with suspicion as tending to create types and general monotony.

BLOCKS.

(a) *Units.* Concrete blocks laid to be effective as units may perform a legitimate aesthetic as well as structural service. Texture and color can be given them. Their danger lies in exaggerated scale and general uniformity. Stone has the advantage of lending itself to cutting and fitting in length and height without conse-

(Continued on page 168.)

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A JOURNAL FOR THE ARCHITECTURAL
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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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The Claims of the Canadian Architect

In a much more general way than heretofore, sentiment is centering around the principle of utilizing Canadian products and ability in preference to going outside of the country for the commodities and services which enter into our daily life. Up to the present time this has perhaps been more noticeable as regards manufactured lines, and there are still some enthusiastic supporters of this principle in reference to their own business, who fail to recognize the necessity of extending its benefits to other branches of Canadian endeavor. Under the above heading INDUSTRIAL CANADA deals editorially in a recent issue with that phase of the question which affects the architectural and contracting interests. In this connection our contemporary says:

"Every reasonable effort to make the Made-in-Canada campaign thoroughly consistent should be practiced by its sponsors and supporters. It should unquestionably be a well-rounded and comprehensive scheme to maintain and en-

large the business and industrial activities of the nation. Nor should it be limited to the buying and selling of commodities. It is quite as deserving of recognition in the case of the professional man, who is contributing his quota to the upbuilding of the country.

"The business and professional elements come into close contact in the case of the architect. Not only does the architect create, but he also has a great deal to do with prescribing methods and materials. To urge upon him the desirability of using Canadian-made materials in the erection of buildings is important, but it is equally important that the men or companies who are erecting buildings should give a preference to the Canadian architectural profession in arranging their plans. The brains of Canadians are as deserving of recognition as the products of Canadian factories, and when new construction is contemplated, the consistent course to pursue will be not only to requisition the use of Made-in-Canada materials but to insist on the employment of Canadian architects and contractors as well."

Our contemporary looks at the facts of the case logically. If the resources of Canada are to be fully developed, and the country put on an independent and self-sustained basis, it is necessary that all branches of industry and service should be part of a general policy. The manufacturers more than anyone else can best support their own interests by considering at the same time the interests of others within the country. To encourage preference for Made-in-Canada goods and to ignore Canadian ability and service in the designing and erection of the buildings in which these goods are manufactured, denotes at its highest estimate a self-centered and narrow vision which fails utterly to see things in their bigger aspect.

Regina Architects Form Local Chapter

The Regina members of the Saskatchewan Association of Architects have formed a local chapter with a view to promoting a more frequent interchange of ideas and of giving mutual support and protection to local interests of the profession. Those present at a recent meeting held for the purpose included Messrs. J. H. Puntin, E. Delay, W. G. Van Egmond, H. Dawson, F. Reilly, T. Carmichael, J. Turner, F. Portnail and A. J. Rowley (hon.-sec.).

The meeting was presided over by J. H. Puntin and subjects of interest to the profession were discussed, among them being that of drawing the attention of the public to the advantages accruing, especially in these days of high costs, from the employment of an architect qualified in accordance with the requirements of the Saskatchewan Architects' Act.

Super Cement

A new product known as "Super Cement" which, in view of the claim made for its water-proofing and other special qualities, should be of interest to architects and the building industry, is now being placed on the Canadian market. When appropriately mixed and gauged the resulting concrete, it is claimed, is so dense that it is impervious to water and will even resist the percolation of so insidious a liquid as aviation petrol, as has been demonstrated by its successful use for making storage tanks at numerous aerodromes throughout the United Kingdom. It is stated that the reason that concrete made with it is more effective in all ways than that made from ordinary Portland cement, is due to the fact that it is able to combine with sufficient water when gauged, to perfect its crystallization, provided the surface is kept moist while the whole of the setting continues. It differs essentially from other methods of making concrete waterproof because it does not depend upon mixing anything with the cement for the purpose of filling up its pores or coating the resulting concrete with any foreign substance with a like end in view.

Super cement, which is an English product, is now being made in Canada at Mount Dennis, Ont., and is distributed to the trade by the Alfred Rogers, Limited, Toronto. Some very informative literature setting forth the many purposes for which it can be used and dealing with its tensile and crushing strength, as well as tables of tests, are available to anyone interested upon request.

Personal Items

Thos. W. Lamb, Architect, New York City, has established a permanent office at 269 Victoria Street, Toronto, and would be glad to receive catalogues and samples from various manufacturers.

According to word recently received Mr. Oscar B. Raven, formerly of Toronto, is now in Hong Kong, China, where he is engaged designing a university which is being established at Amoy by a wealthy native philanthropist who is devoting his time and fortune with a view to providing better facilities for educating the Chinese. The promoter is a large owner of rubber plantations in the Malay Peninsula and has already built kindergarten, primary and secondary schools in his native village near Amoy. The scheme further contemplates separate schools for boys and girls in the higher grades, together with a normal school and other buildings which will provide complete educational advantages. Mr. Raven, who is an Englishman, spent a number of years working in various

architectural offices in Toronto, and was with the Dominion Realty Company prior to leaving for China last year.

