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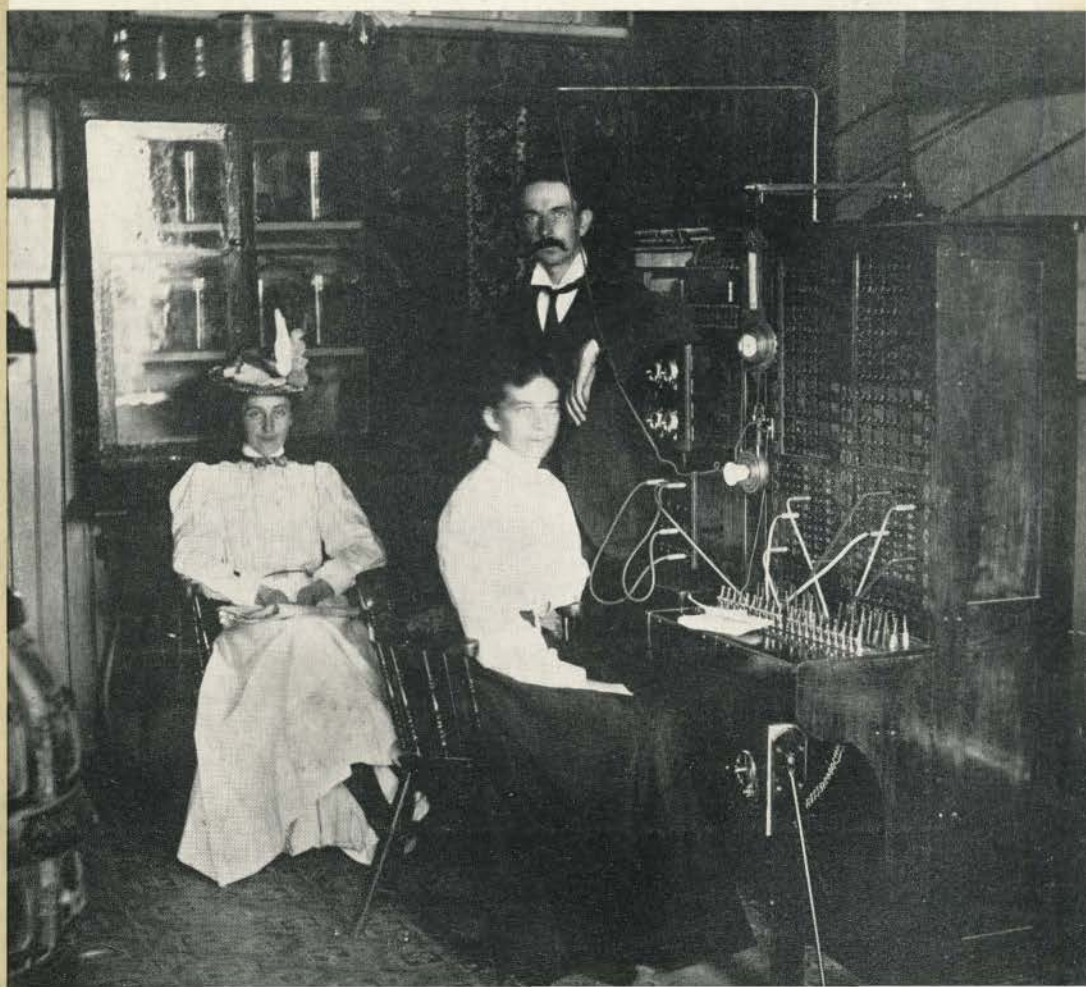
JOURNAL

ROYAL ARCHITECTURAL INSTITUTE OF CANADA



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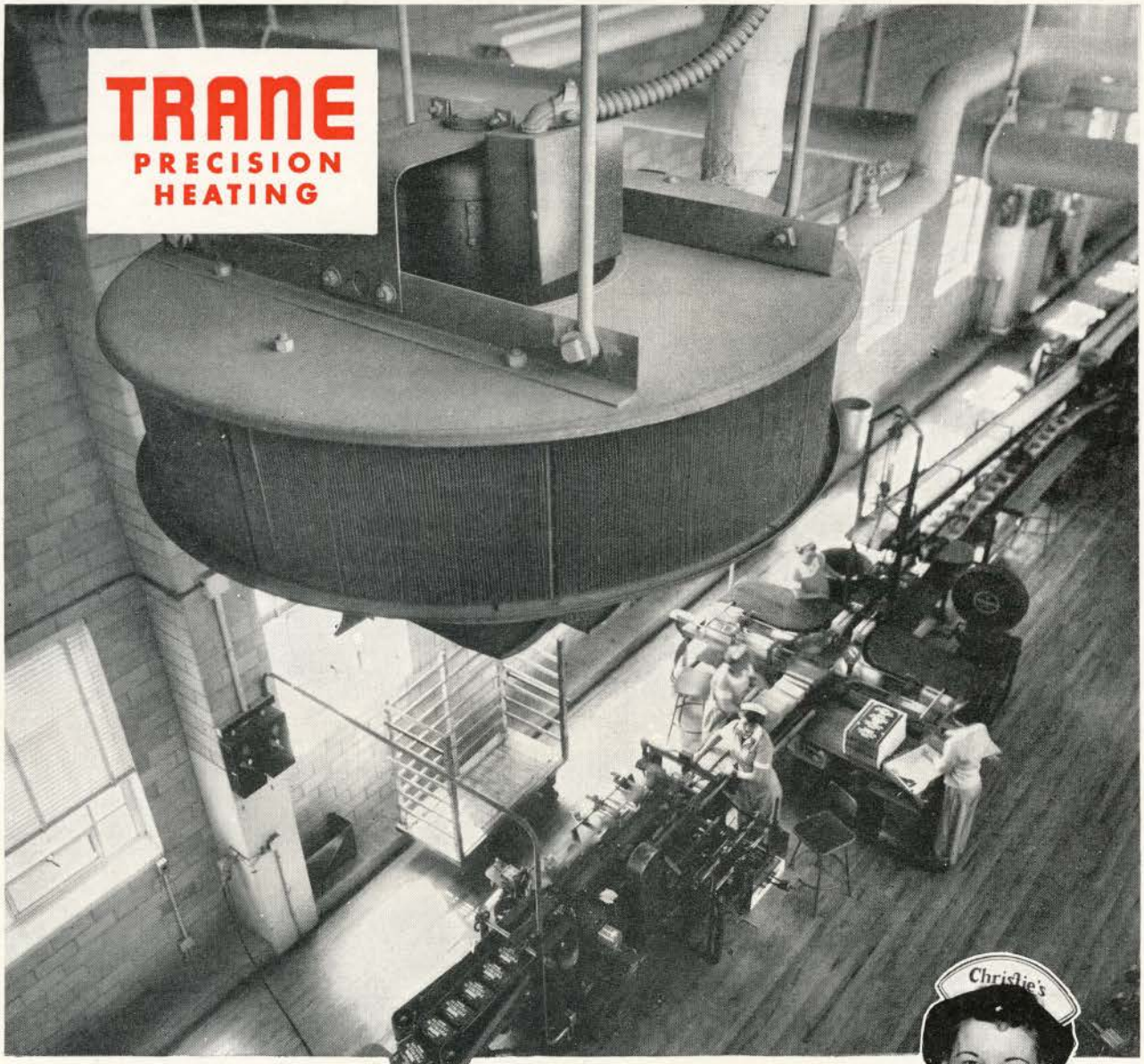

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Serial No 314, Vol. 28 No 10

ROYAL ARCHITECTURAL INSTITUTE OF CANADA

EDITORIAL AND ADVERTISING OFFICES, 57 QUEEN STREET WEST, TORONTO 1

Toronto October 1951

Secretary to the Editorial Board, Mrs Gordon Wry

EDITORIAL

THERE MUST BE many Canadians, like myself, who have gazed with admiration at the objects in the Swedish Shop in New York, and wondered why there was no Canadian shop on the same street.

Canada has all the natural resources of Sweden and twice the population, yet their handicrafts are so immeasurably superior to ours in all fields. It is true we see only the best, and much junk may never leave the village where it was made. The same is true of buildings. Many students and colleagues have returned this year from Europe (including the Scandinavian countries) and told me of the sense of shock they experienced at the sight of poor contemporary buildings. However, to return to handicrafts, we know that our standards are low compared with that of all European countries. The reason for the difference in quality is probably our lack of a cultural tradition. In older countries, skills are carried down from father to son and mother to daughter and, on a larger scale, through the staffs of old established schools.

In Canada, we lack that continuity of handicraft appreciation, which gives vitality to the products of other countries. The situation here is, luckily, far from hopeless. We have enthusiasm, provincial government encouragement in some Provinces, and the stimulus of new Canadians. We have suffered and still suffer from paternalism in Government, and local groups of well intentioned ladies and gentlemen (the terms are used advisedly) who meet regularly, and arrange exhibitions and run shops on behalf of the craftsmen.

At this stage in our cultural development, the interest of these groups is essential. It is their general unwillingness, or inability, to criticize that gives the whole movement, at this level, a dilettante atmosphere. As a consequence, the poor craftsman is encouraged to go on being poor especially if his product sells like hot cakes. A great evil is the Women's Section of the Canadian National Exhibition in Toronto, where, to judge from the exhibits, no standards of any kind are necessary. A mountain of junk dwarfs the little hills of well designed material. There, as elsewhere, the emphasis on technique far transcends quality of design. The exhibitors can see flaws in hooking or flaws in a lace table mat, and give not a thought to the fact that the designs in each case were bad or copied from a transfer. It is a tragedy that so much technical skill can not be directed into artistic channels.

So much heat has been engendered by the fact that I have just sat on a jury of selection at a handicraft exhibition, where the work shown was Dominion wide. Ten years ago, in another Province, I had a similar task, but with a jury that was fearful, to a degree, of hurting the feelings of the craftsmen. As a result, hideous things were approved on geographic or political grounds – craftsmen were misled into believing they were first class and the public was left in a state of complete bewilderment. A report which I wrote was suppressed. This time, the jury was a more enlightened one and excellence or approximations of it was the only criterion. Pottery stood out in a class by itself for high standard of design. Weaving came next, and here, the influence of the new Canadians was evident, especially in rugs. All men's ties (except in a self colour) were rejected. Anyone who saw the beautiful work of Mrs. Saarimen's pupils at Cranbrook will realize to what abysmal depths we have dropped in Canada in this article of male attire. While other crafts showed excellent work by individual workers, the crafts as such did not approach the standards of the weavers or the potters. The leather workers showed ingenuity, but in the same way as the dock side tatoo-er who works on the chests of seamen. Only one article was acceptable. Hooked rugs were rejected in toto for their slavish devotion to pictures done in paint. Rejected, too, were carved wooden oxen and peasants with pipes and those mysterious nude females who emerge from driftwood.

Altogether, it was a stimulating experience. It can be said with truth that, bad as some things were, nothing approached in depravity of design the Hapsburg Salt Cellar of Benvenuto Cellini.

