JOURNAL

ROYAL ARCHITECTURAL INSTITUTE OF CANADA

VOL. 19 TORONTO, FEBRUARY, 1942 NO. 2

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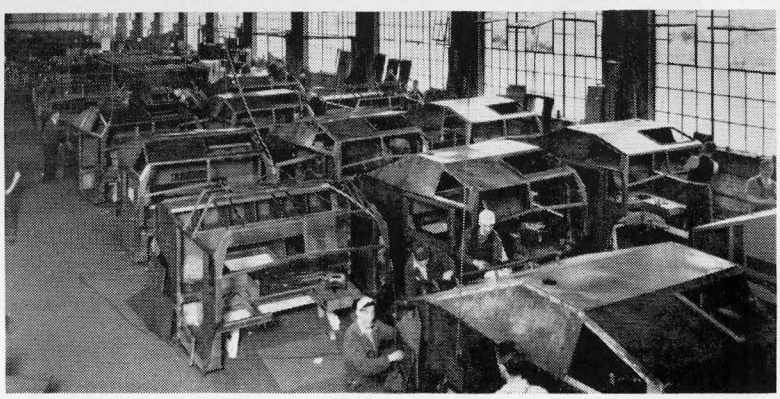

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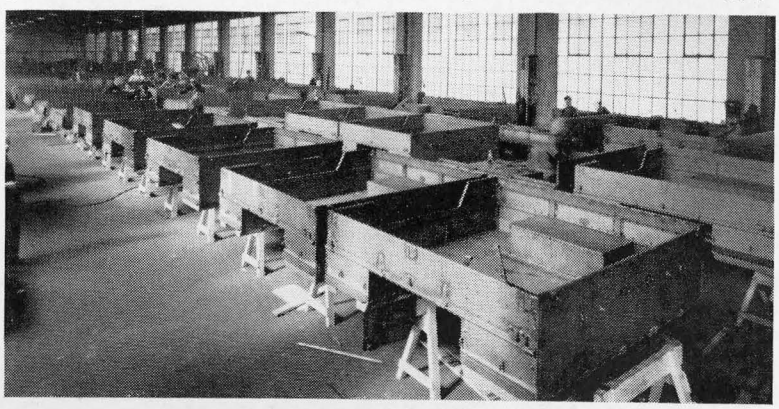
ABOVE: A view of the assembly line in one of our plants showing production of Gun Tractor Bodies.

BELOW: This view shows an assembly line of 15 CWT. Steel Truck Bodies for Dept. of Munitions and Supply.



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JOURNAL

ROYAL ARCHITECTURAL INSTITUTE OF CANADA

Serial No. 198 TORONTO, FEBRUARY, 1942 Vol. 19, No. 2

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PLATES

SUBSCRIPTION RATES

Canada and Newfoundland—Three Dollars per year. Great Britain, British Possessions, United States and Mexico—Five Dollars per year. All Other Countries—Six Dollars per year. Single Copies—Canada 50 Cents; Other Countries 75 Cents.

DURING the Annual Meeting of the Institute in Montreal on February 20th and 21st, there will be in that city an exhibition of the year's work of the four Schools of Architecture.

An attempt will be made this year to give the exhibition a more pleasing and studied appearance by notifying beforehand each School of the size and shape of their alloted space. This will permit them to arrange and dispose their exhibits to the best advantage before sending them off.

This year, with the usual rendered and unrendered drawings, will be sets of complete working plans as well as structural analysis notes, as these will demonstrate the practical work of the Schools.

This, to my mind, is a step in the direction which we Architects should travel, and if I may trespass on the time of the reader for a moment, I should like to expound a theory of my own.

In the past, shall I say one hundred years, the Architects have attempted to make the public believe that there was something abstruse and mysterious in the practice of their profession. They were slaves to Art and Beauty, (both with capitals)—and anything beyond the spheres of these two Goddesses was not for them. Consequently in the public mind arose the feeling that Architects were like all Artists, a rather impractical lot, and that it was only necessary to employ them if a building was to be decked up with all sorts of ornamental "doo-dabs".

This moth-eaten robe and tarnished halo must be cast aside and the true Architect, garbed in good taste with practical tweeds, step forth. Shout from the house-tops on every occasion that we are not mere Exterior Decorators, but Expert Builders, or as in the old definition of Architects, "Master Builders" — men capable of handling any building, large or small, and getting the most out of it — efficiency, and suitability. I dislike using the hackneyed term, "Functionalism", but that really expresses what I mean.

I am sure this would have a special appeal to the business men of today, who after all control most of the building, directly or indirectly.

This advertising of the practical side must be given to the public at all times, and we should do it with a light heart, knowing that it is true.

This short dissertation is not intended as a "plug" for the "Modern" in design, but rather for "Practical Building".

A movement is on foot at the University of Toronto to equip a Sample Room for use primarily by the students, although the public will also be admitted. This will exhibit the latest in modern materials of all kinds, and is a very worthy object, that I think should be supported by everyone concerned. It is the sincere hope of the Committee on Architectural Training that the other Schools will follow suit.

MURRAY BROWN,
Chairman of the Committee on Architectural Training.

LIGHTNING AND LIGHTNING PROTECTION

By HOWARD CHAPMAN

A BLINDING FLASH, a splitting crash, and Nature is on the rampage again, expressing herself with a volatility for which we mortals have discovered schemes of calibration and are able to say that lightning which is electricity travelling up to about 186,000 miles per second, can develop potentials of hundreds of millions of volts and currents as high as 200,000 amperes, discharging at a possible 500,000,000 horsepower. Though we have learned much about electricity and have developed and harnessed it until it is largely responsible for the form of our technical civilization, we are reminded in the grimly exulting and magnificent abandon of a violent thunder storm that Nature is not greatly impressed by our cleverness and that her wild energy presents uncomfortable possibilities of destruction.

A recent Statistical Report of Fire Losses in Canada ranks lightning as the seventh in a list of 22 reported causes of fire, damages amounting to over $570,000 in a year, from fires traced to lightning. In 1938, 22 people were killed by lightning in this country.

In the United States statistics show that about 1800 people are killed or injured by lightning each year and that the damage done to buildings amounts to between 15 and 20 million dollars.

The National Board of Fire Underwriters in the United States reports lightning to be the greatest single cause of fires in barns and to be a close second only to defective flues in farm houses.

Apart from the danger to human life and animals, and the risk of explosion or fire from a direct stroke; lightning, behaving very often in most unexpected and peculiar ways, does great damage indirectly in its mercurial wanderings.

One of its more interesting tendencies is that it will, if given a chance, try to liberate the captive electricity travelling over our power transmission lines by stampeding it through the lightning discharge path; and it is in combating lightning damage to electrical apparatus and interruptions in power service that a close knowledge of the behaviour of lightning has been gained.

As early as 640 B.C. an experiment is recorded in which charges of electricity were produced by friction on amber which attracted dry leaves, twigs and chaff; but little progress in the study of electricity seems to have been made until 1640 when the invention of the electric machine enabled quite large charges of electricity to be stored and discharged. (This machine aroused great interest in the effect of electric shocks on humans. Louis 15th of France indulged in a series of experiments on different class groups of his subjects with curiously varied and thoroughly entertaining results: a royal command performance by a group of nuns only being prevented in the nick of time by orders from the Supreme Pontiff at Rome.) It was not until 1751 that lightning was identified as electricity by Benjamin Franklin who flying a kite, attached by a string to an electric key in his laboratory, up into a thunderstorm, and observing, when the string became wet, sparks at the key similar to those in the electric machine concluded that lightning must obey the laws of electricity and be conductible by wires as in the machine.

As a result of Franklin's experiment buildings in the United States and later in Canada began to be equipped with lightning rod systems, though this did not take place without a struggle against general prejudice and that of the clergy in particular one of whom maintained that it was "impious to prevent the execution of the wrath of heaven" while another eloquently attributed a shock of earthquake in Boston in 1755 to the erection of protective systems on several buildings; and it was necessary at that time in some lectures on the uses and advantages of lightning protectors to preface every talk with the assertion that their erection was not an act "chargeable with presumption nor inconsistent with any of the principles either of natural or revealed religion". Ignorance of the laws of electricity, however, led to inefficient rodding and later many lightning rod swindles completed the disrepute. England, Germany and France, though, began about 1770 to provide protection for their churches and cathedrals with almost complete success; and in 1778 the Republic of Venice issued a decree ordering the erection of lightning conductors throughout the Republic. In 1840 effective protection was devised and applied to do away with tremendous Royal Naval ship losses from lightning.

We are surrounded on the earth and in the air by electrical charges, either positive or negative which rest on the surface of objects or on drops of water in the air. The existence of two types of charge (the distinction between which being made solely in the material used to produce the charge by friction) is indicated by the fact that charges of the same kind repel one another while those of opposite kind attract one another.

On the cause of thunderstorms there seems to be no real agreement among scientists but the general action is as follows. Water vapour high in the air condenses into minute drops charged positively or negatively and insulated by air. Physical and electrical action takes place. The small drops combine to larger ones, fall, are broken up by the air, the smaller ones being carried up again by the air currents. The electrical action taking place is due partly to the breaking of drops, partly to the charging of drops by proximity to other drops and partly to the attraction and repulsion of signs. The negative charges seem to be concentrated in the lower portion of the clouds and the positive above. While the electrical process is continuing, drops falling, breaking, and being carried up again, the accumulating negative charges in the lower part of the cloud are steadily attracting a similar concentration of positive charges directly beneath on the earth's surface and driving the negative charges away. These concentrations above and below continue to grow, feeding and controlling one another until the resistance or insulating character of the air breaks down and with a violent flash the electricity discharges. The time in which potentials are built up to a discharge is sometimes as little as two seconds and is followed by a rapid decay to zero.

The passage of lightning current breaks down the chemical constituency of the air: and it is estimated that through this action of lightning about 100,000,000 tons of fixed nitrogen is deposited annually over the earth's surface by rain.

While the charged cloud is floating overhead and drawing the positive charges along on the earth beneath, these positive charges creep up as close to the cloud as possible even though the conductivity is poor; and ground charges are concentrated in the tops of trees or other conductors since time before the stroke is seconds or even minutes. Pre-stroke conditions and electrical stress on high objects can be so great as to cause a discharge into the air. Isolated conducting objects such as metal roofs separated from the ground by a small gap may develop sufficient potential, when a stroke of lightning

between cloud and ground has reduced the electro-static field, for the electricity to flash across the gap with this release of the bound charge; and though the building itself is not struck a fire may easily be started by this indirect stroke, especially if inflammable gases or explosive dust are present. Waves of electricity, with the same speed as light, travel without being seen until the voltage breaks down the air resistance around and produces what is known as "corona" discharge: which may account for "ball lightning" not thoroughly understood at present but, probably, in connection with persistance of vision, is closely related to the high stress at earth's surface immediately preceding a stroke.

Lightning consists of a rapid discharge of electricity, current mounting swiftly to a peak and more gradually subsiding. Some strokes have a succession of peaks or pulses of current. The time required for a single discharge varies widely but 100 microseconds (millionths of a second) is close while many successive discharges along a single path may take as long as 1½ seconds.

From observations made with special cameras and devices to measure the current flow, it seems that except where tall buildings are involved, discharges of lightning between earth and cloud are initiated by a streamer of electricity from the cloud (choosing the easiest path offered by the atmosphere from moment to moment and sometimes branching) which establishes an electrically conducting path through which the earth strikes back to the cloud with a speed from one-tenth to one-half that of light. It is this discharge that the casual observer sees first. Subsequent discharges downward and upward follow with a velocity of three to three hundred feet per micro-second.

The downward leader distributes negative charges from the cloud along its path with the effect of drawing positive charges on the ground in to a point which is to be struck. As the rapidly moving negative charges come closer to earth, positive charges on the ground become more concentrated until, with the leader a few hundred feet from the ground, streamers may form from the earth to a length of a hundred feet or more. Sometimes there is more than one streamer until contact is made with the leader and positive earth charges rush up the channel. The preliminary up streamers cannot be seen with the naked eye because of the brightness of the return stroke from the ground.

In the case of lightning strokes to the Empire State Building, the conducting path was generally established by streamers initiating from the building, the current flowing upward for several tenths of a second, then succeeding discharges beginning at the cloud and going to the building were followed by upward return strokes exactly as in the previous case. The discontinuous character of a cloud makes the availability of cloud charges less than that on earth which explains the lack of a return stroke following the initial leader from a tall building. The usual return stroke following a downward leader to the earth proves that high currents associated with direct strokes must come from the earth and not the cloud. When a person is struck by lightning they are presumably, therefore, struck up from the ground and not down from the sky.

Thunder is the result of the steep pressure wave caused by the sudden expansion of air created by a fast lightning discharge. Though multiple discharge lightning may appear to the eye as a single stroke it may actually consist of as many as ten discharges which will cause the thunder to be tearing or ripping in effect. Thunder is the result of downward leaders and in the case of tall buildings thunderless lightning is often observed when there are no discharges after the direct current flow (which may have the appearance of a severe stroke of lightning) follows the upward leader from the building. Cloud to cloud discharges involving low currents (because of the lack of mobility of charges) sometimes extend great distances and the progress of the stroke is often slow enough to follow with the eye, thunder being persistent and rumbling. These strokes are relatively harmless and can only damage by releasing bound charges in a change of cloud fields. The pressure developed is dependent on the amount of current in the discharge; and it is the speed, five millionths of a second or less, with which this pressure is developed that causes the tremendous explosive power of lightning. (This power is sometimes increased by the vapourization of moisture such as might be present in a growing tree). So much heat can be generated in such a short time that sometimes metal conductors in outdoor telephone circuits disappear completely without any damage being done to the rubber insulation.

In the headlong rush of electricity between earth and cloud, as long as no resistance is offered to the current flow, the inevitable process of discharge will take place without damage being done. If, however, resistance is offered by the nature or condition of the path through which the current flows towards discharge, whatever is in that path will either explode or burn and if an air gap is part of the path a spark will be caused by the resistance of air.

It is in the provision for an ample path of very low resistance to discharge the flow of current between earth and cloud that the lightning rod system plays its part.