F. Telfer Arnoldi, registered architect, Toronto, formerly with Messrs. Langley & Howland, has taken offices for practice at 527 Confederation Life Building, and is desirous of receiving catalogues and samples from supply firms.

Mr. G. H. MacDonald until recently associated with F. G. Marani, Toronto, and who has been in Eastern Canada during the greater portion of the war, has returned to practice at Edmonton, Alberta, where his firm, Magoon & MacDonald, Tegner Building, have just won the competition for the new Y.W.C.A. building to be erected this year.

Representative of Tower and Clock Firm to Visit Canada

The representative of an English firm making tower clocks and bells will visit Canada shortly and desires to get in touch with buyers likely to be interested who should address the British Government Trade Commissioner, 260 Confederation Life Building; Toronto.

CONTRACTORS and SUB-CONTRACTORS

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

HART HOUSE—UNIVERSITY OF TORONTO.

Billiard Tables, Brunswick-Balke-Collender Co.
Brick, Don Valley Brick Works.
Casements, Henry Hope & Sons.
Electrical Fixtures, F. C. Henderson.
Electrical Conduits, Conduits Ltd.
Electrical Equipment, Canadian Kranz Mfg. Co. & Sangamo Electric.
Electrical Contractors, Bennett & Wright.
Elevators, Otis Fensom Co.
Expanded Metal, Metal Shingle & Siding Co.
Fire Doors, A. Matthews Ltd.
Fire Escapes, McGregor & McIntyre.
Fire Extinguishers, F. C. Montgomery Co.
Furniture, T. Eaton Co.
Flooring (Linotype), T. Eaton Co.
Flooring (Wood), J. C. Scott Co.
Flooring (Asphalt), H. H. Symmes & Co.
Glass (Stained), McCausland & Co.
Gymnasium Equipment, Harold G. Wilson.
Hardware Equipment, Aikenhead Hardware Co.
Heat Regulating System, Bennett & Wright.
Kitchen Equipment, Consumers Gas Co.
Kitchen Equipment, Gurney Foundry Co.
Marble, Holdge Marble Co.
Marble, Italian Marble & Mosaic Co.
Ornamental Iron, McGregor & McIntyre.
Ornamental Iron, Canadian Ornamental Iron Co.
Painting (Great Hall), A. Scott Carter.
Painting (Interior), Faircloth & Winfield.
Painting (Waterproof), H. H. Symmes & Co.
Plumbing Fixtures, J. L. Mott Co.
Plumbing (Contractors), Bennett & Wright.
Pipe Coverings, Canadian Johns-Manville Co.
Plater, Holdge & Sons (Balmer & Blakely).
Refrigeration Equipment, Linde Canadian Co.
Refrigerators, J. Hillock Co.
Radiators, Gurney Foundry Co.
Roofing, H. Williams & Co.
Steel Sash and Lead Work, Henry Hope & Sons.
Sprinkler Equipment, Bennett & Wright.
Structural Iron, McGregor & McIntyre.
Stone, Indiana Quarries Co.
Stone Contractors, Page & Co.
Serving Room Fixtures, J. Hillock Co.
Theatre Seating, Globe Furniture Co.
Tables (Great Hall), Stanley Sowden.
Upholstery and Drapery, Stanley Sowden.
Vacuum Cleaners, Spencer Vacuum Co.
Ventilating Fans, Sheldons Ltd.
Woodwork and Interior Trim, J. C. Scott.

Barrett Specification Roofs

Bonded for
20 and 10
Years

Barrett Specification Roof

20 Year Guaranty Bond

Know all men by these presents, That on the _____ day of _____ 19____, _____ of the County of _____ and Province of _____, for and in behalf of _____, the undersigned, have granted, sold, conveyed, confirmed, released, quitclaimed, released and discharged, and by these presents do grant, sell, convey, confirm, release, quitclaim, release and discharge unto the said _____ of the County of _____ and Province of _____, all that certain _____ situate _____ in the City of _____, in the County of _____ and Province of _____, together with all and singular rights and appurtenances thereto in anywise by law or equity to him or her in anywise lawfully belonging, unto the said _____ his heirs, assigns and assigns forever.

Witness my hand and seal of office this _____ day of _____ 19____, at _____ in the County of _____ and Province of _____.

The Barrett Company

Massey-Harris Bldg. No. 8, Toronto, Ontario. Roofer, McDermid Bros., Toronto. Gen'l Contractors: Sherwood & Sherwood, Toronto.

Lowest cost per year of service—

The building shown above is the latest addition to the big Toronto plant of the Massey-Harris Company.

Plans and specifications were prepared by the Company's own technical staff, and the construction throughout represents the most approved and up-to-date practice.

A Barrett Specification Roof was selected for the building because moderate cost and *guaranteed* long service make this the most economical roof it is possible to construct.