SEVENTY YEARS OF PROGRESS

F. J. MACNAB

The telephone industry has just passed the three-quarter century mark. It was in March, 1876 that Alexander Graham Bell invented a telephone which would transmit distinctly the sounds of speech, and within a year, his invention had been put to commercial use. The Bell Telephone Company of Canada which first undertook the systematic development of the telephone in this country, was established in April, 1880.

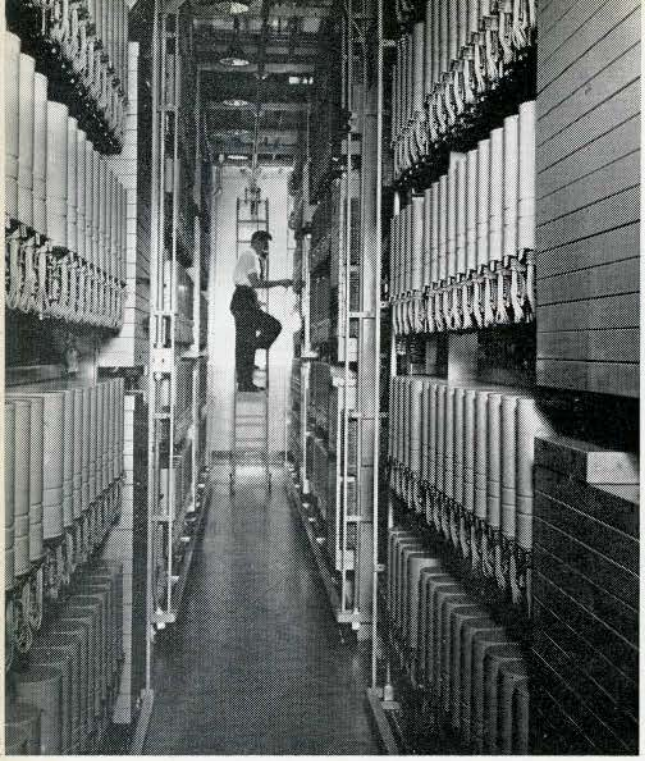
Since those pioneer days, the telephone has developed from localized service furnished to a handful of subscribers into a worldwide communications system. The buildings used by the telephone company, their structure and their appearance have reflected this development. It has not been just a matter of growing big, but of adapting building design to great technical changes and to developing concepts of the industry's relations with the public.

In the early days when telephone wires were strung from rooftop to rooftop, the rented premises housing the "exchange" were often found on the top storey of a commercial building. It was quite a few years before consideration was given to providing the telephone business with a home of its own. Even in large centres requirements were met by renting a room of sufficient size to accommodate the board, with its crude switches for connecting one subscriber's line with another and to store telephone sets, wire and batteries. All activities including storage and what later became known as the "business office" were just fitted into whatever space was available. At first, boys standing beside the board made the connections but they lacked the sense of service which the telephone industry already possessed, and were soon replaced by young ladies who were provided with chairs. In smaller towns, a store or other local business establishment would not only house the exchange but a member of the family would operate it. This sharing of quarters with other business continued to be the practice for many years in numerous rural communities and met the requirements of the times.

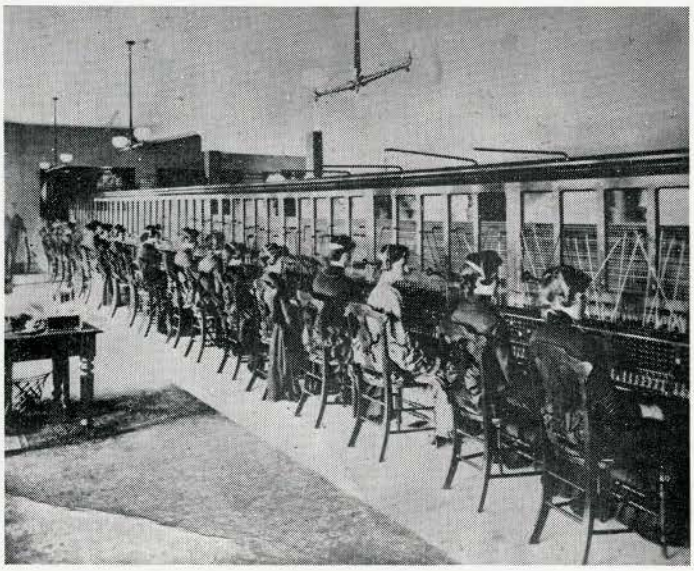
In the cities, however, expansion of the telephone system made it necessary for the Company to set up housekeeping on its own, for even in its earliest days the industry had certain characteristics which influenced the location and design of its premises. The wires-across-the-roof period came to an end when the lines became too numerous to be carried in this manner and civic authorities permitted the Company to erect poles on the streets.

At first the wires were brought straight into the building from the poles. In the case of some smaller offices, it was not uncommon to run the wires from the terminal pole through the transom over the front door. The danger of turning the city streets into a forest of telephone poles draped with unsightly wires was averted by the use of cable. Aerial cable was first introduced in Canada in 1885 and underground cable in 1889. By the turn of the century, underground cables were being brought into most urban central offices through a cable vault located below street level.

Initially, when the number of subscribers was small, it was a comparatively simple matter for the operator to connect one line with any other in the exchange. As the number of subscribers increased and switchboards were extended, the equipment had to be developed so that all connections were still within reach. The next step was the introduction of additional exchanges in the larger cities and the provision of special sections of switchboard to handle the growing number of long distance calls. Trunks between local offices and from local switchboards to long distance had to be provided. It was a case of continuous development and improvement to meet the requirements. As might be expected, the increased size and weight of switchboards, distributing frames, cables and other equipment meant that the type of building



Dial Equipment, Typical Installation, 1950.



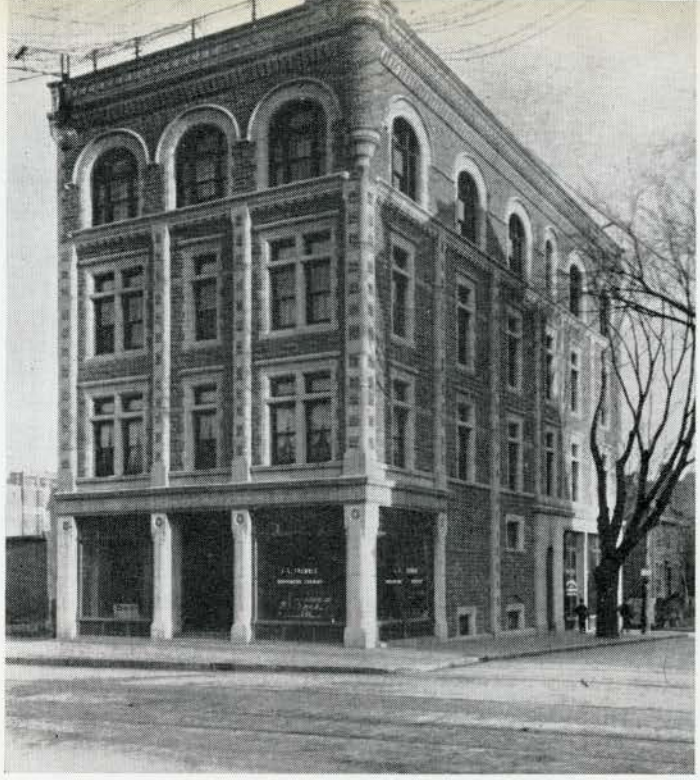
First Exchange built in Canada by The Bell Telephone Company of Canada, British Empire Assurance Company Building, Montreal, 1886.

usually available for rent was not suitable. Ceiling heights were insufficient and floors not substantial enough. Moreover, space for expansion had become an important matter. The telephone industry now required buildings designed for its own purposes.

Through the early years, the industry moved steadily past its milestones. The first Montreal office and exchange of the Bell Telephone Company of Canada had been opened in 1880, in the British Empire Building at the corner of St Francois Xavier and Notre Dame Streets. The first exchange in Toronto was opened in the "Mail" Building in 1881. It was burnt out twice within its first five years, in May 1884 and May 1886, emphasizing the fire hazard of which the telephone industry has always been keenly aware. The first "uptown" exchange in Montreal was opened in 1887, on the corner of St Catherine and Mountain Streets. In 1900, Canada's first exchange to dispense with crank-turning was opened in Ottawa. In 1917, the first vacuum tube repeater units used in Canada were installed at Kingston. They brought about immense improvement in long distance transmission. In 1924, Bell of Canada's first dial exchange was opened in Toronto, and the same year the first long distance cable, taking the place of open wires, was erected between Toronto and Hamilton. The use of lead-sheathed cable, first carried on poles and later placed underground, and of improved electronic repeaters, opened wide new horizons for long distance telephony. In 1932 Montreal was able to speak to Vancouver over all-Canadian lines.

The introduction of dial operation in the 1920s resulted in radical changes in the planning and structural design of telephone buildings. Floors had to be designed for still heavier loads, more ceiling height was required, column spacing had to be changed and many features which had become standard for buildings housing manually operated equipment were not applicable. Concentration of users meant that it was more efficient and economical in large cities to plan for several units of approximately 10,000 lines each in one building. While there might be wide variation in external design, the plan irrespective of size was now governed by rigid engineering standards. The transition from manual to dial was naturally gradual and is still taking place. With few exceptions, full economic use was made of the older buildings.

While dial service was first introduced in large cities, small communities were also suited to this mode of operation, but buildings as well as equipment had to be modified to suit the different conditions. In 1933, the Company's first "community



"Uptown" Exchange Building, Montreal, 1887.

First Company-owned Exchange Building in Ottawa, 1892.

dial" central office serving only a few hundred subscribers was put in operation. Local calls were completed by the equipment in the building while long distance, information and other types of calls requiring operator intervention were automatically routed to a larger exchange which could be up to thirty miles distant. Service equal to that furnished in the large cities now became available to the village subscriber. A good many exchanges of this type, some much larger than those originally built, have been established in recent years and still more are included in the immediate programme.

The trend of development in the design of telephone buildings has kept pace not only with technical requirements but with public taste. The telephone business operates very close to the people it serves. It is not concentrated in a few large plants or distributing centres, but on the contrary requires personal and physical representation in practically every community in the country. Central offices serve both the residential, commercial and industrial areas of large cities, and towns and villages of varied types and sizes.

A public utility is dependent for its success on the goodwill of the people it serves. Like schools and churches, telephone exchanges have to be where the people are. In purely residential areas zoning regulations or other restrictions must be taken into account and it is essential that the telephone building be acceptable to the community. In this respect, the architect's contribution cannot be measured by the size of the job. A telephone building in a large city may be just another good building but in a smaller community it may well be something more. The architect's problem is then to design a building which will meet all technical requirements and be compatible with its surroundings.