The shape of cloud and ground objects may have much to do with what happens in a discharge of lightning. Earth can either be regarded as a flat plane with bumps not influencing the cloud on their own; or a tall structure may represent an appreciable part of the distance between earth and cloud. A flat field may be struck at any point but a really tall structure will usually guide to itself discharges which would otherwise spread over a large area. Height is sometimes increased by the presence of streamers of electricity tending to guide the stroke but low objects 100 or 200 feet high have little or no effect upon a cloud discharge though a discharge already on its way, coming within their influence, will usually strike them. Lightning rods on account of their lack of height can have nothing to do with guiding to themselves lightning; and the idea once held that the leakage of electricity from the points of a protective system actually reduced potential sufficiently to prevent the stroke taking place is now regarded as mistaken.

It has been discovered by laboratory experiments and confirmed by experience with actual lightning that surrounding a vertical conducting pole, there is an inviolate area in the form of a cone with a base radius in a ratio to the height of the cone of one to one in the case of tall structures which increases to as much as four to one where lower conducting paths are offered. In observations at the Empire State Building, out of forty-six lightning strokes recorded to the building only one terminated within a cone having a base radius on the ground of 1200 feet (and that one terminated sixteen feet down from the top of the antenna) which gives an approximate one to one cone of protection.

The danger from lightning to life and property in the country is much greater than in the city. Out of the 1800 lightning casualties in the United States each year, nine-tenths occur in rural areas and in towns and villages with a population of 2500 or less. The considerably greater exposure in the country accounts very largely for this.

The large amount of conducting metal and the number of pipes and wires in city buildings provide more or less conducting paths for the discharge of lightning and the underground water systems make an excellent ground. Efficient firefighting with adequate water supplies reduces the damage done in cities.

Though tall steel buildings can provide excellent protection for surrounding areas, there are cases in which they have

proved a hazard. Two such cases are recorded in New York City where the forty-eight storey General Electric Building and the Equitable Building were both struck and damaged by lightning several times to an extent that masonry was hurled from the tops of the buildings into the streets below. It was discovered that the reinforcing members in the fifty foot masonry tower capping the General Electric Building were not connected to the main steel frame with the result that the lightning had been finding its own discharge path through the masonry which offered sufficient resistance to the passage of current to be blown apart. The provision of metal paths around the upper brickwork and a lightning rod system for the tower put an end to the trouble in this case and similarly the Equitable Building was equipped with a frequently grounded copper strip encircling the top of the building which has discharged lightning harmlessly ever since.

The principle of the cone of protection in tall lightning masts with intersecting cones, is used to protect oil storage reservoirs and ammunition dumps. Where any pipes enter these protected areas they are bonded to the protection system to allow free current flow without possible sparks caused by changes in potential. In any system of protection different conductors must be three or more feet apart or else bonded to the lightning rod system. Electric light wires for instance separated from a lightning rod system by only a few inches of wood have been known to cause fire with a lightning stroke; and if there have been any changes in a protected building involving electric wires or water or gas pipes, it is advisable to check their proximity to the lightning rod conductors.

It was originally thought that lightning rod conductors must be insulated from the house they were protecting, but now in new buildings it is considered safe practice to place the down wires inside the partitions, assuming that proper conductors are used.

It is important to think of lightning in terms of its complete circuit, and low ground resistance is necessary if damage is to be avoided in the vicinity of a lightning stroke. Danger lies underfoot when lightning strikes close by as the lightning sometimes comes up out of the earth in its search for a good conductor, if the soil resistance is high; and it may pass considerable current up one leg of a person and down the other. It is in this way that cattle are often killed beneath trees.

When soil conditions are right, the resistance offered to the current flow in a lightning stroke will cause tree-like formations of fused sand called fulgurite to be formed several feet long and inches in diameter.

Only the best ground connection will afford protection. The current in an average lightning stroke is about a billion times that flowing in the ground of a radio receiving set and objects grounded for ordinary current values may assume high potentials above ground with a lightning stroke. Radio antennas are occasionally struck and the attachment of antennas to trees is dangerous, small wires often being destroyed by a stroke and the lightning doing damage in finding its own way to ground. Danger to a house can be avoided in such cases, if at the point of attachment to the house a good ground (or a lightning rod conductor) is provided about an inch away from the antenna and strong enough to take the stroke. An inside antenna vapourized by lightning is dangerous.

The attachment of an electric wire from a house to a tree is all right provided a suitable ground is provided to take the current which would otherwise flow along the wire to the house.

Assuming that a tree is tall and a house is within its cone of protection, as a rule the tree will be struck although there are many cases vice versa on record. A tree, though acting as a good conductor during the first interval of a stroke is not able to carry large volumes of current and thus may explode or the current may jump in any direction seeking a better path. If the tree is rodded the house will be protected. If not, the house may be damaged by either the tree exploding or by a side flash of electricity; or if there was a good ground to the house such as a water pipe system a path might be plowed in the earth between the base of the tree and the house. Fire, of course, is caused whenever the passage of lightning current is resisted by inflammable material for a sufficient length of time to cause ignition.

To stand beneath a tree, overhead wires, transmission towers or any other electrical apparatus is dangerous during a lightning storm. Because of its height a sixty foot tree is perhaps ten times more likely to be struck than a person standing in the open and if unprotected is dangerous for the reasons already explained. If the tree is protected by a lightning rod system, though other hazards are eliminated, the danger of current from resisting earth still remains and will depend on the position of conducting ground paths in relation to the person.

House chimneys are often struck and the presence of soot which is a very poor conductor, increases pressure sufficiently to blow the chimney apart. To be near a fireplace can be dangerous in this way if an unrodded chimney is struck and the current may, in jumping to a grounded radiator, pass through a person in its path.

There can be a certain amount of danger in holding conducting objects such as golf clubs vertically in the air outside. By keeping dry one lessens the chance of being visited by lightning current. Swimming or any other water sport is extremely dangerous for though there is not much chance of a person being struck directly in the water, unconsciousness and drowning can readily be caused by the flow of current due to a stroke to the water nearby, and there is ample evidence that lightning does strike the water.

The principle of protection for human beings depends on keeping all parts of the body at the same potential or voltage which is accomplished when one encloses oneself in any form of metal cage such as a steel frame building or an all steel automobile which need not necessarily be grounded if one stays inside until the discharge ceases. To people in unprotected buildings there is danger from either direct lightning or the current released from a bound charge by a lightning stroke nearby. A piano or sewing machine might easily acquire a large potential which might pass through a person when released. If a building is struck a safe place to be is on an iron bed with a projecting head and foot and there are several instances where persons were not hurt even when the lightning discharge passed in at the head and out at the foot of the bed on the floor.

It seems, though, that to seek maximum safety in unprotected buildings would mean practically suspending animation during a lightning storm. One would keep away from fireplaces, baths, pianos, sewing machines, radiators, radios or electrical apparatus, telephones, switches, and wires and would finally arrive in ultimate abjection and perfect safety, inside the furnace or the refrigerator.

In a lightning protection system the number and location of air terminals or projecting rods is important as is also the number of down conductors. Down conductors should find their way to ground by the shortest route possible and low ground resistance is of great importance. If there are extensive water systems available connection should be made to them; otherwise local conditions will determine what is to be done.

The familiar plain or coloured ball which solemnly embellishes many lightning rods is simply Rural Rococo or a delicate emphasis of spatial relationship.

A faulty protective system may prove more dangerous than none at all and it is extremely important that there should be no gaps or increases of resistance along the system which must provide a continuous and even path of low resistance. The enormous current of a lightning stroke makes obvious the need for efficient installation and proper maintenance.

As a result of the recognised failure of inadequate protection over a number of years there are now definite rules governing the installation of lightning protection systems. In Ontario, the Lightning Rod Act covering the Standardisation of Equipment and Methods of Installation ensures efficient protection by enforcing a proper standard of material and workmanship, which is inspected by the Office of the Fire Marshal.

As far back as 1914 the late W. H. Day, after thirteen years of study and investigation was able to show, with statistics assembled with the co-operation of forty insurance companies and covering twelve counties of the province of Ontario, that out of 621 lightning damages totalling $113,-459.89, lightning rods saved $25,809.40 out of an expected loss of $29,726.49, showing an efficiency of 86.8 per cent. which evidence proving improper rodding in one case increased to 92 per cent. Over a period of eight years in Iowa insurance statistics showed a rod efficiency of 98.7 per cent. Both the Iowa and Ontario statistics cover improper rodding in some cases. During four years from 1909 to 1912, insurance company inspected rods showed an efficiency of 99.9%.

Allowances are made in insurance rates by most companies where lightning protection is installed, on country buildings mostly. In Ontario the Canadian Underwriters Association makes allowances for lightning rod protection on farms and churches and schools: though in city property on churches and schools only.

We know now, from both science and experience that lightning rods properly installed afford almost absolute protection; and with a recognition of Nature's true necessity a force of unimaginable destructive power is reduced to complete harmlessness.

For much of its information this article is greatly indebted to the book "Playing with Lightning" by Dr. K. B. McEachron and Kenneth G. Patrick. (Random House).

COPYRIGHT IN PLANS

MEIKLE vs. MAUFE

THE plaintiffs, a firm of architects, sued the defendants, who were an owner and another architect, for breach of plaintiffs' copyright in a design of a building. Some years prior to the commencement of the action the owner had employed the plaintiffs' predecessors in business as his architects for a building which he proposed to erect. They prepared sketches and plans and the building was constructed from them.

The general features of the façade were that shop windows on the ground floor lay within a colonnade on the line of the street pavement and above was an alternation of triple and single bays until the entablature was reached.

Some time after the original building was erected the goodwill of the business of the original architects and all their copyrights were acquired by the plaintiffs.

Then the owner of the building decided to erect an addition to it. There was some courteous correspondence between him and the plaintiffs in which the plaintiffs were assured that consideration had been given to their names when the selection of an architect was under discussion and that no doubt the architect who had been selected would "follow out and develop in a contemporary manner the original design with the fullest sympathy and insight." The defendant architect who had been selected wrote to the plaintiffs and received from them a letter stating that their best wishes were with him in the work and trusting that in it he would find much enjoyment.

As to the effect of this correspondence it was held that there was nothing in it which amounted to a license authorizing the infringement of the plaintiffs' copyright.

The architect for the addition repeated the design of the façade for a certain distance along the front and copied from the existing building its distinguishing features. His object was to make the new building look like the old one throughout its frontage and to follow substantially the original design in the interior.

After the addition was finished the plaintiffs brought this action against the owner and his new architect for damages for breach of copyright and they were held entitled to recover.

The defendants sought to justify their use of the original design on the ground that at the time the original architects prepared it they knew that additions would be made to the building, and that when such additions were made these should, together with the original building, form one architectural unit. The defendants contended that although there was no special provision to such effect in the original architects' retainer, it was impliedly agreed between them and the owner that he, or any architect employed by him, should be entitled to reproduce the original drawings in the plans for the additions to the buildings in so far as might be necessary to erect them into the one architectural unit.

The learned Justice found that additions were in contemplation and discussed when the original plans were prepared and held that architecturally there could not be a satisfactory façade for additions to the original building unless the original design was repeated for practically the whole length of the extension and that from a commercial point of view it was desirable that the premises should appear to be one shop. He pointed out, however, that the original building was a complete architectural unit in itself.

The learned Justice referred to the law that while the building owner was the owner of the plans, the architect was the owner of the copyright in them and in the design embodied in the owner's building and that therefore the owner might not reproduce the plans or repeat the design in a new building without the architect's express or implied consent. It was held that in the circumstances of this case there was no such express consent and the learned Justice refused to add to the agreement with the original architect, which he said was complete in itself, the implication here sought.

In assessing the damages he pointed out that there was no fixed rule for determining them. It was urged that he should fix them at the profit which the architect would have made had he been given the new job. The infringing building cost £24,000 and the façade about £6,753. The learned Justice said, however, that the plaintiffs if employed might have been asked to design only the façade and interior layout of the addition. As to the marketability of the copyright, he

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THE 51st ANNUAL MEETING OF THE P.Q.A.A.

THE 51st Annual Meeting of the Province of Quebec Association of Architects was held at the Windsor Hotel, Montreal, on January 24th. One hundred and twenty architects registered and one hundred and seventy-four sat down to the luncheon and thereby nearly broke all records for attendance.

John Roxburgh Smith conducted an orderly, smooth flowing business session in the morning which permitted adjournment at twelve-thirty, and this without any apparent curtailment of discussion by members on the floor. An innovation was the reading of reports by committee chairmen with opportunity for discussion after each report instead of at the end of the meeting as in previous years. As these will be published in their entirety in the year book later we will forego any detailed comment at this time except for an extract from the Membership and Scholarship Committee Report and a slight reference to the new Committee on Reconstruction.

The Membership and Scholarship Committee reported a total enrollment of 351 including 18 serving in His Majesty's Forces. It was with great regret that the decease of four members was reported: G. W. Wood (1890), G. A. Monette (1893), K. G. Rea (1907), and Frederick Dumfries (1917).

The Committee on Reconstruction which has been meeting steadily since September, presented a report covering their deliberations to date. While it is too early for them to submit definite conclusions it is evident that their procedure is logical and thoughtful and that they are establishing a firm base for future recommendations. Every member can rest assured this work is in good hands.

After voting that the next Annual Meeting be held in the City of Quebec the report of the Scrutineers on balloting for new members of Council and Delegates to the R.A.I.C. were read. The list follows:

Officers

President	Charles David
1st Vice-President	R. E. Bostrom
2nd Vice-President	Henri S. Labelle
Treasurer	Harold Lawson
Honorary Secretary	Maurice Payette

Council

G. McLeod Pitts	A. J. C. Paine
O. Beaulé, Quebec	E. L. Denoncourt, Three Rivers
Charles Jean, Quebec	John Bland
H. Ross Wiggs	Jean N. Savard
Emile Venne	J. C. Meadowcroft

Delegates to R.A.I.C.

G. McLeod Pitts	Alcide Chaussé
J. Roxburgh Smith	O. Beaulé
Charles David	Harold Lawson
Ernest Cormier	

The retiring President, J. Roxburgh Smith, then turned over the meeting to the new President, Charles David, for such routine business as remained, and as previously noted the meeting adjourned at twelve-thirty.

The cocktail period before the luncheon gave some opportunity for circulating and fraternising of which the members took full advantage.

J. Roxburgh Smith performed his last official duty by presiding at the luncheon. The guest of honour was Professor Eric Arthur of the University of Toronto School of Architecture and Editor of the R.A.I.C. *Journal.* Professor Arthur covered considerable ground in what seemed a very short talk to most, including references to collective effort, control of land in large scale planning, reconstruction and his impressions of London after the blitz. His dryly humorous description of experience on a freighter during the summer aroused much merriment and there was a feeling of regret generally when he sat down.