Free Surety Bond

The Barrett (20- or 10-year) Guarantee is not merely the warranty of a manufacturer or contractor. It is a Surety Bond, issued by a well-known Fidelity and Guaranty Company, which absolutely protects the owner from all expense for roof maintenance during the life of the bond.

The Guaranty Bond costs the owner nothing. It may be obtained on any Barrett Specification

Roof of 50 squares or larger, in towns of 25,000 or more, and in *smaller places where our Inspection Service is available.* The only conditions are that the roofing contractor shall be approved by us and The Barrett Specification, revised April 15, 1920, shall be strictly followed.

Important Notice

The Barrett Specification 20-Year Bonded Roof is the most permanent of all flat roofs. And while we bond it for twenty years only, it usually lasts well over thirty years.

For those who desire a somewhat lighter and lower priced roof-covering, we recommend the Barrett Specification Type "A" Roof, bonded for 10 years.

Full details regarding these Bonded Roofs and copies of the Barrett Specification sent free on request.

The **Barrett** Company
LIMITED

MONTREAL TORONTO WINNIPEG VANCOUVER
ST. JOHN, N.B. HALIFAX, N.S. SYDNEY N.S.

Concrete: Its Uses and Abuses

(Continued from page 164.)

cost and permanence or durability, let me say frequent economic waste. The manufacture of concrete blocks should be studied with variety of size as well as appropriate scale in mind. Corners and angles should be true, and crude and rock-faced surfaces avoided.

(b) *Backing for Stucco.* This is a legitimate field for the use of concrete blocks. Scale need not be taken into account; neither need such matters as sharpness of corners and angles or crudity of surface. Uneven chipping where blocks are cut approximately to the desired outline presents no obstacle to the perfect finish. Surfaces should be such as to which the stucco will most readily adhere.

COST AND PERMANENCE.

In a letter from an official of the United States Housing Corporation I find these words: "We were satisfied that there were certain types which would produce a good practical house at a very moderate cost, but it appeared to us that this could be done only where the same unit was repeated indefinitely, and our belief was that this would produce a deadly monotony." As to the monotony we have already heard; as to the that there may be cases where permanent houses would be a drawback in a developing community. There would be very little salvage in a wrecked concrete house, while the wrecking would entail almost as much expense as the constructing. Unless a community is well "zoned," buildings of a too permanent nature are an economic waste, even though the initial cost may be the same as for a building of less permanent character. Where, as in many of our communities, change is the order of the day, well constructed buildings of a more temporary nature are desirable. Buildings of a temporary nature can be "fire stopped" and made safe for occupancy.

FIREPROOF CHARACTER OF CONCRETE HOUSES.

In the letter above referred to, these words appear: "We found that the people who were interested in the concrete house were, almost without exception, trying to build every part of the house in concrete, including porches and all the trim." This would seem to me to indicate a deficient sense of humor on the part of the people referred to, as well as defective vision. I will grant that the designs of many architects who never intended to make a joke of their work are such as to be readily translated into concrete and would not lose in the process; but a concrete man with a sense of fitness, I'll call it humor, would not deign to affect the translation. I must still warn the enthusiast against excess; excess of imagination as well as excess in material means, or some of them may wish to make

the door hinges out of concrete after all! Fire-proofness, so to speak, and permanence are good qualities, for which it is possible at times to pay too much.

METHODS AND MEANS.

How to make the house reasonably fireproof, reasonably durable, reasonably attractive and reasonably economical in cost and in upkeep presents a series of problems for the architect and the concrete expert. As an architect, I shall receive the findings of the concrete expert and will make such application of the methods and means presented as may suit the particular case. I will even present the case beforehand to the expert—if it is not already covered—and aid him in his solution. I will even ask him now to present types of floors in structure and finish which are durable, economical and appropriate to a small house. I will ask the same concerning the roofs, high-pitched, low-pitched and flat.

There are many problems to be solved in connection with the design, construction and location of the concrete house, and I congratulate the concrete and cement interests that they have enlisted the services of so many serious-minded and enthusiastic men in the quest for the best along these lines. I hope that architects of vision and deep feeling may be called upon to co-operate.

Exhaustion of Southern Pine

According to a bulletin just issued by the Spruce Production Corporation of the United States War Department, only four mills out of 2,043 southern pine mills have timber supplies (southern pine) which will last more than twenty years. More than 1,600 mills will have exhausted their supplies in five years or less, and more than 1,900 mills in ten years or less. Attention is drawn to the fact that this rapidly approaching depletion, coupled with an expanding world market for timber, is bound to result in heavier demands upon the great timber areas of the Pacific coast and Canada. The present generation of timbermen in Canada will probably benefit as a result. This benefit may be extended to posterity if the short-sighted policy of the southern lumbermen is avoided.—
CONSERVATION.

Enamelled Wire to be Manufactured in Canada

An addition is being built to the plant of the Eugene F. Phillips Electrical Works, Montreal, to provide a department for the manufacture of enamelled copper wire. This represents a new branch of industry in Canada.

It is also understood that the Canada Wire & Cable Company, Leaside, Ont., will shortly be turning out a similar product.