Efforts to meet the public in the right atmosphere are highlighted by changes in the design and character of telephone business offices, which have been made much more attractive in recent years. Particularly in the smaller cities, earlier public offices were very much of their period and hence, in retrospect, rather unattractive. A golden oak counter was the dominant feature, apparently indicating a desire to keep both business and those who brought it at arm's length. This counter was flanked at one end by the cashier's position, where any money transaction, no matter how small the amount involved, had to take place through a grilled wicket. The brown linoleum on the floor was in keeping with the wall paint, which had been chosen for durability rather than colour value. While this scheme of interior decoration did not

include a "keep out" sign, there was certainly no "welcome" mat at the door.

Today's business office is an entirely different place. The counter has disappeared. The clerk who stood behind it has become a "service representative," sitting at an individual desk, ready to discuss the visitor's business in an easy, personal manner. There is no need to use marble and other expensive materials in order to attain suitable and pleasing surroundings. The many new materials now available for interior finish and floor covering, as well as the modern types of lighting fixtures, allow the creation of a friendly, attractive atmosphere at reasonable cost. The same is true of the finish and furnishings of the cafeterias in the larger centres and other rooms provided for employees in their off duty hours.

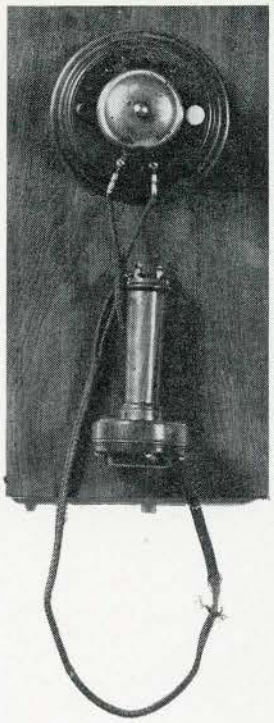
The second world war brought extensive changes to the telephone industry. In the immediately preceding years, little expansion of telephone facilities was needed to keep up with the gradual increase in use. War conditions aroused pressing demands for telephone service and at the same time, greatly restricted the means of extending it. Although available facilities were carefully conserved nonetheless they were used up. New equipment was available for only the most urgent use and new building was reduced to a minimum. Meanwhile the demand for service mounted steadily and both its extent and its persistence indicated that post-war use of telephone service would be on a far higher level than in the preceding period. In 1945, therefore, The Bell Telephone Company of Canada was confronted by a tremendous demand for new service and its existing facilities were loaded to capacity. The Company had anticipated the situation and prepared a far reaching programme of expansion but the physical components of telephone service cannot be produced out of thin air and even when they have been produced it takes time to get them into service. More than a year is needed to complete a telephone exchange building of very moderate size and to install the equipment.

The programme was launched at the earliest opportunity. In the post-war period more than twenty architects in private practice in Ontario and Quebec have been retained to design new buildings and extensions to existing ones, many of the latter being large and important projects. A construction programme of this magnitude under abnormal conditions has presented difficulties but with the best efforts of those concerned in this essential phase of the programme many buildings have been erected and are now in service. A large part of the building programme has been completed but the part that remains to be done represents a sizeable undertaking.

The Bell Telephone Company of Canada now serves more than one and three quarter million telephones in the provinces of Ontario and Quebec and there are still many thousands of applications for service to be filled as facilities become available. Growth appears likely to continue at a good rate for some time yet. Technical development will continue also, and new improved means and methods of giving service will be introduced as they are proved to be practical. This will mean in the future as it has in the past that the design and construction of telephone buildings will evolve to meet the new requirements.

BELL TELEPHONES *(see opposite page)*

1. Alexander Graham Bell's telephone and call bell used in 1878 at Hamilton by subscribers to the first telephone exchange in the British Empire. **2.** Blake Magneto wall telephone mounted on floor stand for use behind chair of an executive to enable him to use the telephone without leaving his desk. About year 1885. **3.** One of the first desk telephones. About year 1885. **4.** Long Distance Magneto Wall Telephone. Year 1891. **5.** Blake Magneto Wall Telephone Set. Used from 1880 to 1900. **6.** Combined Telephone Set. Year 1937.



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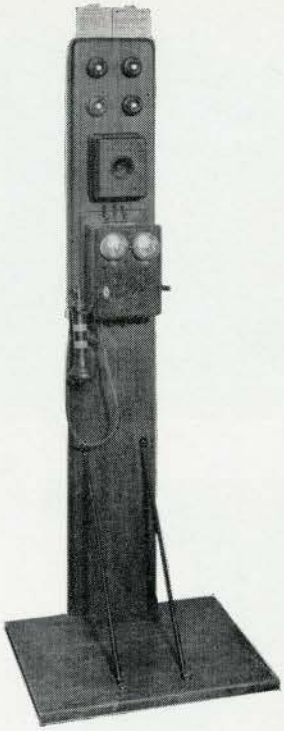

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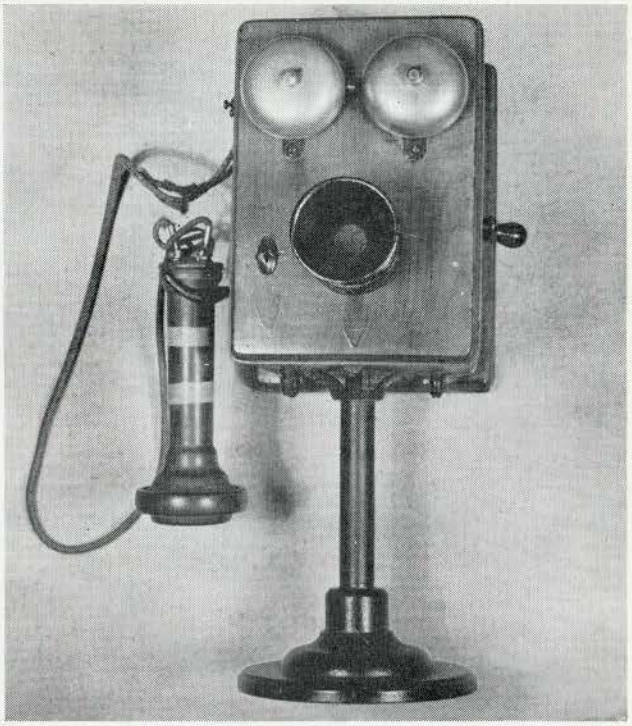

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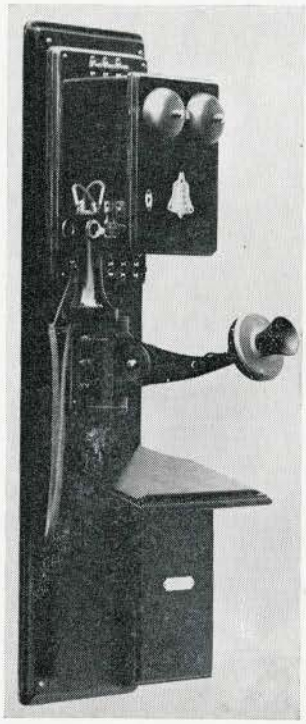

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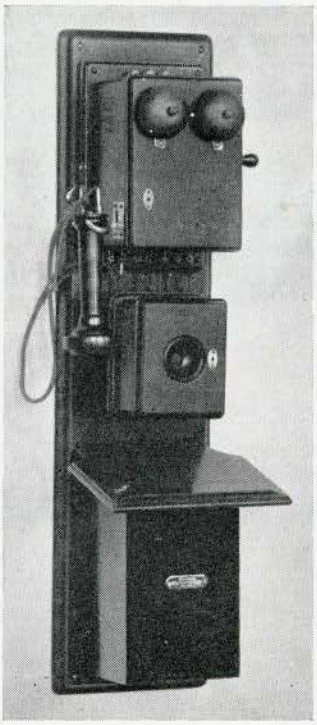

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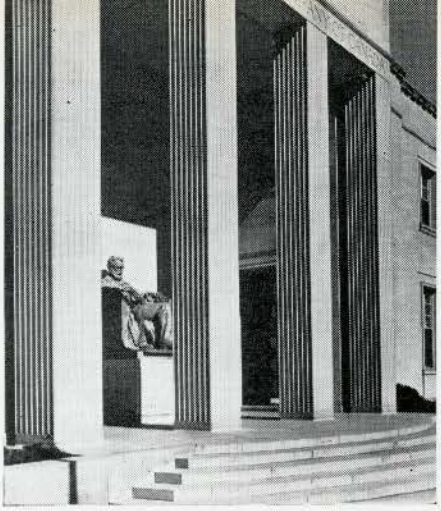
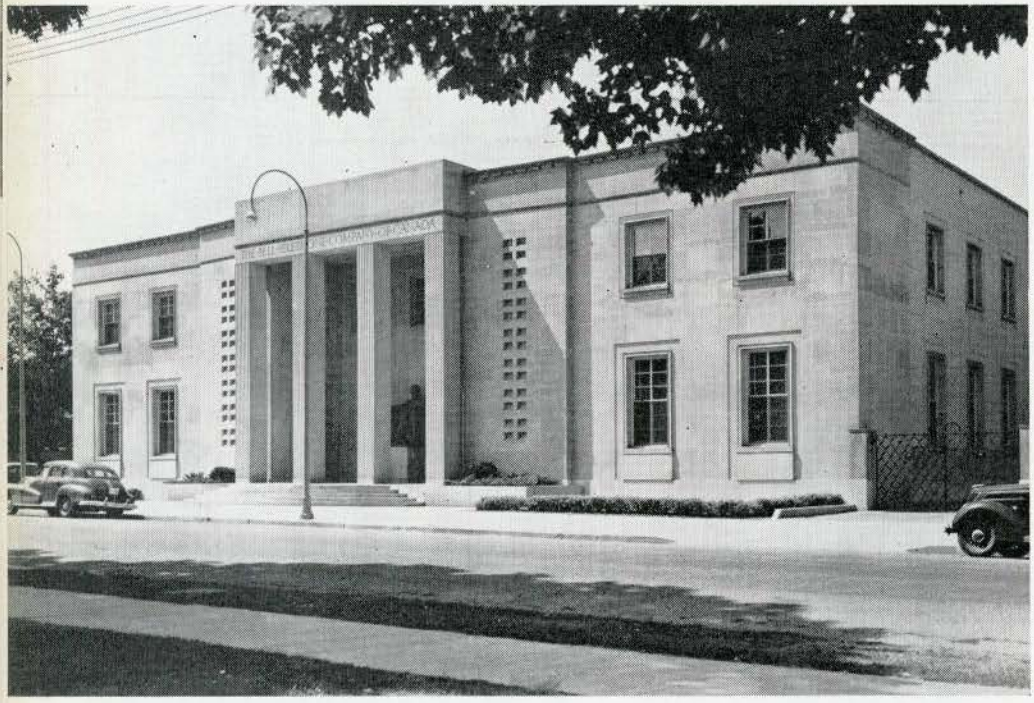
BELL POSTWAR BUILDING

On the following fourteen pages of illustrations are shown Bell Telephone Buildings in Canada, representative of the postwar expansion of The Bell Telephone Company of Canada.