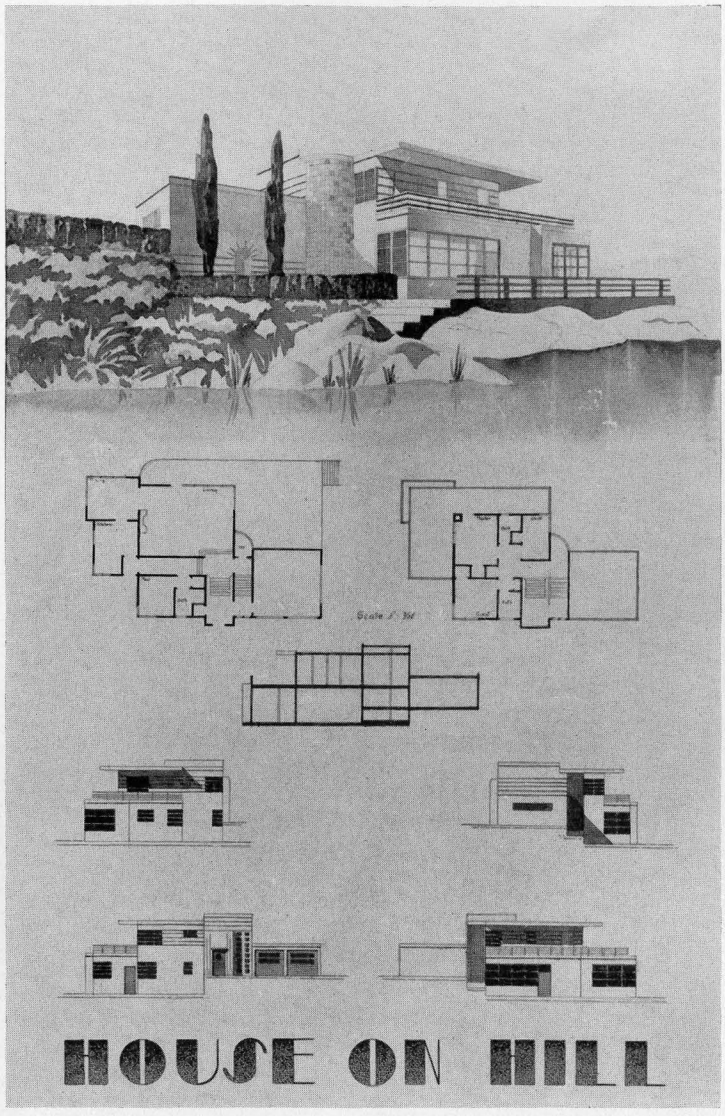
Other speakers were Hon. Arthur J. Mathewson, K.C., Provincial Treasurer, who represented the Hon. Adelard Godbout, Premier of Quebec, Rev. Msgr. Olivier Maurault, Rector of the University of Montreal and Professor Percy E. Nobbs, past president of the P.Q.A.A. who in his capacity as City Councillor brought greetings from the Mayor of Montreal and also gave us some sage advice. Other guests at the head table included J. O. Asselin, Chairman of the Executive Committee of the City Council, McNeely Dubose, Vice-President of the Engineering Institute, O. O. Lefebvre, representing the Corporation of Professional Engineers, T. Taggart Smyth, President of the City Improvement League, George Mooney of the City of Montreal Industrial Bureau and Walter S. Johnson, K.C., legal adviser.

An agreeable feature and one which gave the utmost satisfaction to everyone there was the presentation of the Association's Medal of Merit to Philip J. Turner, F.R.I.B.A., F.R.A.I.C., in recognition of his long and untiring service in the interests of the Profession and Architectural education. Mr. Smith, in making the presentation, referred to highlights in Professor Turner's career and the many positions which he filled with distinction. He also quoted from the eulogy tendered him by Harold Little in the *Journal* on his retirement from the McGill University School of Architecture.

In accepting the Medal, Professor Turner replied graciously, remarking that he had derived great pleasure and satisfaction from his relations with the Association and added that though he was more or less on the retired list he would be ready to render such assistance as he could.

Shortly after the termination of the luncheon the members again gathered to view a film entitled "The City" which dramatically unfolded some horrible features of modern city development to sound effects and forceful exposition by Lewis Mumford. George Mooney spoke before and after, accenting further features and lessons derived from the film. While is was "familiar stuff" to all, and in a sense preaching to the converted, it served to terminate the day's activities on a high note.

In whole and in part the functions attending the 51st Annual Meeting were well planned and executed and thanks are due to the Committee of arrangement, particularly Messrs. Smith, Wiggs and Pitts.



SCHOOL OF ARCHITECTURE
UNIVERSITY OF MANITOBA

FIRST YEAR

THE HOUSE ON THE HILL

Walter Katelnikoff

This is a simple, practical planning problem from First Year Architectural Design with elevations, section and a perspective view presented also.

The program called for a two-level house to be built to suit a sloping site, the occupants being a family of three, —man, woman and a child of twelve, a maid and facilities for an overnight guest. The man is interested in gardening, his wife is an accomplished pianist.

To familiarize the students with practical procedure the problem was carried on as a series of conferences between client and architect rather than between professor and pupils.

SECOND YEAR

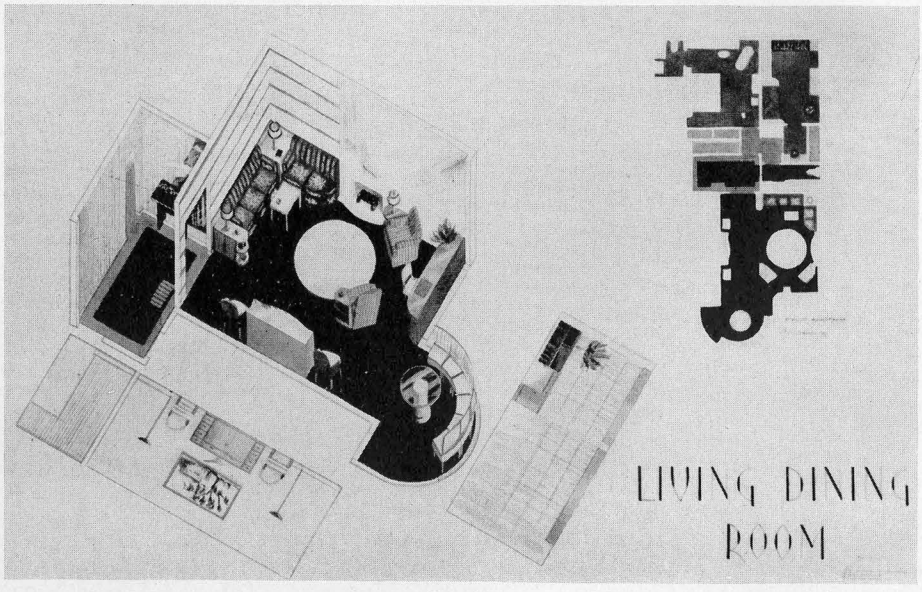
A LIVING-DINING ROOM

Marie Henderson

The furnishing of this apartment, to be used by a young executive and his wife, was a First Year Interior Design Problem.

In this solution, the interior scheme consists of honey-coloured walls, and a midnight blue broad-loom carpet which is carried over the entire floor and repeated in the hall.

The cabinet work is blond maple. The two overstuffed chairs by the window are upholstered in a green and white striped material which repeats the colours of the wall covering in the hall. Maroon is used in the chesterfield group, while maroon accents are found in the hall seat, in the edging of the lamp shades and in the flowers. The furniture in the dining room is also blond maple, upholstered in honey-coloured leather with maroon piping.



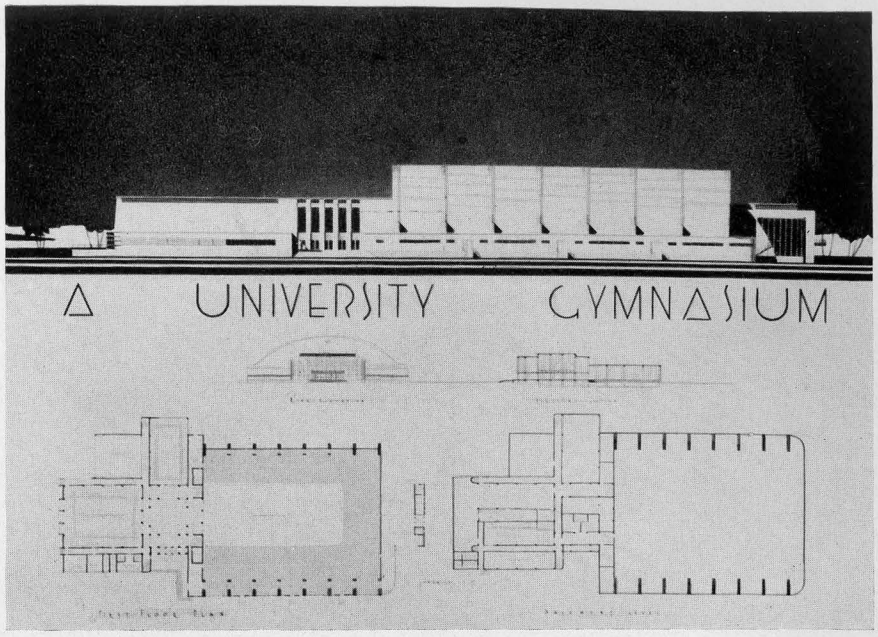
THIRD YEAR

THE UNIVERSITY GYMNASIUM

William Leithead

This problem called for the design of an athletic centre for the University of Manitoba.

The program required several athletic arenas to be grouped in one building with convenient locker facilities for both men and women. A hockey rink — with apparatus for artificial ice, a swimming pool, a basketball and a badminton court, were to be incorporated with the two flows of traffic, spectator and athletic, kept separate.



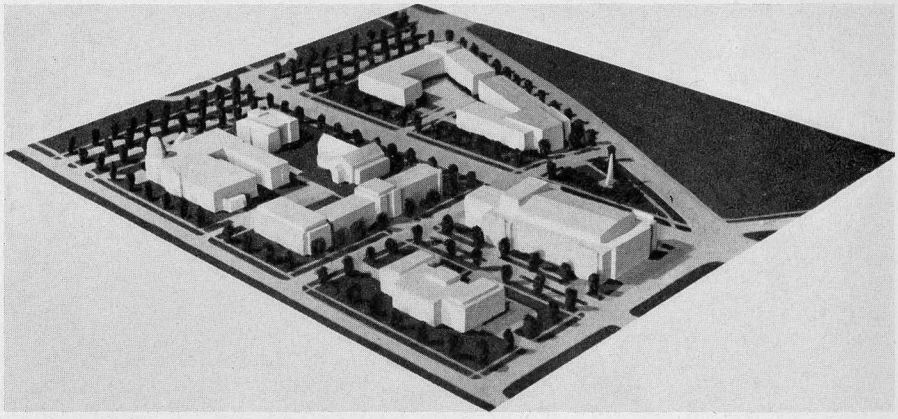
FOURTH YEAR

THE DEVELOPMENT OF THE MALL

Ruth Scott

This problem combined design and town planning. The requirements called for the replanning of about four city blocks, to form a Civic Centre for Winnipeg. The land is adjacent to the Provincial Parliament Buildings grounds and is just outside the business area. The roadway through the centre of the model leads from Portage Avenue to the main entrance of the Parliament Buildings.

At the present time the Law Court and the Land Titles Buildings and the Winnipeg Civic Auditorium are included in this area and it is proposed to add four new buildings, a city hall, a library, a provincial office building and an art gallery, the rest of the area to be used as a small park.