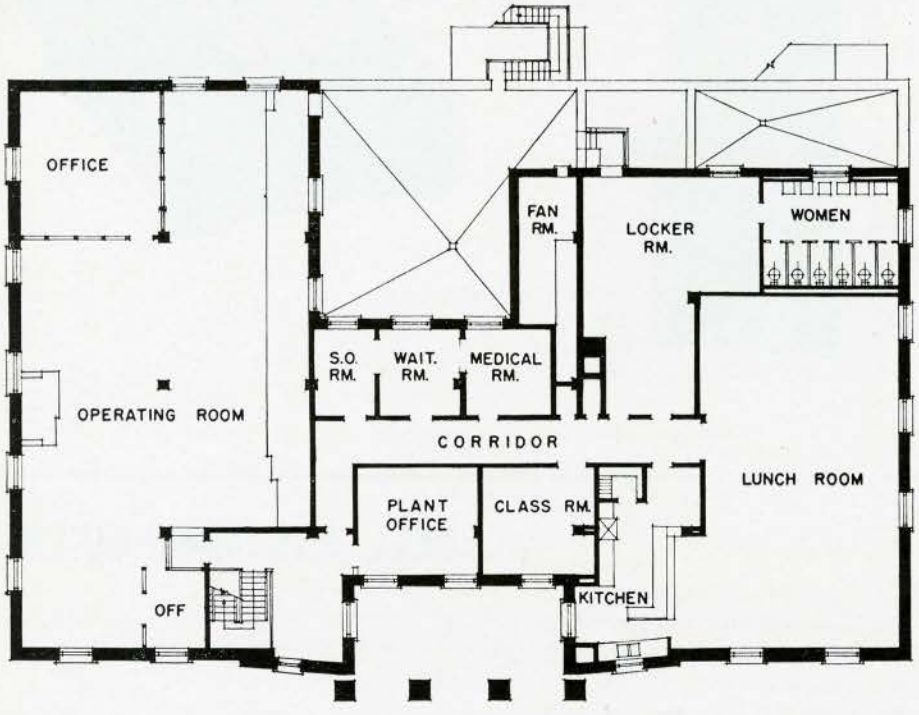


HAYWARD STUDIOS

BUSINESS OFFICE



WARNER BROS



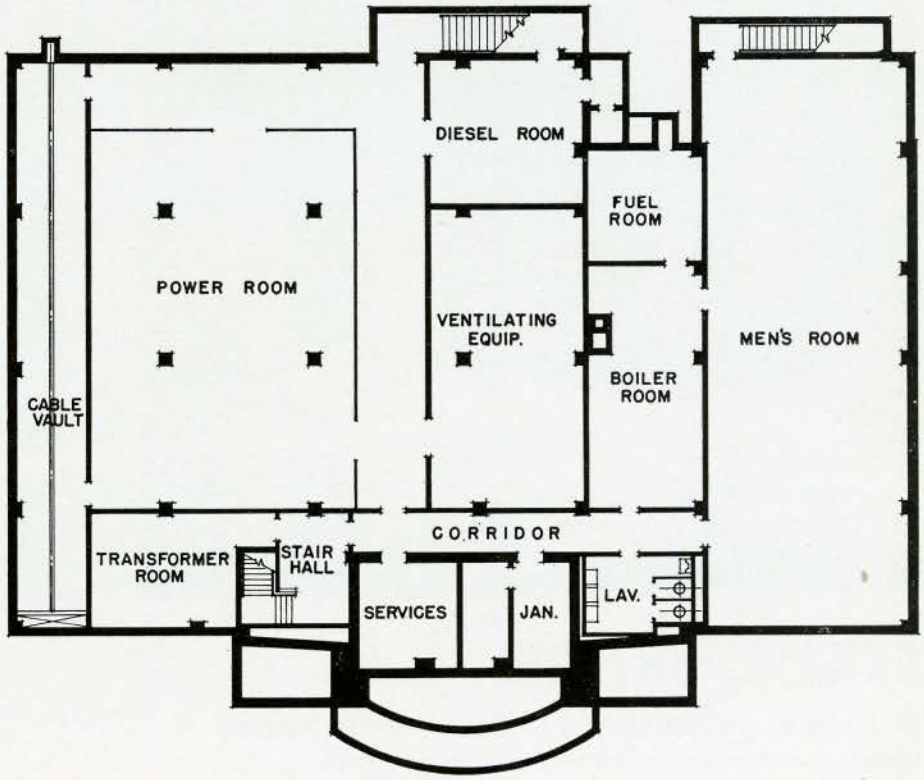
2ND FLOOR

BRANTFORD, ONTARIO

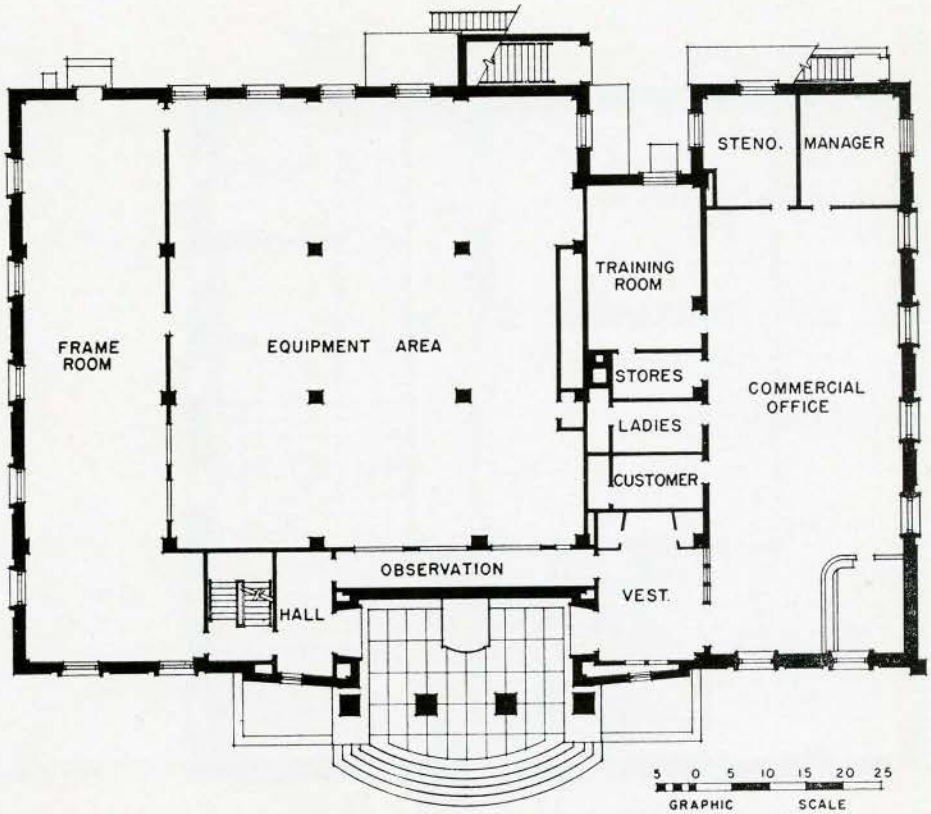
MARANI AND MORRIS, ARCHITECTS

Krumm, Young & Company Limited, Structural Engineers
Karel R. Rybka, Mechanical Engineer
Johnson Bros. Company Limited, General Contractors

BASEMENT



1ST FLOOR

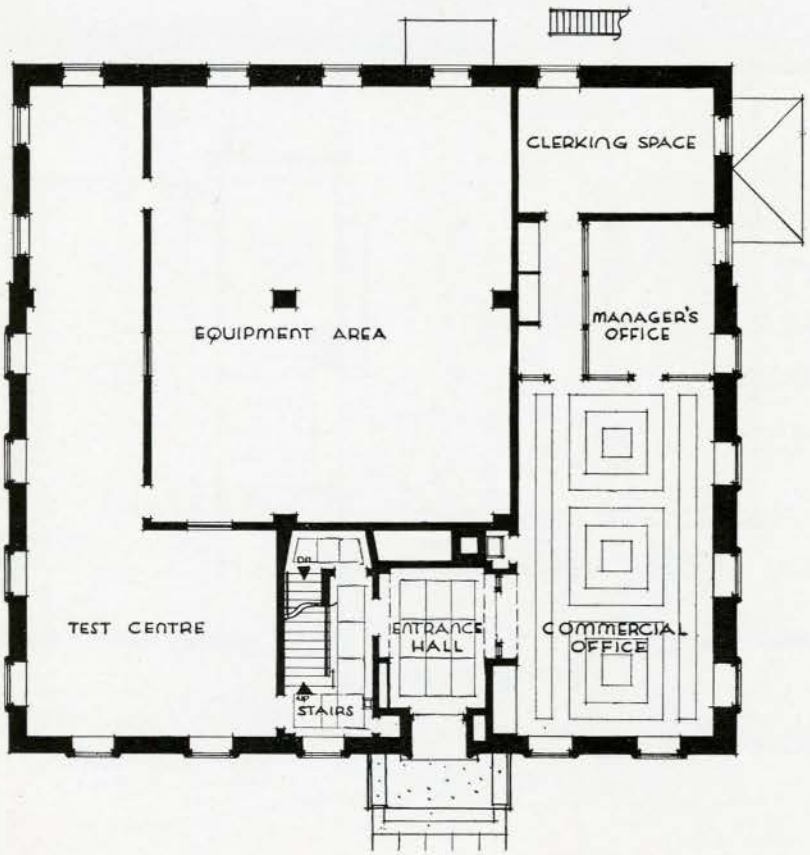


HAYWARD STUDIOS

ORILLIA, ONTARIO

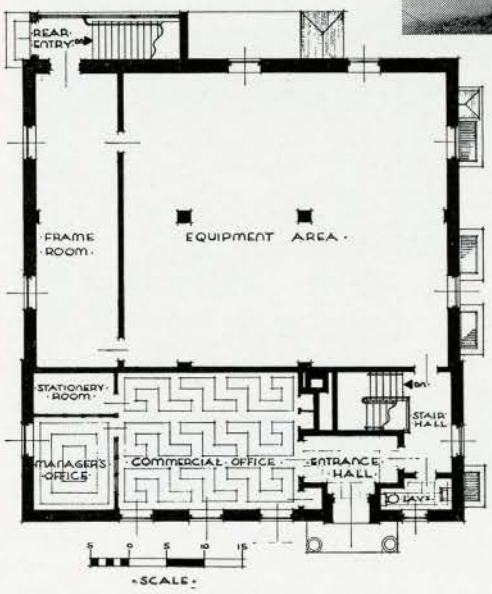
MURRAY BROWN & ELTON, ARCHITECTS

Wallace, Carruthers & Associates Limited, Structural Engineers
Karel R. Rybka, Mechanical Engineer
Dickie Construction Company Limited, General Contractors



1ST FLOOR (Second floor is shown opposite)

▼ 1ST FLOOR

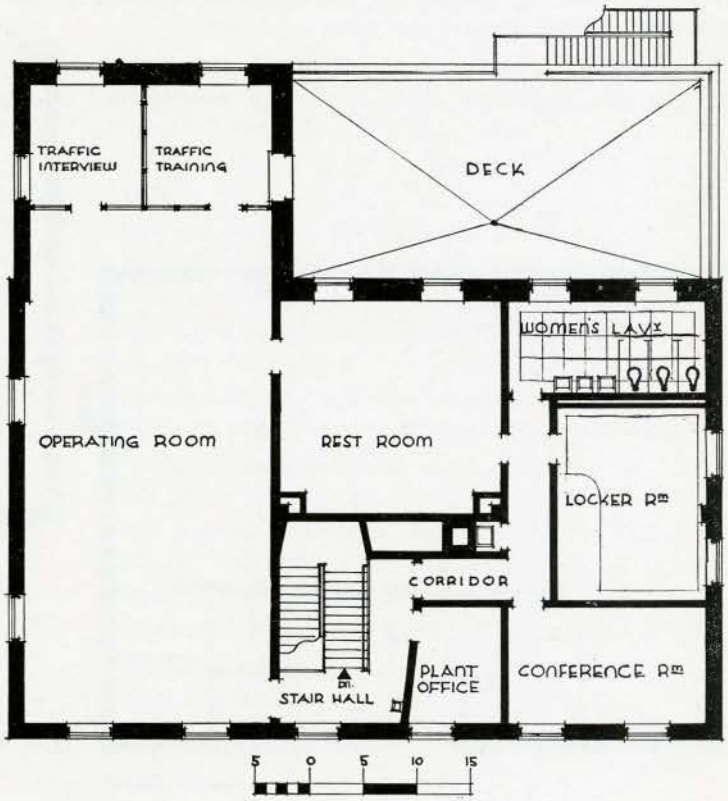


PORT CREDIT, ONTARIO

MURRAY BROWN & ELTON, ARCHITECTS

Wallace, Carruthers & Associates Limited, Structural Engineers
S. M. Peterkin, Limited, Mechanical Engineers
Wells & Gray Limited, General Contractors

ORILLIA, ONTARIO



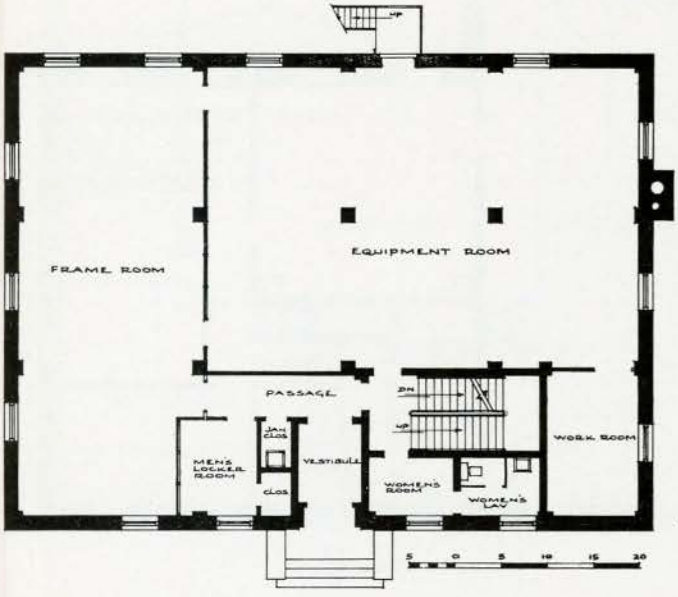
2ND FLOOR

MARVIN FLATT

EASTVIEW, ONTARIO

HAZELGROVE AND LITHWICK, ARCHITECTS

T. G. Anglin Engineering Company Limited, Mechanical Engineers for Heating only
Ross-Meagher, Limited, General Contractors



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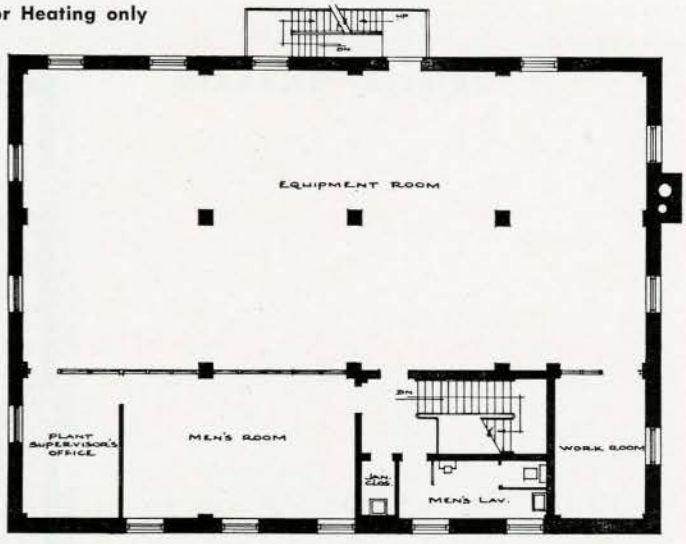


2ND FLOOR

TELEPHONE BUILDINGS

THE MODERN TELEPHONE BUILDING

F. J. MACNAB

The modern telephone building is as much a working part of the telephone system as the familiar instrument in the subscriber's home or office. The design and construction of the telephone building serve one main purpose; the housing and protection of equipment vital to this service.

The type of telephone building most familiar to the general public serves all the telephone needs of the small to medium-sized, self-contained community and fulfils a number of different but related functions. It contains the frames to which all the telephone lines in the community are connected and through which they are distributed to switchboard or dial appartus. It accommodates the interconnecting equipment for local service which may be either dial operated equipment or an operator-served switchboard. Space is also required for the power equipment including batteries and, in many cases, provision is made for the installation of a diesel-driven generator for emergency use should occasion arise. Usually the building houses also the business office where the public transact their business with the Company. Such telephone buildings provide working space for the employees assigned to various duties, and the rest rooms and other personnel facilities needed, including where necessary, facilities for meals. Office space is usually required for clerical and supervisory staffs associated with the telephone work in either the immediate locality or a wider area.

More specialized types of buildings are found in larger cities where several telephone centres are needed. Usually each building is devoted to one main operating purpose, such as the large-city dial centre building which houses several dial central offices, or the separate long distance centre building. In suburbs or small separate communities, the telephone building may house only dial equipment for local service. Such units operate by themselves with systematic supervisory devices reporting to a centre elsewhere on the occurrence of trouble in the apparatus. Periodic maintenance reviews are made by crews located at a nearby centre. Any call dialed into such an office and requiring an operator's attention is routed automatically to another centre where such attention is available. Similarly self-contained buildings, now being constructed regularly by the telephone industry, are the repeater stations spaced along cross-country cable routes to house the equipment for amplifying the voice.

Another type of building distinctive to the telephone industry is the "work centre," where fleets of specialized company vehicles are serviced and stocked up with materials used in the construction, installation and maintenance of the telephone system. These buildings usually are located in medium to large cities.

The location of a telephone building is not a matter of guesswork. An equipment building must be close to the wire centre, that is, the most practical and economical point of distribution for cables and wires. Lead-covered telephone cable is expensive and a lot of money can be either saved or spent depending on the accuracy in determining the wire centre. Studies and surveys are made to forecast the potential telephone service requirements, both residential and commercial, in the area to be served. The result of these studies not only determines the location of the building but also its size, both initially and through possible future stages of extension. On the whole, judgment and experience, along with full knowledge of available facts, usually make adequate provision for normal growth conditions.

Since the cost ratio of equipment to building is

usually about 3 to 1 initially, increasing to probably twice that figure as more equipment is added to care for growth, it is obvious that planning for the future is highly important with regard to both site and building. Moving to a new site during the life of the equipment is very expensive and must be avoided. The need for future extension is usually predictable, and since it must be achieved without disruption of telephone operation, the whole question must be thoroughly considered at the time of planning the initial building. Extension either laterally or vertically may be allowed for and, if vertical extension is probable a flat roof is used on the initial building. Extension possibilities also pose a designing problem; the building should be pleasing to look at not only initially but also with one or two storeys added, or with a lateral extension.

The telephone business is probably one of the few commercial enterprises where a site on a busy street is not necessarily an advantage. On the contrary it may be a detriment. Land values on main streets are usually high, and if at some future time additional ground is required, it is likely to be costly. Fire hazards are greater in built-up areas, while the dust and noise resulting from heavy traffic reflect adversely on operating. If the structure includes a public office where customers may pay accounts and transact other business with the Company, public convenience must be considered. However, a quiet location a block or two from a main thoroughfare is often more convenient to the majority of customers.

In the design of every telephone building, whatever its purpose, the keynote in detail design of the building and its services is the same: every precaution must be taken to preserve continuity of service. Possibly some architects have felt that fire protection, for example, both external and internal, is overemphasized, but a small fire can readily disrupt a large number of lines and inconvenience many people.

The planning of a telephone equipment building is a specialized job. What to do and sometimes what not to do have been learned the hard way. Invariably the equipment layout governs, and since equipment follows rigid standards the architect has no latitude in planning areas to accommodate it. Restrictions apply not only to the plan but also to the structure. Variations from standard in column spacing or ceiling clearance, for example, are immaterial in many types of buildings, but just not permissible in telephone buildings.

When an architect is retained to design this type of building complete floor plan studies are prepared by the Company's architectural and engineering staffs. These studies are fully dimensioned and show, in addition to the floor layout, all special building features which are governed by the equipment. These include ceiling and beam clearances, location of holes and slots for cable runways, location of the numerous inserts from which apparatus is to be hung, and many other details. Light and power services and their distribution must tie in very closely with the telephone equipment. The whole job is one of close coordination between the architect and the telephone equipment engineer.

Telephone equipment is heavy and except in the case of small installations, floors are designed for a uniform live load of 150 lbs. per square foot. This figure may even be exceeded if the heavier equipment, such as power plant, is located elsewhere than in the basement. Reinforced concrete structural framing is used for all typical equipment buildings and vibrated concrete is standard, in order to reduce the size of structural members to a minimum. Vibrating the concrete may, however, be omitted in small communities where local contractors are not familiar with the method. The solid concrete floor slab is standard, to provide for wide span and heavy loading, and to afford means of installing facilities for hanging and securing equipment at practically any point. Study has been given to the more recently developed types of fireproof floor construction, with a view to reduction in dead load and in cost, but they just don't meet all the requirements. Full advantage is taken of the use of plywood forms, particularly in the equipment areas. Standard practice is to apply paint directly to the concrete surface, resulting in a very satisfactory job without the use of plaster.