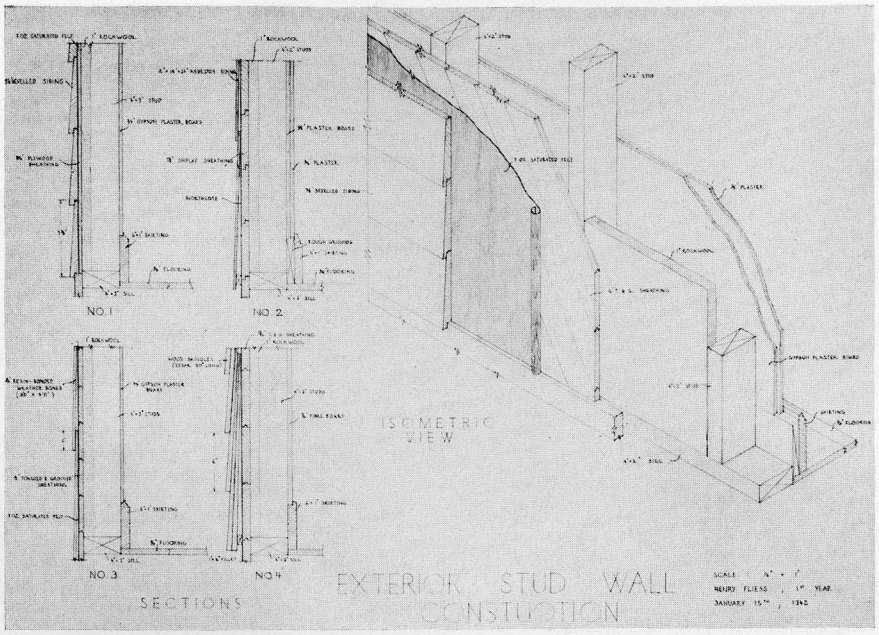
FIFTH YEAR

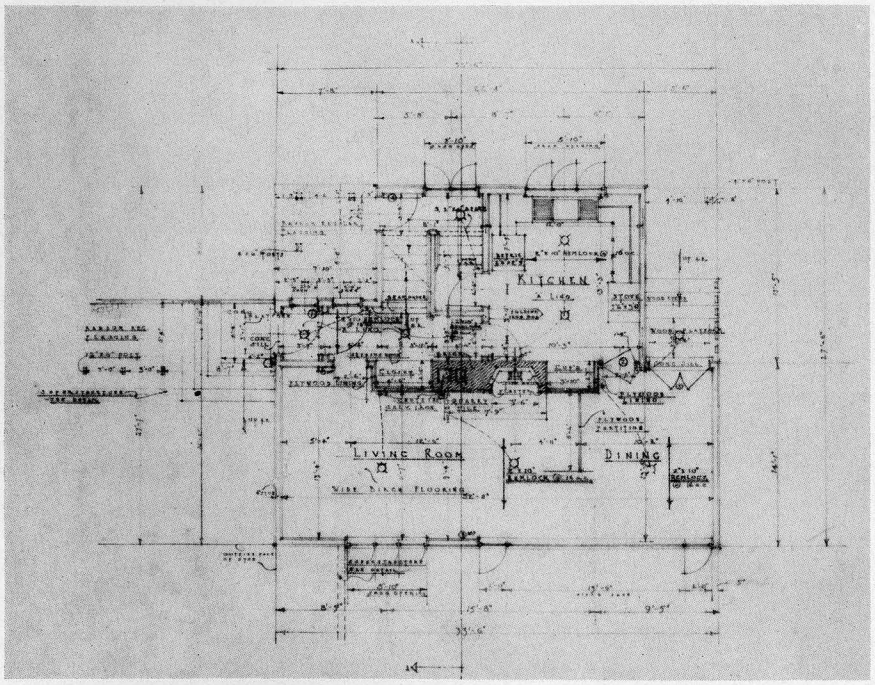
PROPOSED RECONSTRUCTION OF OSBORNE STREET

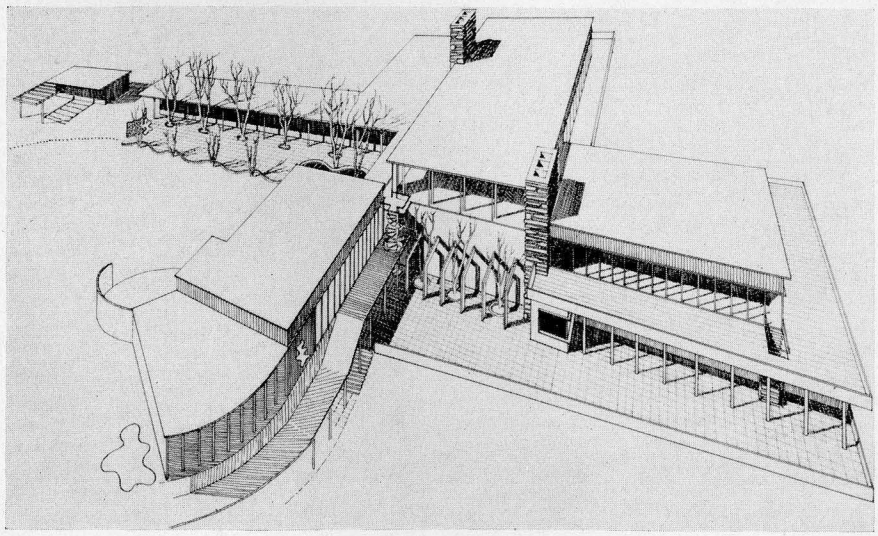
Edna Russell

Osborne Street in Winnipeg, between the Assiniboine River and Corydon Avenue, has presented a traffic problem for several years. There are two very awkward angles within three blocks and a shopping centre has grown up along these very blocks. On each side are residential districts which, in rush hours, produce a large volume of traffic which has to pass over a narrow bridge, important, indispensable street cars also add to the congestion.

This design presents a solution to the problem, by moving the shops back so the street may be straightened, by providing parking space off the main traffic road and by proposing a wider, modern bridge. It also suggests a design for higher-priced apartments to be placed along the river banks.







SCHOOL OF ARCHITECTURE
UNIVERSITY OF TORONTO

FIRST YEAR

CONSTRUCTION DETAIL

H. Fliess

A first year student must be largely occupied in developing skill in draughtsmanship and in the visualization of three dimensions. We are now trying to associate this process of learning with an understanding of simple structural design. This is done by a series of studies of building forms drawn in isometric. It is our hope that this will enable students to develop a sense of the aesthetics of modern structural designs, rather than regarding aesthetics and construction as two separate considerations. It is also intended that this early emphasis on simple constructional methods will advance the time when students will be of value in architects' offices.

Time—One week

SECOND YEAR

WORKING DRAWINGS OF SMALL HOUSE

Pegeen Synge

Fewer rendered drawings than usual have been made this year. Students are given about a week to prepare drawings as "for a client". Drawings are on tracing paper of a convenient size and are bound or clipped on one edge. When these drawings are finally approved, working drawings are made. In this second year problem the "client" was a small tradesman in an Ontario village. The village rather than the suburb was selected as the house was to be in frame construction. Students worked to a cube of 20,000 cubic feet at thirty cents per cubic foot.

Time—Three weeks

THIRD YEAR

A SUMMER HOTEL

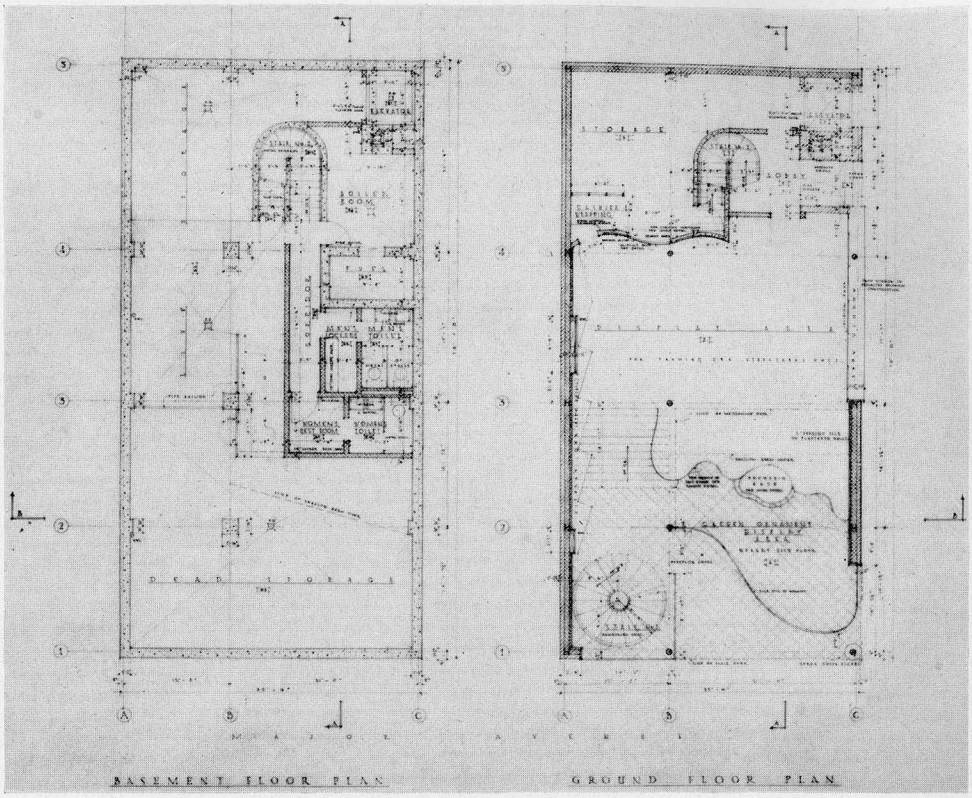
R. C. Fairfield

A summer hotel was set as the last problem of the year for a Third Year Class. The requirements were realistic and related to a specific site on the shore of Rideau Lake in Eastern Ontario. The use of local materials and economy in construction were stressed as a need for this type of project.

The whole scheme consisted of 144 double bedrooms to have full benefit of the lake view and proper orientation. These rooms were grouped into reasonably sized units in direct relation to the central and community buildings. The central building, here illustrated, is a portion from a large drawing developing the scheme. It shows the arrival station and court at the back; the administration offices; the lounge and dining room looking over the lake and the recreational section.

Drawings submitted included a plot plan (with contour plan model by whole class); elevations and section at 1/16-inch scale; isometric or perspective; and a working drawing of one bay of the guest room wing in plan, section and elevation at $\frac{1}{4}$-inch scale.

Time—Six weeks



FOURTH YEAR

A CERAMIC SHOP

J. A. Murray

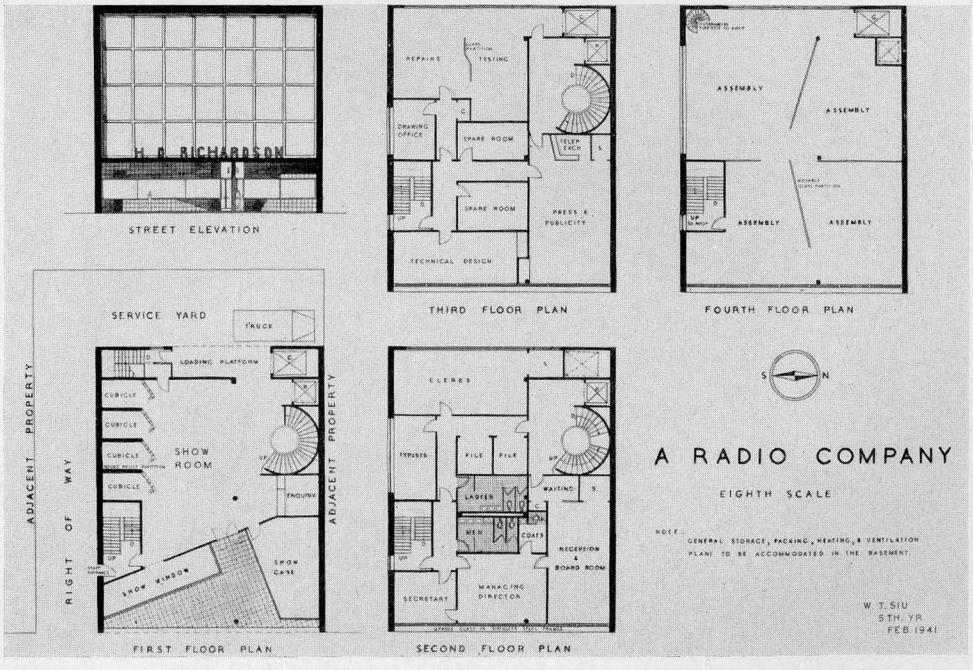
The plans shown were made after sketches were submitted to the "client". He required a building where objects for the house and garden would be sold in a retail section as well as an area where architects and others interested in tile could see samples and discuss problems and colour schemes. Three sheets of $\frac{1}{4}$-inch scale plans and $\frac{3}{4}$-inch details were made by each student. *Time—Four weeks.*

FIFTH YEAR

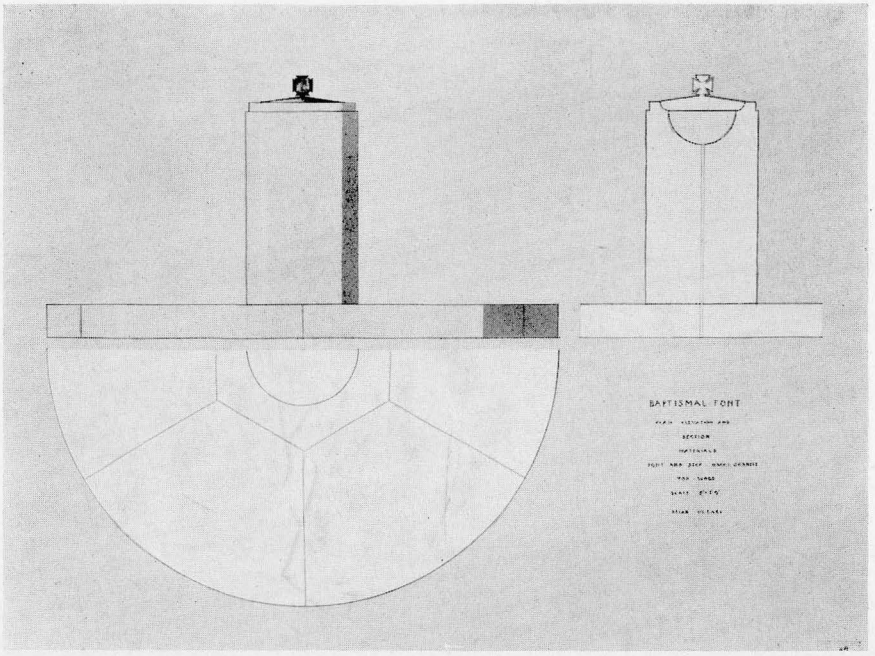
A RADIO COMPANY

W. T. Siu

Considerable interest has been aroused in the last two years by allowing the student to write his own problem and then solve it. We found that quite often a student would go through his course of five years and not do particular problems that interested him very much. Second, third, fourth and fifth years now announce their problems at the end of the first term. Those are approved and the problem written during the Christmas holidays. The problem then takes the first three weeks of the second term. In some cases students work with a "real" client with whom a correspondence is kept up and a contract signed. *Time—Three weeks.*



SCHOOL OF ARCHITECTURE
McGILL UNIVERSITY

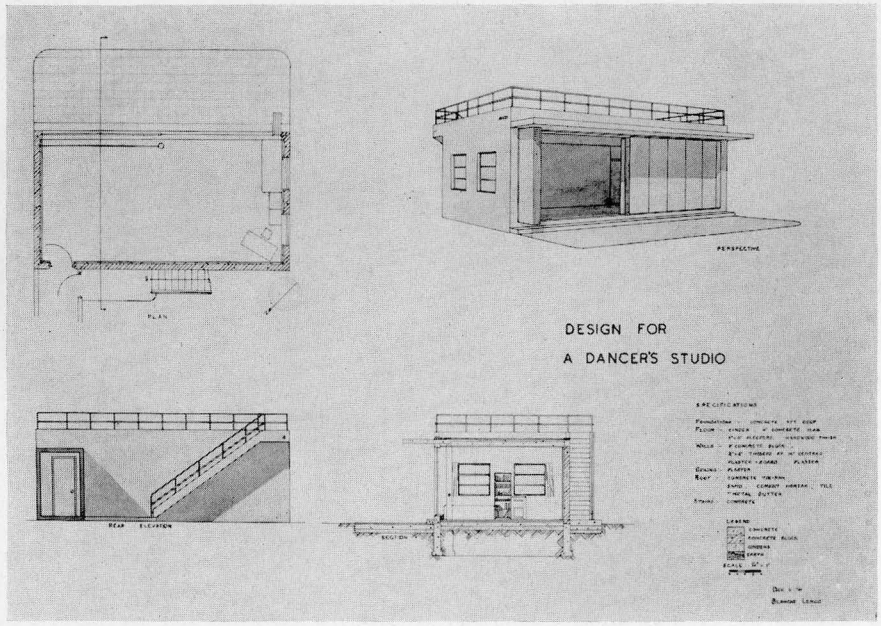


FIRST YEAR

BAPTISMAL FONT

Brian O'Leary

The Baptismal Font is essentially a basin for containing water raised to table height. It is a fixture of great importance in a church. It has monumental quality. Granite was the material chosen. It has a lid to keep it clean which must be easily removed: this is made of ebony. The handle represents the Cross. The Font is raised upon a step so that the ceremony is elevated. This is a first exercise in searching for suitable form.

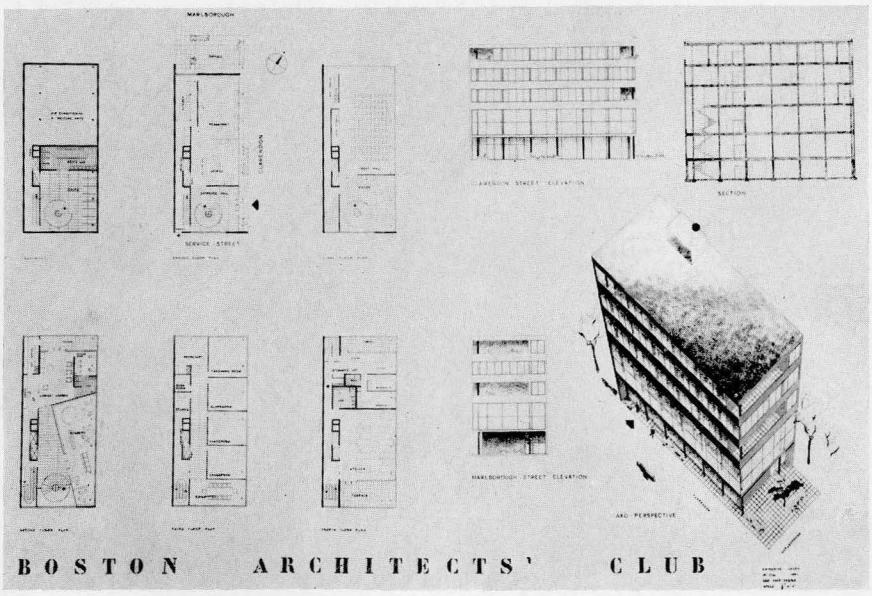


SECOND YEAR

A DANCER'S STUDIO

Blanche Lemco

The problem is to design a space of a given size to be suitable for an artist of the author's choice. The dancer has been chosen. The dancer is an athlete. He needs a perfect floor, music, fresh air, a place to rest. A roof deck is suggested. One side of the studio opens on to a terrace. This is not sentimental architecture. The building satisfies its essential purpose as it has been analysed. This is basic. What do you think, Mr. Joos?



THIRD YEAR

AN ARCHITECTS' CLUB

Catherine Chard

Boston Architects' Club, a joint problem with the School of Architecture, Massachusetts Institute of Technology, 1940-41.

The Club is a meeting place for architects, draughtsmen and workers in the allied arts. It has a social and an educational purpose. The building is to contain a great hall for meetings and exhibitions, a committee room, a lounge and restaurant, a library, class rooms and a drawing studio.

The site is open on three sides, two principal streets and a lane. The accommodation requirements and the nature of the site suggest a vertical arrangement.

The social spaces are planned upon the lower floors. The educational accommodation is on the top. The library is the link. A great stair communicates through the social floors. A service element is carried throughout the building along the inside wall from front to back. All spaces in the club would be quietly and efficiently served. The plan is neat, the structure is simple. Architectural emphasis is upon disciplined form and colour.

FOURTH YEAR

BOXING AND WRESTLING STADIUM

Anthony Lewis

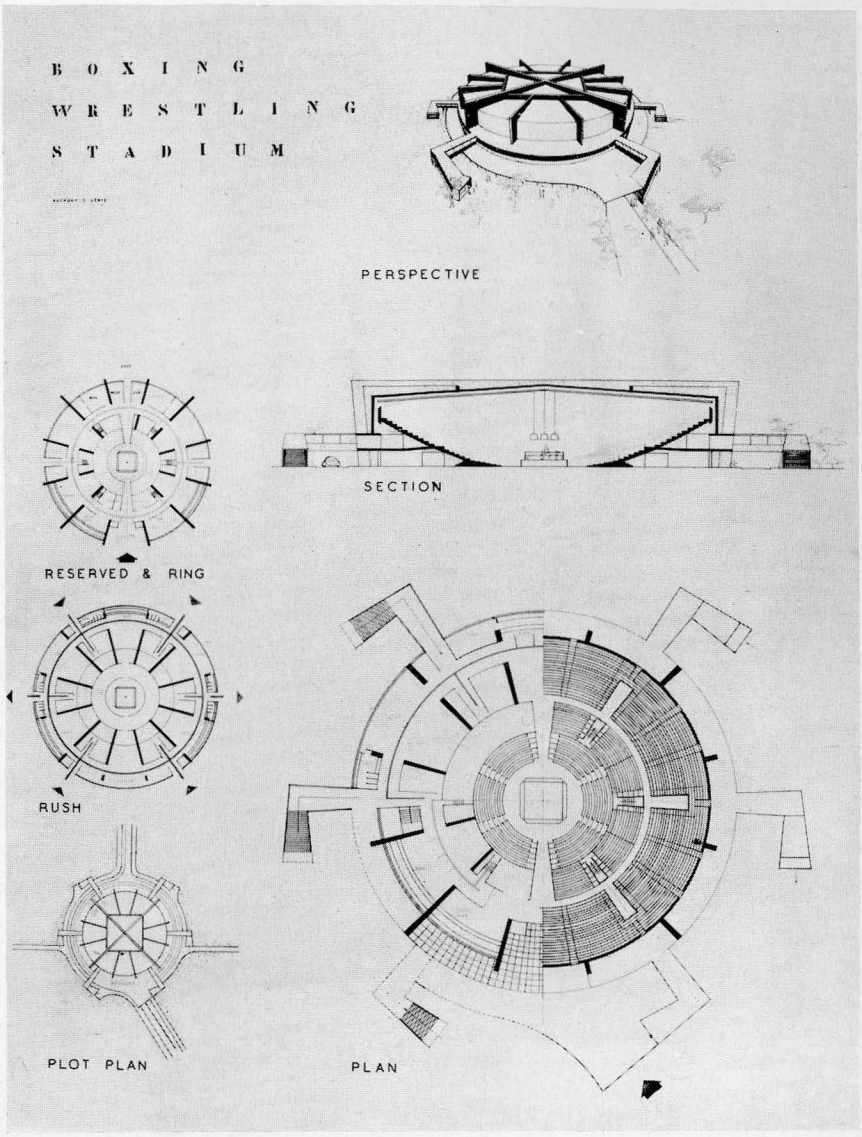
It is proposed that the site is to be developed as a public athletic park for the City of Montreal.

Accommodation—3000 spectators—400 "ringside", 800 "reserved", 1800 "rush".

The stadium was designed for the centre of the park with six avenues leading to it. There is a one-way traffic flow around the building with overpasses which are also used as enclosed queues for the "Rush" crowd. Only four of these are entrances: all used as exits.

The structure is of reinforced concrete flanges cantilevered and counterbalanced by its lower structure and tied laterally by beams. The exterior wall of the stadium acts as a deep concrete tie beam. The "rush", "reserved" and "ringside" have separate lounges, bars, toilets, coatrooms, etc., and the contestants may enter the building at the rear. Horizontal circulation is maintained around the stadium at two levels so that the "rush" crowd may be separated from the rest.

The building has been planned from the point of view of ideal circulation and comfort for all the spectators, and is artificially ventilated and lighted.



FIFTH YEAR

A TOWN CENTRE

John Porter

A small industrial town of 6000 persons propose to erect social and recreational facilities for all members of the community.

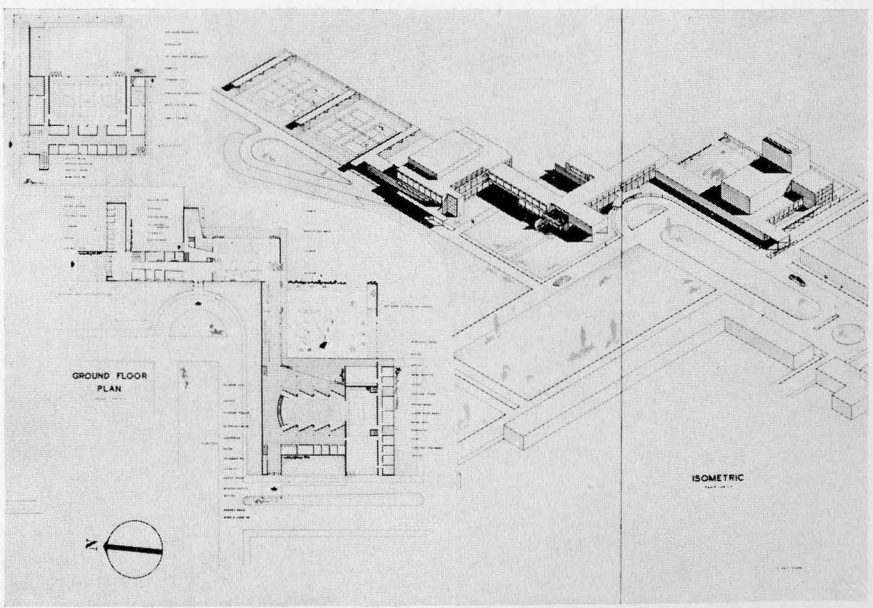
Activities—Civic Banquets, Dances, Private Parties, Restaurant, Lodge Room, Library, Museum and Exhibition Area, Theatre, Gymnasium, Billiards, Bowling, Outdoor Development, Scout Rooms. Accommodation divided into three groups.

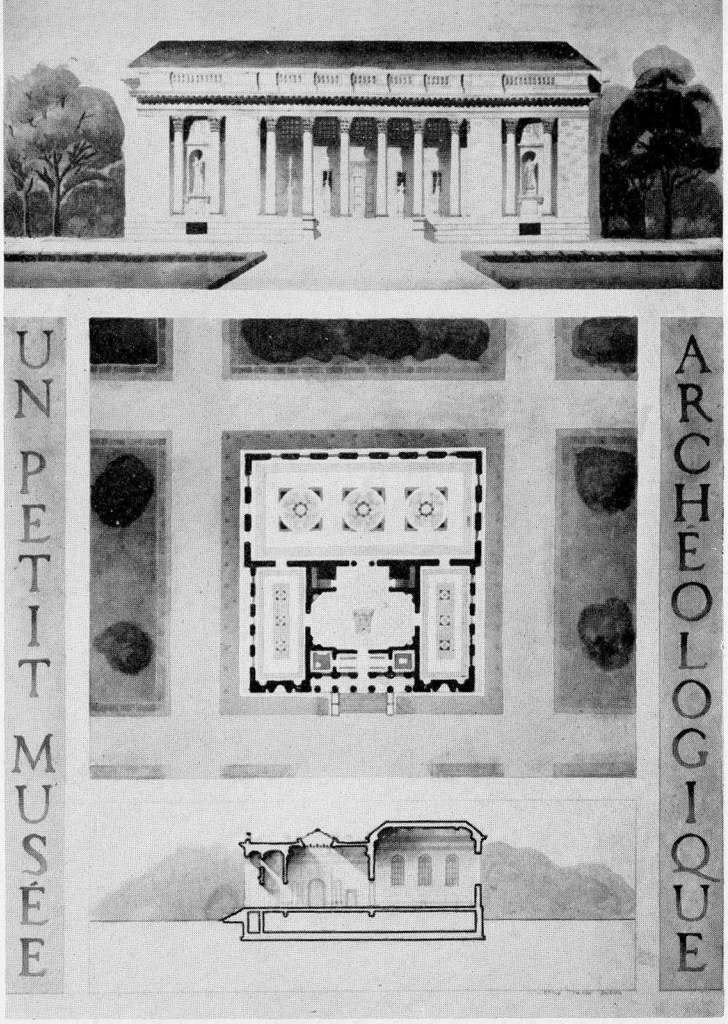
A.—Athletic, isolated because of noise and large land development required in relation to it.

B—Social and Educational—central.

C—Theatre, linked to the above through museum and exhibition spaces.

All units have been planned to suit their fundamental purposes. The grouping of units is governed by principles of circulation, orientation, conditions of site and convenience. Architectural emphasis on neat construction, space, simplicity. Fire-proofed light steel frame, slab floors, brick and terra cotta walls, tar and gravel roof.



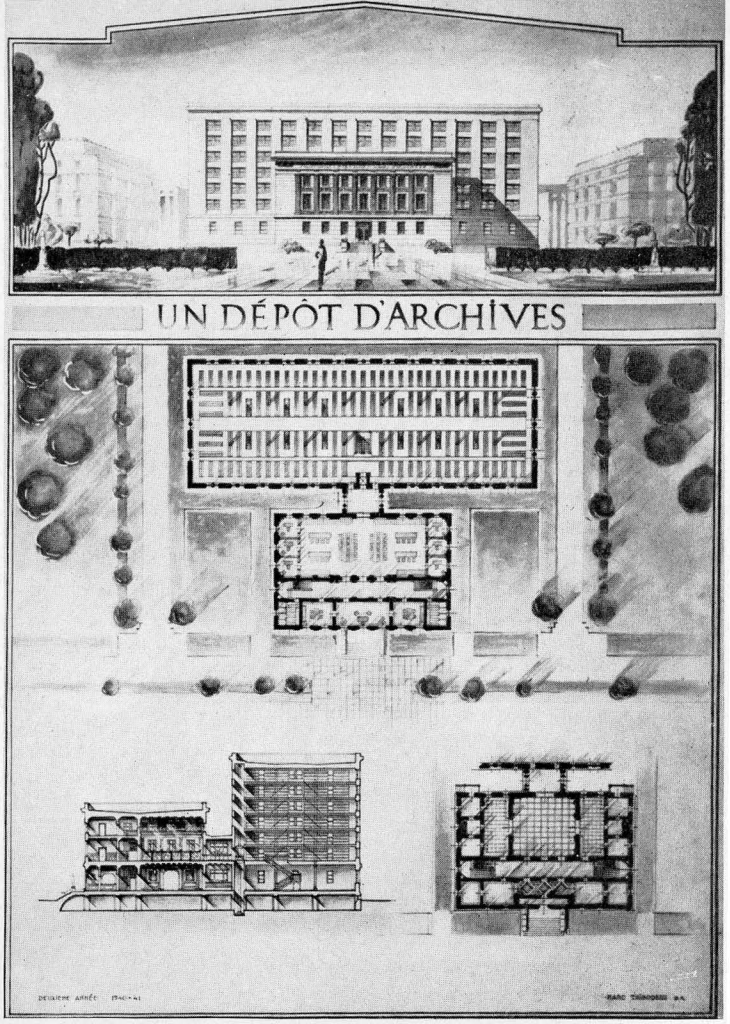


ARCHAELOGICAL MUSEUM

FIRST YEAR — *Ernest F. Smith*

Classical style obligatory. Designed to shelter fragments of architecture, sculpture and small objects as medals, arms, etc. The lot, isolated in a park, has 120 feet in its largest dimension. Only the ground floor was required. Entrance, guardian room, cloak room, a large hall, two small rooms or galleries, one or two staircases, an open portico, etc.