Many features of modern building practice have been adopted to meet the requirements of the newest types of telephone equipment. Dust, while not of major concern in the operation of manual equipment, is very important in dial installations where the mechanism is much more delicate. Imperceptible dust particles on the switches soon make their presence known, resulting in dissatisfied customers and high maintenance costs. The substitution of oil for coal in heating was a step in the direction of dust control, but only a step. Modern practice in the larger installations which frequently are situated in urban locations where dust is more prevalent, is to seal all windows in the areas housing the switching equipment and to supply filtered air from a central unit. The layout of dial switchrooms is designed to minimize traffic through them, with the object of lessening the circulation of dust and lint.

The small community dial exchanges and the

long distance repeater stations, where the mechanism functions with only periodic attendance, give little opportunity for the architect to exercise his æsthetic skill. Yet even in designing these small buildings there are still important jobs for him to do. A freeze-up in a repeater station would affect vital service between large cities. Because the building is isolated, electricity is the obvious answer to the heating problem. This in turn means insulation to a high degree so that heating costs will not be excessive, and the maximum protection be provided. The architect's job here contributes to the all-important continuity of service, which depends as heavily on the perfect functioning of the smallest building as of the largest.

In many communities the telephone public office represents the company to a majority of the customers. In most instances, it is a part of the general telephone building. Until recently, it was customary to embody the public office space in the block of the building, although its function was entirely different and its requirements as to floor load and other features varied from those of the equipment areas. The new approach is to consider the business office as something apart from the equipment block and design it semi-detached. This plan makes possible a better proportioned business office and also permits more flexibility in the equipment areas. Further, it will quite likely produce a more interesting looking building. Although such a scheme requires more land, the practice already mentioned of choosing sites away from main thoroughfares makes it possible to keep land costs in proper proportion.

Providing accommodation for an ever increasing number of motor vehicles, and for the work operations associated with their use, is another important feature of telephone building activities, particularly in larger cities. A building for these combined purposes is a self-contained centre for certain operations in a certain area, and it is better described by the telephone designation "work centre" than by the customary appellation of garage. As most telephone motor vehicles are operated as working units rather than merely as transports, they require, besides ordinary automotive servicing, facilities for replenishment of work supplies and for servicing of work equipment. Accommodation for their operators or crews, for servicing and supplies personnel and for office forces directing these varied activities is needed.

Work centre sites, like those for equipment buildings, are selected as close as possible to the heart of the area to be served. Access to main traffic arteries is of course a major consideration. Since the governing conditions are always very similar, the buildings follow a well defined pattern with capacity the only variable in the design.

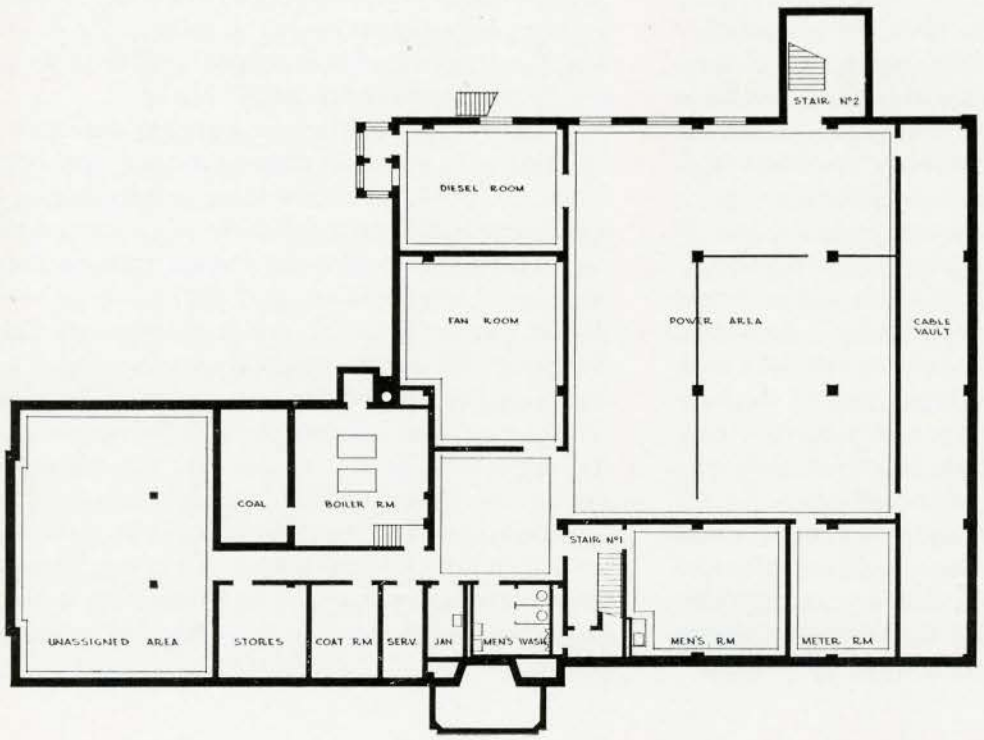
Experience has shown that in large cities approximately 100 vehicles is a workable unit for accommodation at one point. Suitable accommodation for a smaller number of vehicles would tend to be uneconomic while a larger number would cause congestion and increased operating costs. The single floor design is basic for the garage section; multiple floor design would save in ground area but be less efficient in operation. The usual layout basis is the 60 foot span, which allows for two rows of vehicles with a wide driving aisle between. Larger centres are two spans wide, giving accommodation for four rows of vehicles and two driving aisles. Several of these larger buildings have in fact been designed with 120 foot clear span; the parking layout is exactly the same but the absence of columns allows rather better manoeuvrability. The construction conforms to a high standard. Due to the long spans, structural steel is naturally the most desirable material for roof framing, and either steel or light-weight concrete for the roof deck. Facilities for speedy entrance and exit and for the night servicing of vehicles are controlling factors in both general and detail design. Garage doors are motorized, and full servicing facilities are provided. Heating and lighting are of the most modern design. Finally, adequate provision is made for the employees who work in the building and those whose activities are centered there. The part of the building housing office workers and other facilities including space for stores may be either one or two storeys, integrated with the garage section but so designed that either section can be readily extended. Frequently such a building is quite prominent; it follows the modern trend in the design of industrial buildings so that it will be an asset to the neighbourhood.

Whatever the particular purpose a telephone building is to serve, however limiting may be the bounds imposed by engineering requirements, the architect still finds considerable scope for the exercise of his skills. Telephone service must be guarded against interruption, and the buildings which shelter telephone people and equipment should be designed with this necessity always in mind. There must be due regard for economies of construction and upkeep, but proper functioning cannot be sacrificed for economy's sake. Nor can the amenities be overlooked: telephone buildings must suit the convenience of employees and the public and be pleasing to the passer-by. To meet these requirements will always be an interesting problem for those responsible for the design of telephone buildings.

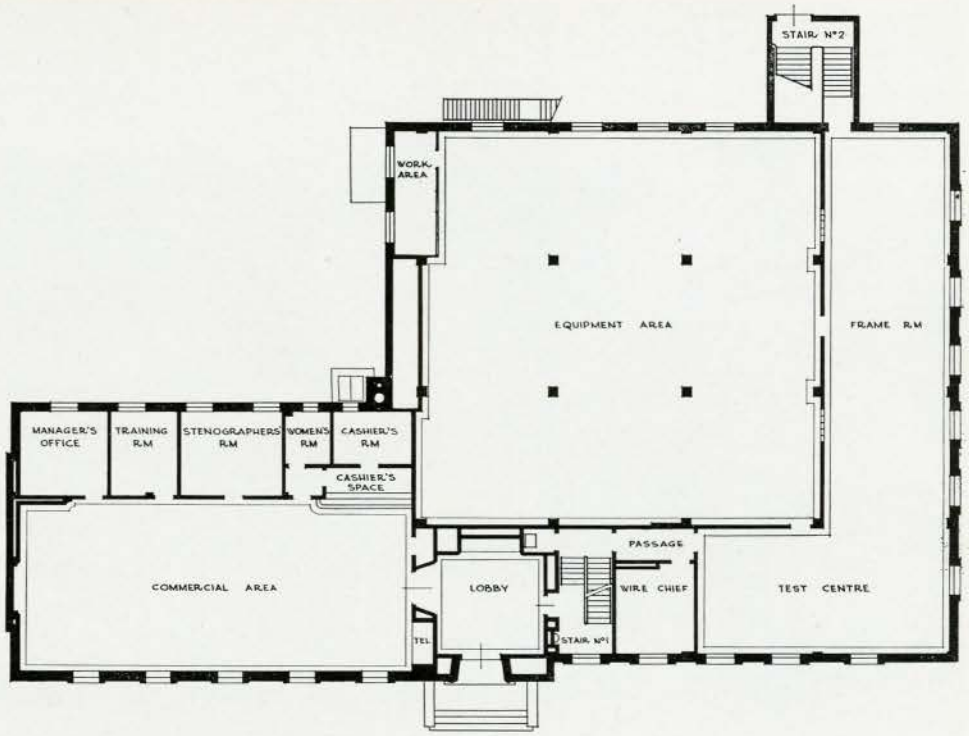
SAULT STE MARIE, ONTARIO

ALLWARD & GOUINLOCK, ARCHITECTS

Wallace, Carruthers & Associates Limited, Structural Engineers
Karel R. Rybka, Mechanical Engineer
A. F. Byers Construction Company Limited, General Contractors