The aim of the problem is to train the student to group one large element in plan with smaller ones and simple services and circulations, as well as to use the orders effectively. *Five weeks*

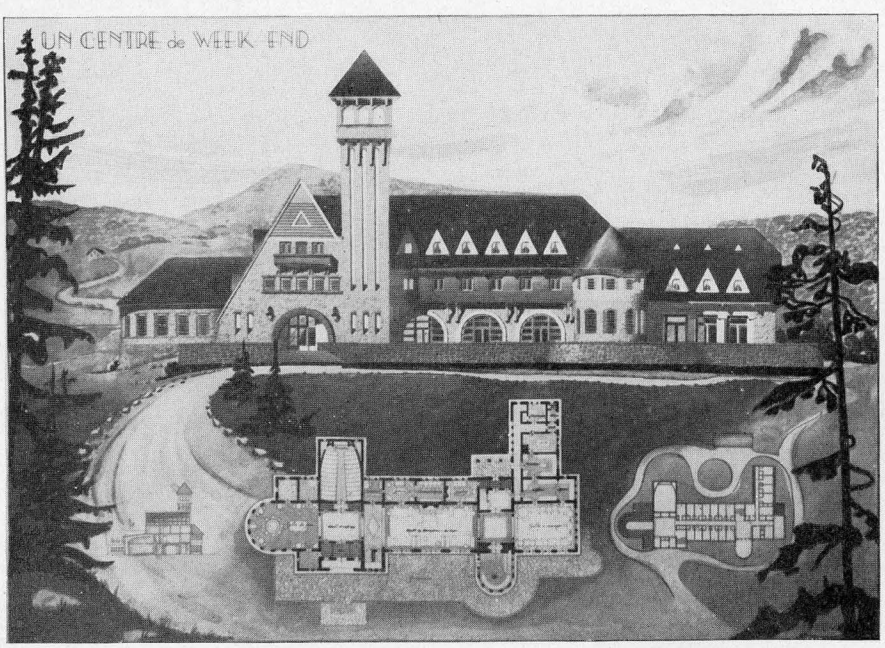


BUILDING FOR ARCHIVES

SECOND YEAR — *Marc Thibodeau*

Lot: 160 x 225 feet. Large side on a public square, the three other sides on lanes. Main requirements: 1; the depot, not accessible to the public (height: 50 to 60 feet above the ground floor, itself at 5 feet above ground level). Only one access to be provided from the public building; 2; the public building: large hall for study; space for the communication of documents, in direct relation with the depot and the hall; rooms for: research, copy of documents, the director's office; the personnel; guardian quarters; vestibule and large entrance hall, etc.

Main Purpose of This Problem: Train the student to co-ordinate a program, solve special circulation arrangements, and group buildings together. *Six weeks*



THIRD YEAR

A WEEK-END CENTRE

Gaetan LeBorgne

Destination: provide temporary accommodation to sportsmen in mountains. Should be conspicuous in the landscape. The lot, 200 feet, largest dimension, to be on a hillock accessible from the road, in good view from the surrounding mountains. The silhouette should add a picturesque note to the region.

Requirements: ground floor: a sheltered porch, reception lounge; a little bar with a terrace; dining room for about 40 persons; kitchen, etc.; separate quarters for the personnel; main and secondary staircases; rooms for games, correspondence, moving-pictures (100 spectators), smoking, etc. Accesses from the outside to the bar, the restaurant and the moving-picture room. Bedrooms in the stories. Outside: garage, hangars, etc. A belvedere-tower to complete the design.

Purpose: Train the student to informal design, to the picturesque. *Six weeks*

ÉCOLE DES BEAUX-ARTS DE MONTRÉAL

FOURTH YEAR

A JAIL

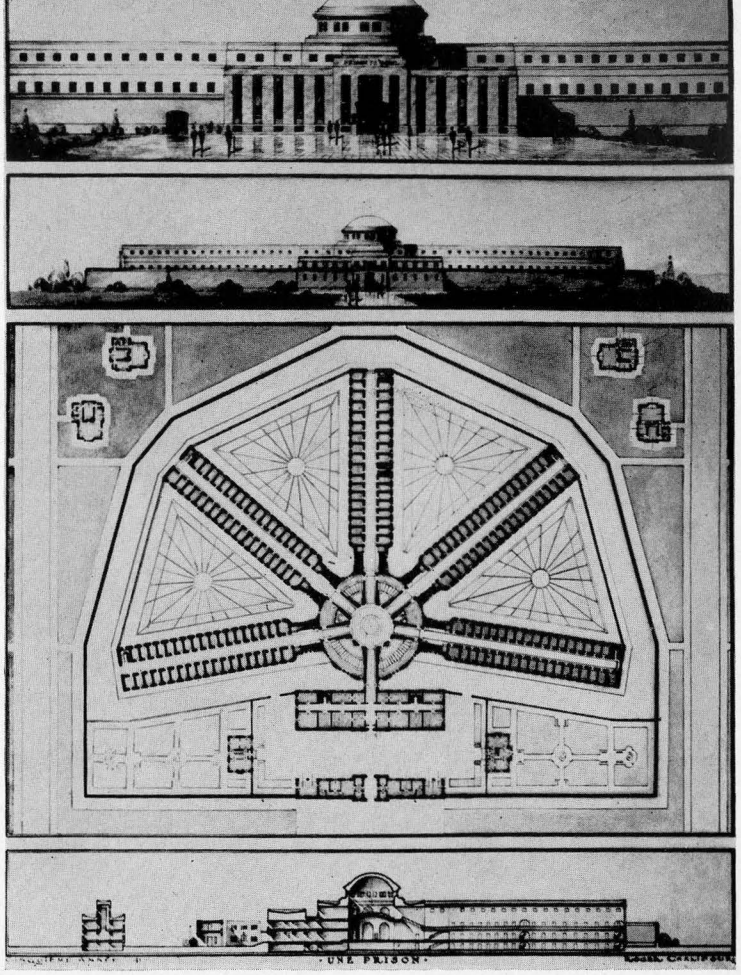
Roger Chalifoux

For 300 prisoners. Site: fairly level ground, 500 x 700 feet. Requirements: A—Exterior buildings for the habitations of the director, the chaplain, the wardens, etc. B—Special entrance services with guard room, etc. C—Prisoners' quarters: (a) Administration: rooms for the director, registry, examination, lawyers, parlor; kitchen, laundry; infirmary; chapels; library; social service, etc.—(In several stories)—(b) Cells: in several buildings and stories; ordinary cells (about 900 cubic feet); about 40 lockups; special cells for diseases, punitions (20), etc. Rooms for one guardian and two wardens (in every unit); at least 75 isolated yards, in separate small groups.

Baths, infirmary and chapels to be accessible from both quarters. Adequate vertical circulations. All the exterior buildings must be frankly separated from the prisoners by a round way. Only one access to the establishment.

Purpose: Training in large composition and handling of difficult requirements.

Six weeks



FIFTH YEAR

A SMALL HOSPITAL

Jean Venne

For a small industrial town (30,000 souls). Would not treat special cases.

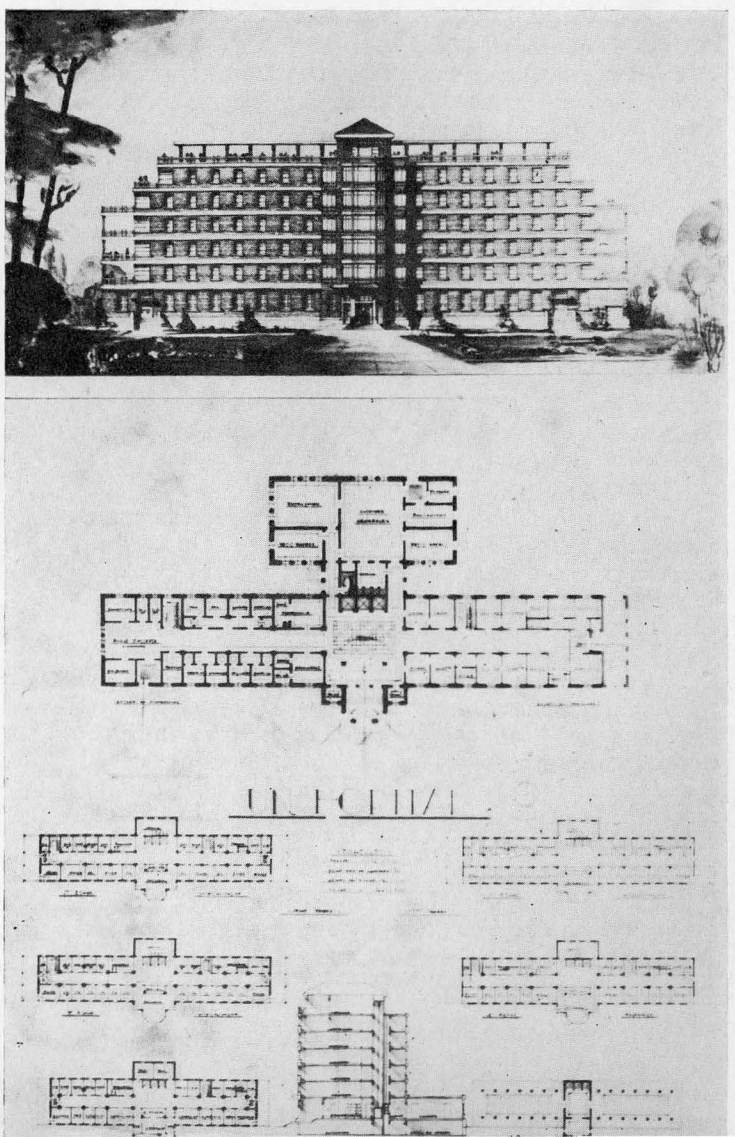
Economy of space and of materials, simplicity and ease of circulations are essential requisites. However, it should be kept in mind that it must be agreeable and that the environment be pleasant as well as calm.

The services must not be grouped only in surface, but also in superposition. Wards and rooms are to receive a maximum of sunlight. Services, conveniently facing north, staircases, elevators, all the main circulations should not be too near to the hospitalization's quarters. One hundred and twenty beds, in rooms and wards. Lot: 300 feet on a large avenue. Depth: 200 feet. East, North and West are private properties. The ground slopes ten feet from the South (street level) to the backline. The alignment of the building to be 50 feet away from the sidewalk.

The requirements, very much detailed, ask for a ground floor and at least four stories.

Purpose: Training in planning with prerequisite data, specified dimensions, and several stories interrelated, with the added difficulty of a bounded lot with regard to many mechanical devices.

Six weeks



WHAT IS AN ARCHITECT?

By CATHERINE M. CHARD

The Historical Division
The Position Today

FOREWORD

The intention here is not to arrive at a definition. It is to develop the question.

To investigate the architect.
To consider his qualifications.
his duties.
his status.
To discover what he did.
what he does.
what he can do.

THE HISTORICAL DIVISION

The Architect has worked

A—As a state employee.
B—As the member of a corporation.
C—As an individual.

A—*State Control*

Under centralized government we expect to find state control of building activities. In Egypt, for example, the Architect is clearly connected with court and temple. He is trusted with a job and made responsible for its execution. He is primarily a superintendent, a director of works. Whether he is relied on for the full design of buildings is unknown. The basis of his education is a sound knowledge of mathematics. To judge by the epitaph of Ineni, "Count, Pasha, Chief of All the Works in Karnak", the life of an Egyptian architect was not bad. He writes,

"I was a really first-class engineer and immensely popular; . . . Listen and do the good that I did—just like me . . . I continued powerful and met with no misfortune; my years were spent with gladness. I was foreman of the foremen and did not fail."

The Roman system of government naturally produced large numbers of official Architects. Most of these men combined the functions of architect, town-planner, civil engineer, and military engineer. They built the imperial palaces, temples, public theatres, amphitheatres, circuses, public baths, market places. They accompanied the legions in the field. They laid out earthworks, roads, bridges, gates, sewers, temporary and permanent camps. The ordered power of the Pont du Gard and of the Colosseum is the work of a great semi-military machine, the work of architect-engineers serving their empire.

These state Architects were attached to the departments of roads, aqueducts, and military constructions. Under their direct supervision were the contractors, paid by the state treasury or the emperor's purse. Competitive tenders were sometimes invited. The Architect seldom acted as contractor.

As to their actual working methods, they drew plans. Aulus Gellius speaks of a gathering at a friend's house where the erection of some new baths was discussed. Some Architects had been called in and they produced plans drawn on parchment. He selected the one that seemed the best in plan and appearance and asked what it would cost to build, everything included. Building by-laws existed for the city of Rome, although no town-planning regulations appear. Specifications were common.

The Roman state, so highly organized in most respects, did not require an Architect to satisfy any test before he commenced practice, as far as we know. Perhaps this accounts for the abuses of which Vitruvius complains. He claims that the profession is overcrowded with the unskilful and uneducated. "Men rush into architecture without even knowledge of the carpenter's trade . . . and this because the professionals do not possess the genuine ability but term themselves Architects falsely."

An important event in the history of the profession occurred in the reign of Constantine. This emperor discovered that the number and quality of the Architects available were not sufficient to carry out his designs. Therefore he issued an edict, A.D. 334, directing his magistrates "to institute schools, appoint professors, and by the hope of rewards to engage in the study and practice of architecture a sufficient number of ingenious youths who had received a liberal education." This experiment in the mass-production of Architects to meet an emergency had results. By the beginning of the 5th century there were 700 Architects in Rome.

The state Architect now becomes a high ranking official, the member of a liberal profession. He practises town-planning and military engineering. He is the director of all the building craftsmen in all trades, and also their paymaster.

Cassiodorus, on behalf of King Theodoric, writes to Aliosius, the Architect at Ravenna:

"When we are thinking of rebuilding a city or of founding a fort we shall rely on you . . . the builder of walls, the carver of marbles, the vaulter of arches . . . All come to you for orders. If you direct them right, while theirs is the work, yours is the glory . . . Above all, dispense honestly what we give you for the workmen's wages."

The Architects of later Rome, as of the Augustan Age, were versatile, well-trained men. Their success was due to their mathematical bias and to their sound practical knowledge.

B—*The Corporation*

The organization of the building trade in the Middle Ages is exceptionally interesting. It was a system of co-ordinated team-work, differing entirely from the situation at any other period. Control of the trade was in the hands of associations of builders. We must get some idea of how these corporations worked. Then we can investigate the position of the directing builder, or Architect.

The companies of builders controlled hours of work, wages and methods of training. Typical gild ordinances are those of the London Fellowship. Their "Regulations", drawn up in 1356, are a comprehensive code. The articles concern

—Provision for the appointment of wardens or other officers to administer the gild.

—The scale of wages and the settlement of wage disputes.

—The seven years' apprenticeship required to become a mason.

The "ordinances" of 1481 were passed to correct abuses that were causing trouble. Typical articles follow:

—The wardens of the fellowship were given the right of search for imperfect work.

—The applicant for fellowship was to be examined by four or six other honest persons of the craft.

—The hours of work for winter were set from daylight to dark with 1 hour for dinner and 15 minutes for "drinking" in the afternoon. Summer hours were from sun-

rise to 30 minutes before sunset, with 1 hour for dinner, 30 minutes for sleeping and 30 minutes for drinking. To judge by the preamble it is doubtful if the hours were strictly observed, as it complains that "divers artificers and laborers . . . retained to work . . . waste much part of the day . . . in late coming unto their work, early departing therefrom, long sitting at their breakfast, and long time of sleeping after noon."

The ordinances arrived at by the builders had to be approved by the municipal authority. So we find for example that on the 15th of October, 1481, "Came good men of the art and mystery of masons of the City of London . . . before the mayor and aldermen and prayed that certain articles for the better regulation of the mystery might be approved."

The directing builder or Architect was as a rule the master mason. It is easy to see why. Every complicated problem of gothic structure was a masonry problem—the thrust of the vault, the counterpoise of the buttresses, the design of the tracery, the interpenetration of the moldings. The business of the master mason was to make plans, decide on the order of operations, determine the quantity of men and materials needed. His office required ability to direct numbers of men, to hire and fire laborers and to fix wages. He was associated with a financial expert, the master of works, with whom he shared responsibility for the accounts.

A very important fact in this situation was that no intermediary existed between the Architect and the craftsman. There was no builder to translate from carefully drawn plans and written specifications the designer's intention to the workmen. The Architect was in direct touch with the worker. He dealt with him personally. He also bought the materials. Therefore elaborate plans and drawings were not needed. Many details were never written but carried in the mind of the master mason and decided on at his discretion after a talk with the craftsman.

The means by which an operative mason became a master mason are not clear. He probably was promoted by regular stages. Possibly some of these men were specially trained to fill positions as designers and Architects. The earliest apprentices in the craft were bound to a master mason. Whether they were learning to become skilled stone cutters or were being trained in design is uncertain. In the latter case they would be experienced hewers qualifying themselves for higher branches of masonry.

Henry Yevele is an example of the successful master mason in England. He was highly esteemed in the trade. His advice was asked for in the drawing up of regulations for the London masons. In addition to being a directing builder he was a dealer in stone and took mason's work on contract. Walter of Hereford was another master mason. He was in the king's service and was capable of taking charge of a military or ecclesiastical building operation. Both these men had a great deal of managing ability besides a sound architectural knowledge.

An interesting aspect of professional work is mentioned in Spanish documents. They refer to a "junta" or consultive committee of Architects established on several occasions to advise ecclesiastical or municipal bodies. In 1416 a junta of 12 members was called by the chapter of Gerona Cathedral.

Each member was separately asked his views on

1. Whether the nave of the cathedral, already commenced, could be safely continued.

2. If not, whether a nave and aisles would meet the case, or if some other method could be suggested.

3. How the nave in whatever form would best fit the apse which was complete.

The opinions of the experts were given on oath. Two of the Architects were appointed to collate the various opinions and draft a scheme. Six months later the chapter considered the report. The following week at a chapter meeting presided over by the bishop it was decided to carry on the work as proposed.

What has often puzzled modern students is the obscure personality of the medieval Architect. His anonymity is clearly a result of trade organization. Under the system the Architect worked in such close collaboration with the craftsman that their identities became almost indistinguishable. These men, daring innovators, designers and engineers in equal parts, attained a method of collective thinking. This achievement in organization is reflected directly in their structure where every great mass is composed of small elements without loss of a major unity.

C—*The Individual.*

The violent history of the Architect as an individual can be opened in the right tone by an incident from Greek mythology. This is one of the earliest examples of the independent practitioner and client arrangement. Trophonius and Agamedes were commissioned by Apollo to build a temple. Homer says that the god chose the site and actually got to work with his Architects. Upon completing the undertaking the partners are said to have asked the god for a reward for their labours. Apollo promised them the best of all gifts, and consequently within three days they were both found dead.

The Architect in early Greece is an indefinite figure. The most distinct picture of a building enterprise at this period is found in the records of the fifth temple at Delphi. The Architect, a Corinthian, was chosen by the city council. A contract was drawn up between the council and a wealthy family of builders. The temple was to be of local limestone, but with great liberality the contractors made the columns of the front of white Parian marble.

In the age of Pericles the professional status of the Architect was established. But he has to be a good salesman to be recognized. For example, Philo, Architect of the arsenal at Athens, gave so eloquent an account of his building's merits that "The most enlightened community in the world applauded him no less for his oratory than for his talent as an architect."

The exact nature of the Architect's duties at this time is not clear. Philo was a civil engineer, Scopas a sculptor as well as Architect, and Hippodamus a town-planner.

As to their methods, they sometimes used wax models of details, occasionally also a general model of the whole building. Specifications were written. The specification for the arsenal at Piraeus gives full instructions as to dimensions, materials, thicknesses of walls and time of completion. At Epheseus there was a law under which, if an Achitect's "extras" exceeded 25 per cent. of the contract cost, he was held liable. Various Greek cities instituted by-laws and appointed inspectors to see that they were carried out. The regulations at Pergamon include clauses relating to party walls and dangerous structures.

An interesting note on architectural practice in Greece is the account of the erection of a war memorial on the Acropolis. At first it was suggested that Callicrates be employed as Architect but a member of the board proposed an amendment, that there should be a competition. It was then resolved to invite designs. The drawings were to be not less than one cubit large, that is equivalent to the scale of 1″ equals 1′ 0″. They were to be publicly exhibited for ten days and at the end of that time to be judged by popular vote.

Socrates says in one of his dialogues, "In what do you intend to excel, Euthedemus, that you collect so many books? Is it architecture? For this you will find no little knowledge necessary." The information as to how this knowledge was arrived at, otherwise than by books, is non-existent. We

know very little about the training of such men as Callicrates and Ictinus, for example. Whether they went to schools or were apprenticed to a master is impossible to say. There are, however, many instances of boys being trained by their fathers. Plato advises such parents to provide the child with miniature tools so he can build model houses.

The Greek Architects were the first to write about architecture. They wrote pamphlets explaining or defending their buildings, describing new features of construction and design that they had introduced. The main topic in the 4th Century B.C. was "Principles of Design". Hippodamus of Miletus, the town-planner, made full use of literary methods of propaganda, and published ideal schemes of lay-out for towns.

There is no parallel to the competitive system of Greece until the Renaissance. The collective organization of the Middle Ages gradually broke up. It was replaced by an intensely personal system. The Architect became independent and non-co-operative. It rested on himself to get a client. No form of organization within the profession existed. For most Architects the result was a cut-throat struggle for a living.

Vasari gives a good description of the Architect of Renaissance Italy. He speaks of Brunelleschi working on the dome of Florence, dealing with labour troubles, locking out strikers, organizing canteens in the dome to save the time lost by workmen descending for dinner at mid-day, inventing and improving tackle and scaffolding, then in addition there is mention of a woman Architect "of the Gaddi family who ventured to put her knowledge in competition with that of Brunelleschi." The Architect no longer writes, "My years were spent with gladness."

The Architect continues to be a versatile man but his duties are undergoing a change. He is not confused with the builder. As early as 1423 Brunelleschi succeeded in paralysing all work on the cathedral of Florence by shamming illness and remaining in bed. The "master builder" and the "purveyor of works" visited him there as they were unable to proceed. This made it clear, as the Architect intended, that he alone possessed the master brain.

Civil engineering continues to be part of the general practice. Garden design and theatrical scenery become important. The Architect obtained his work either by private interest or in competition. Professional rivalry was acute. The ideal client was the Pope, or a great cardinal or noble. There are many references to competitions, consulting work and arbitrations. Vignola was invited by the King of Spain to act as judge in the competition for the Escurial, for which 22 Architects of different nationalities had submitted designs by invitation. Upon this Vignola " . . . with that exquisite discernment so peculiar to him, selected whatever was most elegant from each, and writing his own ideas, produced so beautiful a whole that Phillip II immediately decided on it."

It is hard to generalize on the system of training an Architect at this time. His education depended very much upon the circumstances of his birth. In Vasari there is no mention of a school where architecture was taught. The majority of students were apprenticed to an Architect in practice. It is remarkable that every famous Architect that Vasari mentions, no matter how poor he was, managed to spend long periods, often years, in Rome, measuring and drawing antiquities. The artist-architect begins to develop. The line between art and science disappears. There is no longer any "art and mystery of masons". Architects are sculptors, painters. The architect-engineer is in decline.

A successful member of the profession enjoyed riches and honours. He receives special privileges. The Architect as "a great man" has arrived. A few instances will illustrate the position.

Michelangelo insisted on having a clause inserted in his contracts that he should not be interfered with. Once the building committee of St. Peter's objected that insufficient light had been provided at some point. Michelangelo replied to the cardinal chairman, "I neither am nor will be obliged to tell your lordship or any other person what I intend to do for this work; your office is to procure money . . . the designs for the building you are to leave to my care."

Verrochio stipulated that wherever he was working " . . . the door of the cellar, or whatever place the wine was kept in, should be left constantly open that he might go and drink whenever he pleased without asking leave from anyone."

Perhaps the climax of this sort of thing was the career of Bernini. His journey to the court of Louis XIV was something of a triumphal march. "At Lyons, all the professors of the arts and persons of rank went out to meet him; and in every country he went through the people so flocked in the streets to see him that he was accustomed to compare himself to an elephant."

In France the medieval mason held on for a while before the invasion of "the new learning". Soon, however, the students set out for Rome before settling down to a career. Books of the orders are available. The functions of Architect and builder became distinct. The modern system begins to appear. The Architect in France is now recognized as an expert along the Italian lines and the master-mason Architect is gradually frozen out of existence.

In 1671 the Academy of Architecture was established in Paris. It grew out of a small consultive committee appointed to superintend the Louvre. The first members were all practising Architects. They met weekly to discuss problems of design and construction. Their first object, however, was to consolidate the professional status. In 1666 the travels of students in Italy were recognized when the French Academy at Rome was established. The winner of the "Prix de Rome" on returning from Italy was guaranteed employment.

As to the organization of work—a specification and a model formed the usual basis of a crown contract. Materials were found sometimes by the contractor, sometimes by the crown authorities. There is nothing to indicate the existence of a general contractor. The Architect now had a competent staff, including artists and craftsmen of all kinds as well as draftsmen. The "architectural ghost", who concocted the design while the "Architect" secured social contacts, was by now flourishing. Another tricky development was the collections of architectural engravings that appeared. These were pattern-books. The business was to supply "thoughts" for Architects, painters and sculptors.

In England medieval building methods persisted into Elizabethan days. The change was on its way however. In 1614 Robert Smithson is described on his epitaph as "gent, architector, and survayor unto the most worthy house of Wollaton". By this time, then, the corporation of builders has gone and the gentleman Architect and client has come. This Elizabethan Architect is a rather problematical person. He uses plans much as we do today, appears to welcome the "new light" from Italy, yet he hangs on to some of the medieval methods. Shakspere in 1598 writes,

"When we mean to build we first survey the plot, then draw the model; and when we see the figure of the house, then we must rate the cost of the erection; which if we find outweighs ability, what do we then but draw anew the model in fewer offices, or at last desist to build at all?"

When the "great man" does arrive in England he comes with a bang. For a hundred years, from 1620 on, architecture in England is completely monopolized by Inigo Jones and Wren. To get an idea of what was happening let us look at a few facts of Wren's career. He was, in the first place,

never trained for architecture. He dropped into it, more or less by accident, from scientific pursuits in which he had been successful. His father, the Dean of Windsor, and his uncle, the Bishop of Ely, were instrumental in getting him his first commissions. When in 1661, at the instance of one of his influential friends, John Evelyn, the king appointed him Assistant Surveyor-General of His Majesty's Work, he had had no training whatever in architecture. He brought to his work, however, a lively and inquiring mind.

Wren's work was the design and erection of new buildings. He also developed a town planning scheme for London which was not carried through. He did no important work in civil or military engineering, nor did he carve statues, paint pictures or write books. The profession is becoming more specialized. Towards the end of the century the civil engineer is distinguished from the Architect, due to the rapid development of canals.

The Architect was important to the actual building operations. There was no general contractor and he had to "assemble" all the different trades and keep them in touch with each other. An old contract reads, "Sir C. Wren draws all the designs of the building, hath the universal care thereof, gives all directions to the workmen and other officers, examines all accounts, and agrees for the prices of workmen and materials."