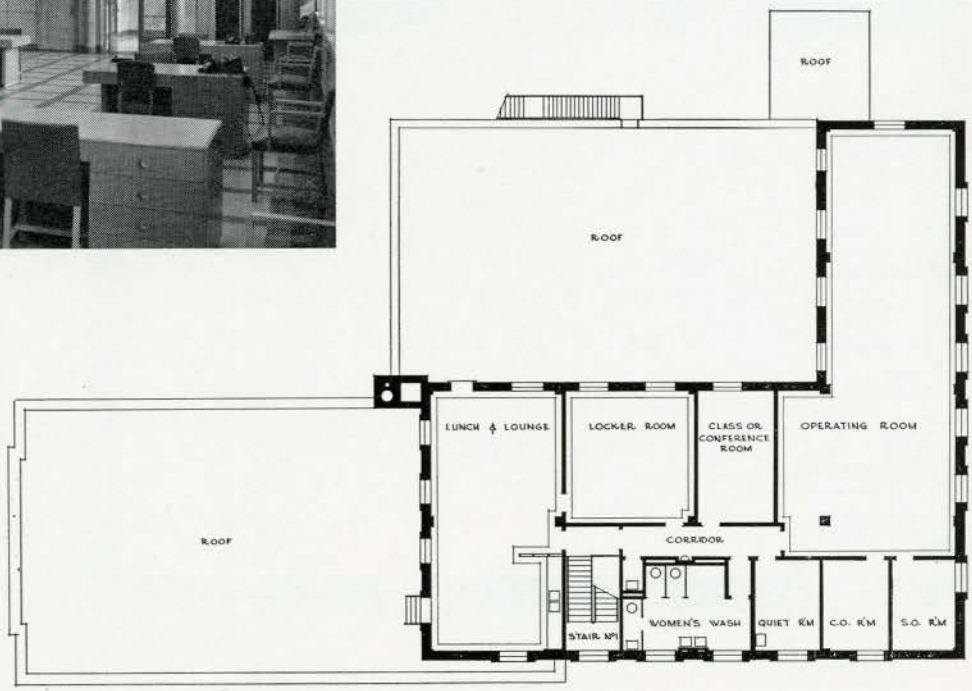


BASEMENT

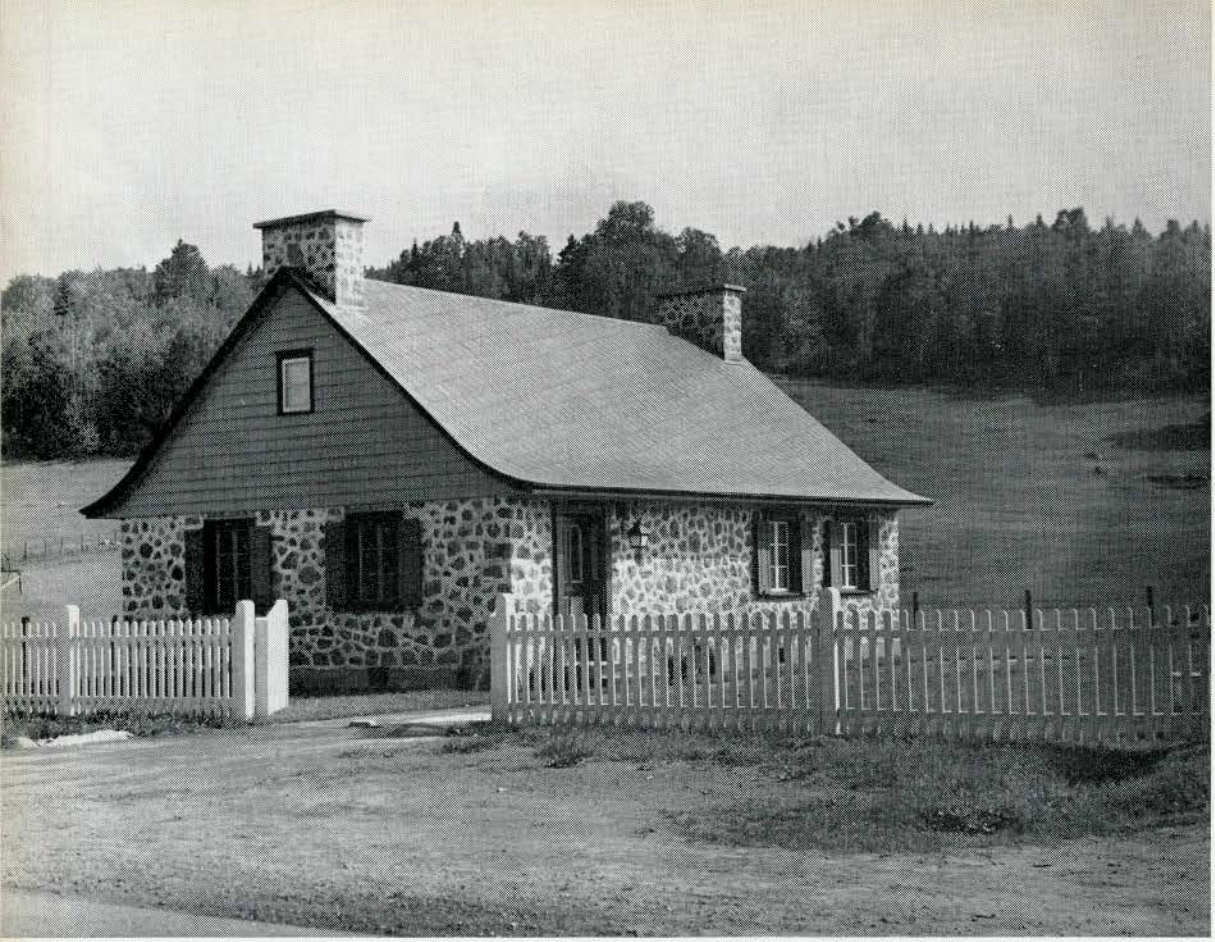


1ST FLOOR

BUSINESS OFFICE



2ND FLOOR

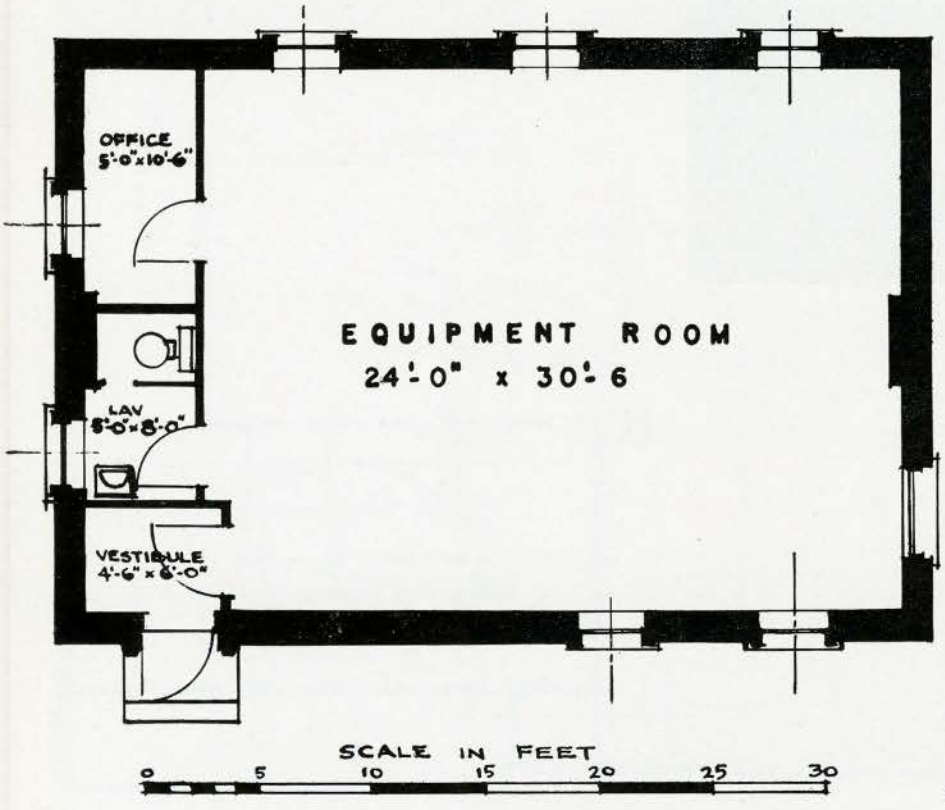


HAYWARD STUDIOS

NOTRE DAME DES LAURENTIDES, QUEBEC

H. ROSS WIGGS, ARCHITECT

Wiggs, Walford, Frost & Lindsay, Consulting Engineers
Bergerville Estates Limited, General Contractors



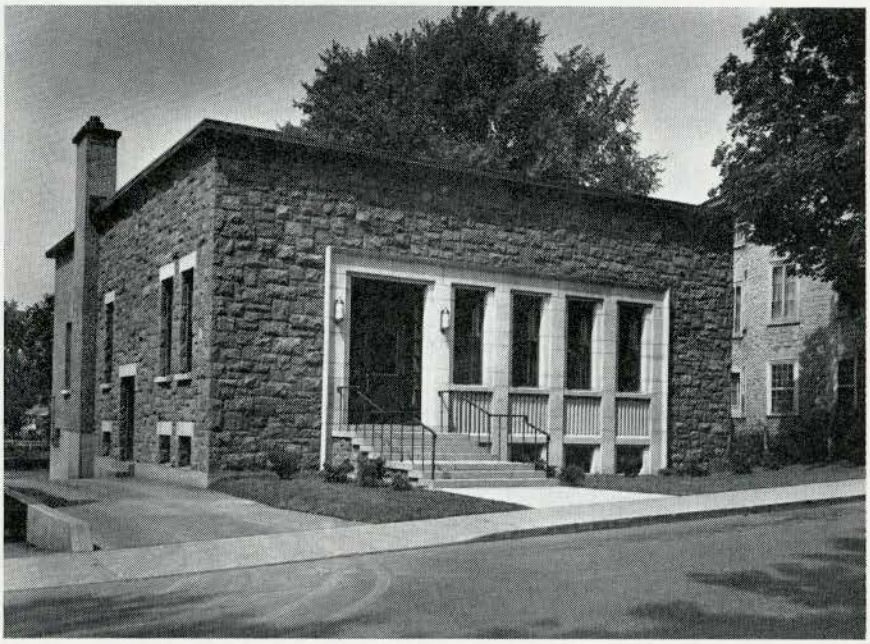
GROUND FLOOR

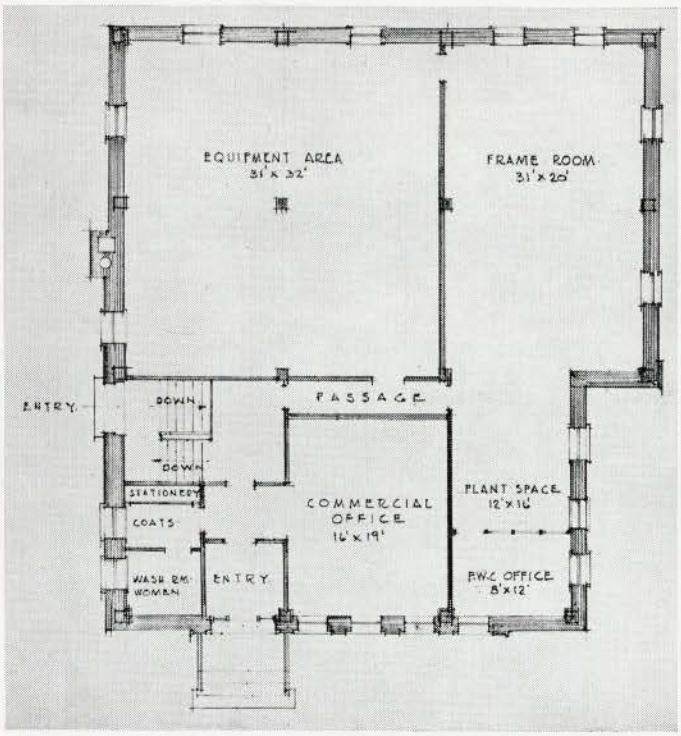
STE THERESE, QUEBEC

HENRI S. LABELLE, ARCHITECT

Brouillet & Carmel, Structural Engineers
L. Gordon Tarlton Limited, General Contractors