In the 18th Century the system of patronage continued. The Architect's career depended upon his retaining a place in society and his education was strangled by the "beaux arts" formula. In 1766 John Gwynn writes,

"Nothing more is required to fashion a youth of moderate parts into a complete Architect, than to put him apprentice to a bricklayer, mason or carpenter, under whose tuition he will acquire the great art of scoring straight lines and setting off their proportion by scale and compass . . . thus furnished with the rudiments of architecture he may be sent to Rome and after he has spent the usual time allotted for traversing the city he may cause it to be inserted in the London papers that Mr. T., the celebrated Architect, shortly intends to revisit his native country, to which he will no doubt do incredible honour. The trumpet having thus been sounded he may venture to make his appearance in London. His next business is to decorate his house with a collection of the best Italian masters of the science and then get some friend to beat the drum. . . . But to be serious is there a building, or even a fragment of a building in Greece or Italy, of which we have not accurate draughts and measures? And is it not from these sources that every modern building is compiled without variation, and without the least attempt at novelty or invention."

This John Gwynn declined the post of instructor in architecture to the Prince of Wales in 1755. He wrote "London and Westminster Improved", a plea for town planning in those cities. His views are lively and often bitter.

The general state of the profession was now very low. Carpenters and other building craftsmen turned themselves into Architects by the simple method of an advertisement in the newspaper. A typical one reads, "As the said Mr. Robert Brettingham is leaving off his business of mason, he intends to act in the character of Architect, in drawing plans and elevations, giving estimates or putting out work, or measuring up any sort of building, for any gentleman in the country." (1753).

The rise of the speculative builder forced the Architects to organize, for self-preservation. In 1791 "The Architects' Club" was formed. This was a little convivial association which met once a month at the "Thatched House" in London. In 1834 it was established on a firmer basis as "The Institute of Architects" and in 1837 it obtained a royal charter. The Architect began to recover a little of his position as a respected professional man. Dependence on a patron abated somewhat and competitions became popular. In the early 19th Century the general contractor, the builder of today, made his appearance.

The Victorian period was the great day of the pupilage system. The pupil was bound to his master for a period of from 3 to 5 years. Evening lectures supplemented his office work. Towards the end of the century a system of school training came in. The R.I.B.A. Board of Education undertook the control of work in certain recognized schools, universities and technical colleges that offered a course in architecture. However, even now the majority of those entering the profession begin as pupils in an architectural office and sit for the open R.I.B.A. examinations.

THE POSITION TODAY

The position today is still conditioned by the state of affairs in the last two centuries. Architecture degenerated into a weak and sentimental aestheticism because Architects lost touch with the swift progress of life. They had no unity of plan, no sense of reality, no clear conviction, no policy, no philosophy. The public lost faith in Architects because they failed completely to keep pace with the needs of the people. The Victorian Architects had not the courage or the competence to tackle the problem of town planning under industrial conditions. This was the result of almost complete lack of organization within themselves. So, Architects were regarded, and are still regarded by the majority of people, not as a necessity but as a luxury. This is our legacy from a generation which created "artists" and "academies". "Fine art" killed the traditional spontaneous art that had permeated the life of the whole people and left a parlor-pink finger exercise.

The new problems of design forced by the transition from manual to machine production had to be faced sooner or later. A most significant step in this direction was the establishment of the Bauhaus in Dessau in 1925. The Bauhaus, a school of architecture and industrial design, preached "the common citizenship of all forms of creative art and their logical interdependence". It realized the fact, sidestepped since the Middle Ages, that building unites manual and mental workers. Therefore both should have a common training. The directing minds will then realize how to make the machine the instrument of their ideas. Architecture will stop being a mask laid on technical products in the name of taste, but will instead be formed out of technical thought. Then it will return to the normal experience of men, instead of being fit to hang in an "art gallery".

The intellectual basis of a working architecture has been achieved. The concentration on concise and economical solutions, on structural functions has produced new forms, the product of social and technical conditions of our age. The most burning and baffling problem of the day is the problem of the town. It is clear that this must be solved. Architects must become co-ordinators if they face town, regional, and national planning problems.

But the word architecture at this point conveys no concrete idea to the majority of people. It still seems uncertain and confused, without a direct line of action.

The Architect cannot become definitely more useful to society unless he organizes himself. The problems are too complex for the individual. They must be faced by a sound body of workmen. The initiative for reform exists but the method is lacking. The most important international congress of town planners in recent years ended in shrugging of shoulders because the experts had to admit they "had no public support". They not only had no public support, they had not the active support of their own profession. We need to develop a technique of collective thinking to arrive at a system of collective action. By a corporative effort we may be able to construct a new city.

PROVINCIAL PAGE

ALBERTA

The Town Planning Commission of Edmonton, on January 13th, forwarded to the City Council a plan and accompanying memorandum proposing the development of a City and Country Centre. The idea dates back to a proposal made in 1925 by the late alderman Lionel C. Gibbs, architect, who then suggested that four city blocks including the market square should be gradually acquired and reserved for civic purposes. Considerable progress towards this purchase has in the meanwhile been made. The new proposal is a revision of Mr. Gibbs' plan in view of later developments. The city had, unfortunately, sold an L shaped lot of somewhat limited possibilities to the Federal Government for a building which they propose to erect. Such a building would effectively block any comprehensive development of the proposed Civic Centre. It is now proposed to correct this mistake by offering a much more advantageous site to the Federal Government. The scheme now proposed goes much farther than was contemplated in the original plan.

One of the pressing needs of the city is better accommodation for farmers and other country people who come into the city on business. This aspect of the city's affairs is of peculiar importance owing to the special dependence of Edmonton on the very extensive and rich surrounding country. The amount of animal and field husbandry carried on in this part of the country requires that the best and latest information obtained by the various research institutions and experimental stations of the province and the university be got home to the cultivators. The scheme therefore envisages an exchange, not only of products, but also of information; in fact, not merely a Civic Centre, but a City and Country Centre where city and country may meet for mutual benefit. At the more specially country part of the centre it is suggested that the country people should find not only physical and social conveniences for themselves, their wives and children, who quite frequently come in to town with them, but also informational facilities such as a bulletin counter and show windows and galleries for systematically arranged instructional displays.

Much of the land involved being already owned by the city, it is recommended that the whole of it be gradually acquired as occasion and means permit. No part of it is occupied by buildings of permanent description. Fine, isolated sites, of over two acres each, are available for the Federal Building and for a City Hall at such time as the city may find itself in a situation to so provide itself.

Further necessary provisions are an auditorium and space for flower shows, poultry shows, fur bearing animal shows, dog shows, etc.

A valuable function of the scheme is the creation of a fine avenue of approach to the city along 100 Street from the Canadian National Railway station to Jasper Avenue. This, for the space of two blocks, is shown bordered on both sides by gardens, with lawns, flowers, shrubs and trees, for the cultivation of which this City of the Parklands is well suited. The Federal Building and the proposed City Hall are set back from this approach avenue, overlooking these gardens and viewed from across them.

Another body for which provision is made is the Edmonton Museum of Arts, a very active and valuable institution, which maintains an almost perennial series of exhibitions of art and handicrafts.

The scheme is fairly ambitious and it is not suggested that at the present any great expenditures should be undertaken. It is presented with a view to a gradual step by step development and one of its special purposes is to guide the city policy in such a way that a fine development of the district shall at no time be blocked by short view undertakings unrelated to the general idea.

—*Cecil S. Burgess.*

ONTARIO

The Annual Meeting of the Ontario Association was not so well attended as usual, largely on account of the fact that a considerable number of the Toronto members are now working out of town, and many in other centres are engaged on work which cannot be left for any length of time. The abnormal conditions under which most architects are now attempting to carry on were referred to by the retiring President, Bruce H. Wright, in his opening address. He went on to deal with more encouraging features, among which he noted the arrangements which had been made by the Ottawa Chapter and the Council of the R.A.I.C. for the employment of a group of architects on important work for the Department of Naval Services, on a basis satisfactory to all concerned. He also mentioned the proposed appointment of a Town Planning Commission for the City of Toronto, and the likelihood that such a move would stimulate an active interest on the part of other communities and the provincial authorities.

When routine matters had been disposed of, the gathering settled down to the consideration of matters affecting the future of the profession, ranging all the way from the sweeping schemes of social planning envisaged by the local A.R.G. to the unemotional realism of the N.C.C. As President of the latter body, A. S. Mathers spoke of the tide of new capital which now exists as a result of wartime activity, and the imperative need of keeping it circulating after the war if chaos is to be averted. He believed that it lay in the hands of the architects to render invaluable service to the country by providing the basic ideas for the use of this capital; and stated that the N.C.C. is taking steps to lay the groundwork by making a thorough survey of construction projects deferred as a result of regulations, shortage of materials and other wartime factors. The broader aspects of the problem—national and regional planning to provide a logical and efficient mechanism for our way of life—were ably dealt with by John Layng, member of the Toronto A.R.G. He outlined the work already done by the Group on a study of a definite area just outside the city, and urged the appointment of officially-recognized committees to co-operate in further development. It is evident, however, that if all this effort is not to be wasted, public authorities and the public at large have to be convinced that architects and their work are of real value to the community —a point which was stressed by the Committee on Public Relations in the presentation of their Report. They recommended a much more comprehensive programme than any yet developed, which must be continuous to be effective, and should be planned and carried out by specialists in that kind of work.

The Report of the Standing Committee on Housing, presented by R. S. Morris, outlined the work which had been done in conjunction with Wartime Housing, Ltd., and in consultation with the P.Q.A.A. and the R.A.I.C., with the object of extending the fields in which architects could render the most useful service at the moment, and looking forward to the time when a more permanent programme would become a national necessity. In this connection W. L. Somerville, as Vice-President of Wartime Housing, paid tribute to the very substantial part which the profession had played

in the work of his organization; and stated that the results achieved had attracted the attention of U.S. authorities and provided the basis for some revision of their own methods.

The Annual Dinner, at the Arts and Letters Club, was preceded by the customary hospitality of the Toronto Chapter, and followed by the installation of the new President, R. S. Morris. A programme of readings by Raymond Card, and motion-pictures very kindly shown by Harry G. Haynes, of the Toronto Amateur Movie Club, brought the proceedings to a close; after which the members dispersed to those more informal conferences which are not the least enjoyable features of our annual get-together.

—*Gladstone Evans.*

QUEBEC

The proceedings of the Annual Meeting of the P.Q.A.A. held in Montreal on January 24th have been briefly covered in other columns of this *Journal.* Those activities filled a crowded day. For a summary of the year's activities, reports of the President and Committees should be read when they are published later in the year book. Those who attended the business session in the morning are of course already familiar with them, but further study would not come amiss.

Apart from routine business the incoming Council has some serious problems before it, the fundamental causes of which are so deep seated as to defy early solution. Changing times, changing practises, unpreparedness and lack of co-operation, fluctuation of the business cycle and war are the chief causes. Much of this is beyond control, but the membership at large may rest assured that the new Council will work for them just as assiduously as previous ones and that under the leadership of the new President progress will be made.

Apart from problems peculiar to our Provincial Association, continued study must be given reconstruction—already a familiar word. A special committee led by Campbell Merrett has been meeting for some time and has already submitted reports and memoranda to Council and the Government. It is a subject with many ramifications that every division of human society will view from a different angle. Architects, as employers or employees, are vitally concerned and should ponder the words of Professor Arthur at the Annual Meeting Luncheon: "Architects must think of themselves particularly as a highly militarized group of people. Would not our troops be heartened if they knew that back home plans were being made for better living after the war was over?"

Members who have not filled out and returned Questionnaires sent a long time ago by the Bureau of Technical Services should do so at once.

We appreciate the value of the arduous labours of the R.A.I.C. Council and are wholeheartedly behind the policy of the Dominion body in its activities to produce an all-out war effort of the profession.

Announcement will soon be made of the opening date of a Loan Exhibition which is being sponsored by the Quebec Association. Called "Stockholm Builds", it comes to Montreal for the first time after being exhibited at the Museum of Modern Art, New York and other places where it created much interest. The locale will be Morgan's Exhibition Gallery.

The programme for the thirty-fifth annual meeting of the Royal Architectural Institute of Canada in Montreal on the 20th and 21st of February was published in the January issue of the *Journal.* By the time this number reaches the Architects it will be a "past performance", but judging by the programme it will be something to remember, especially as the formal dinner will be graced by His Excellency the Governor-General and the star speaker will be Grattan O'Leary.

—*Harold Lawson.*

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observed that there was really no market for it outside of the original owner himself. An architect would not ordinarily repeat the design of such an important building as the original structure here in another work; nor would a new client normally desire a similar building. The learned Justice decided that £150 was a reasonable sum for damages under all the circumstances.

Two things should be noted regarding the above decision: It was not contended that the design was incapable of copyright as not being an original artistic work. The judgment is that of a single judge. His reasoning on some of the points involved is not very convincing and the case may be upset on appeal, if an appeal is taken.

LETTER TO THE EDITOR

The Grove Farm, Port Credit, Ont.

Dear Sir:

May I through your columns thank those architects who supplied me with photographs for inclusion in a Canadian number of the English "Architectural Review". I will return all photographs when I have the last one back from England and till then I ask photograph owners to be patient. If any architect particularly wants a photograph back at once and if he sent me his photographs in duplicate I will accommodate him. I do not yet know the month of publication. The Review has in wartime to prepare its numbers months in advance. The number of copies for sale in Canada will be limited by U.K. paper restrictions. When it is printed the R.A.I.C. who financially sponsored the collection of the material will no doubt inform all members of the details of its publication in this *Journal.*

Yours truly,
Anthony Adamson.

OBITUARY

B. EVAN PARRY
Toronto

We regret to announce the death on January 25th, in Toronto, of B. Evan Parry at the age of 66. Mr. Parry was born in London, England, and came to Canada in 1913. On the outbreak of the first great war he returned to his native land, and enlisted with the Forestry Corps. In 1919 he acted as architect in charge of hospitals for the Dominion Government in Ottawa where he remained for 13 years. In 1932 he came to Toronto and was in private practice as partner in the firm of Smith and Parry. For some years he has been on the Editorial Staff of the Maclean Publishing Company, and was responsible for the "Your Home" Department of "Chatelaine". Mr. Parry took a keen interest in architectural affairs and will be greatly missed in the councils of the profession. He is survived by his widow, the former Elizabeth Walker of Perthshire, Scotland, to whom we convey our very sincere sympathy.

ERNEST DANIEL VERNON
Truro, N.S.

We regret to announce the death in Truro, Nova Scotia, of Ernest Daniel Vernon, at the age of 68. Mr. Vernon was born in London, England, and came to Canada at an early age. He is survived by his widow, three sons and one daughter. Mr. Vernon's death is the first since the incorporation of the N.S.A.A.