HAYWARD STUDIOS





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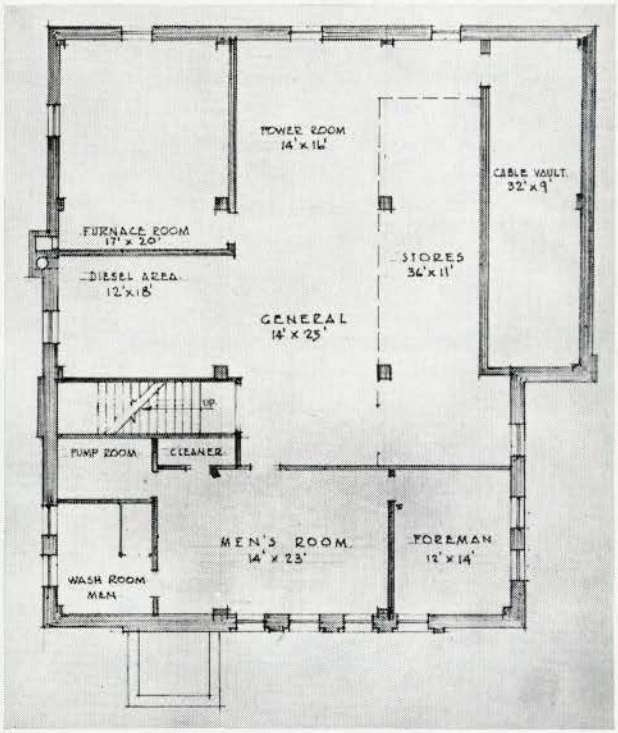

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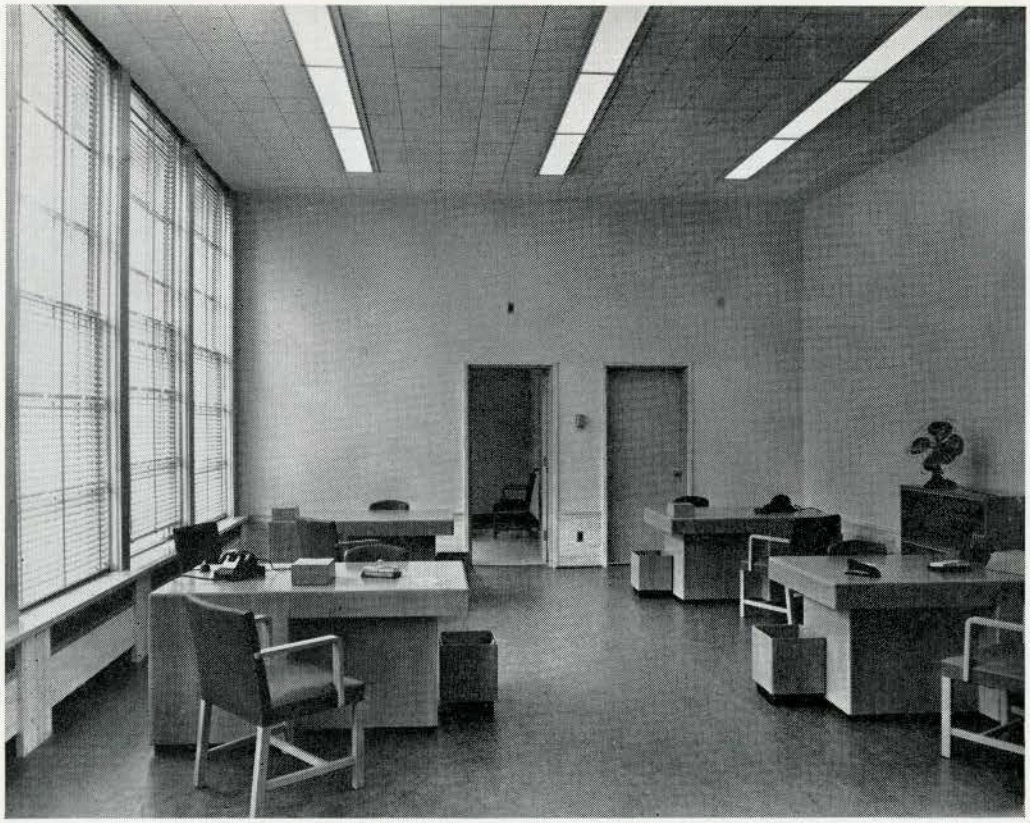


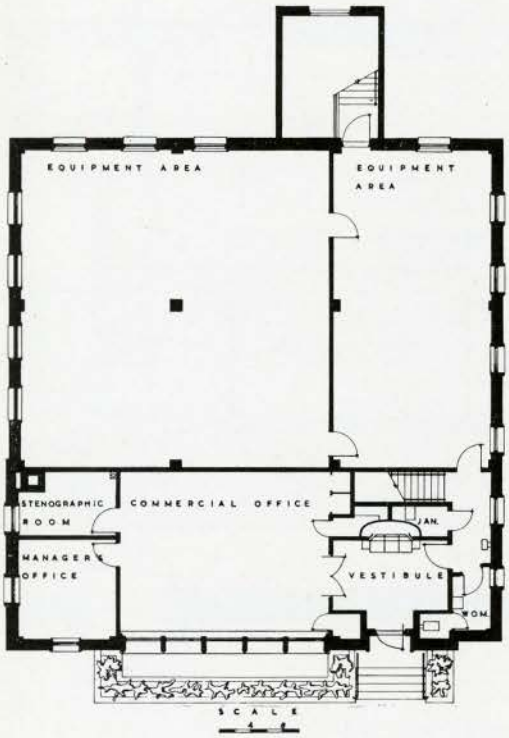
HAYWARD STUDIOS

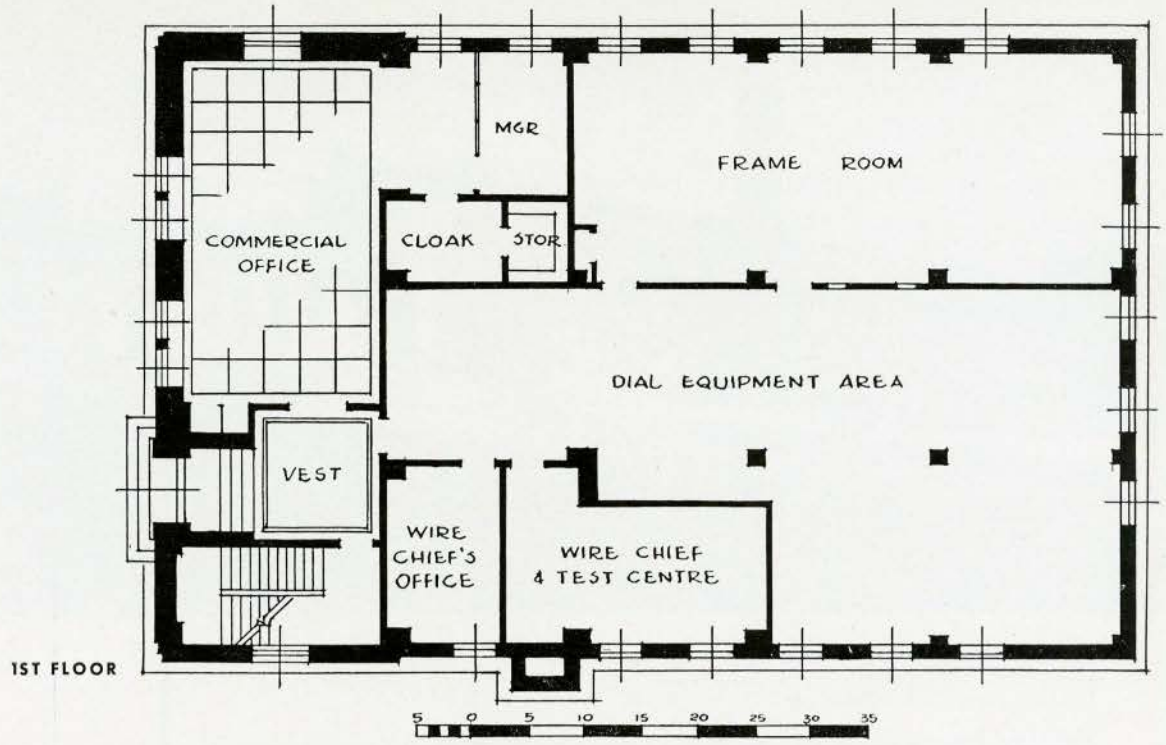
BUSINESS OFFICE

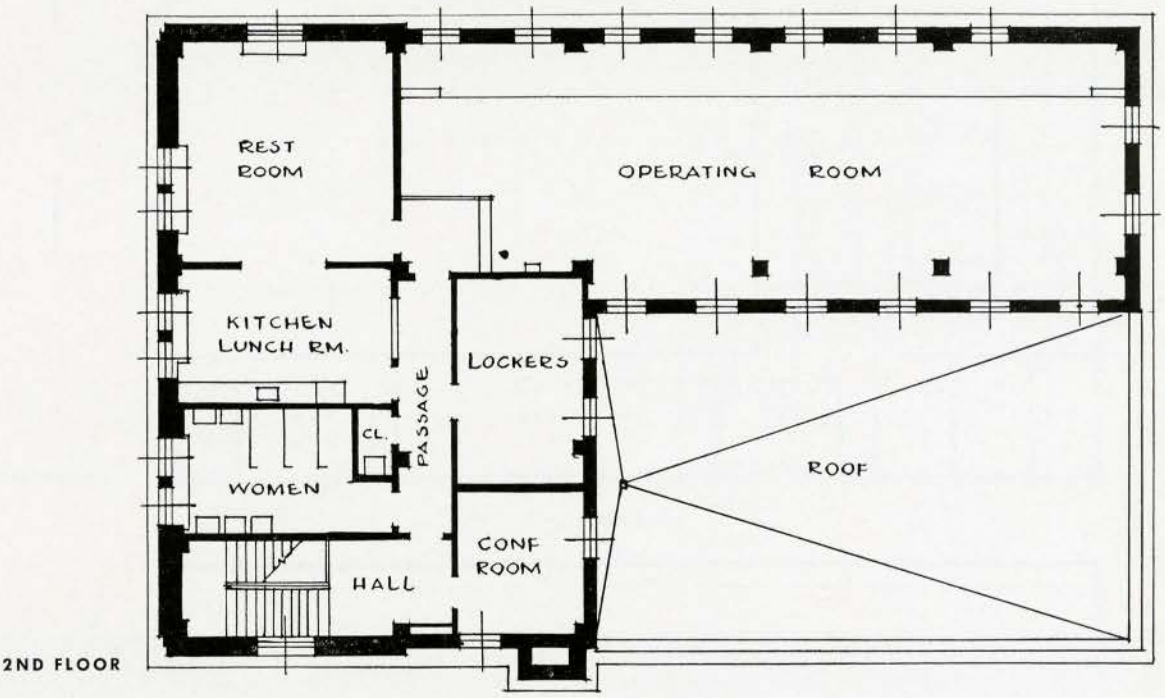
BURLINGTON, ONTARIO

PRACK AND PRACK, ARCHITECTS

Canadian Engineering & Contracting Company Limited, General Contractors





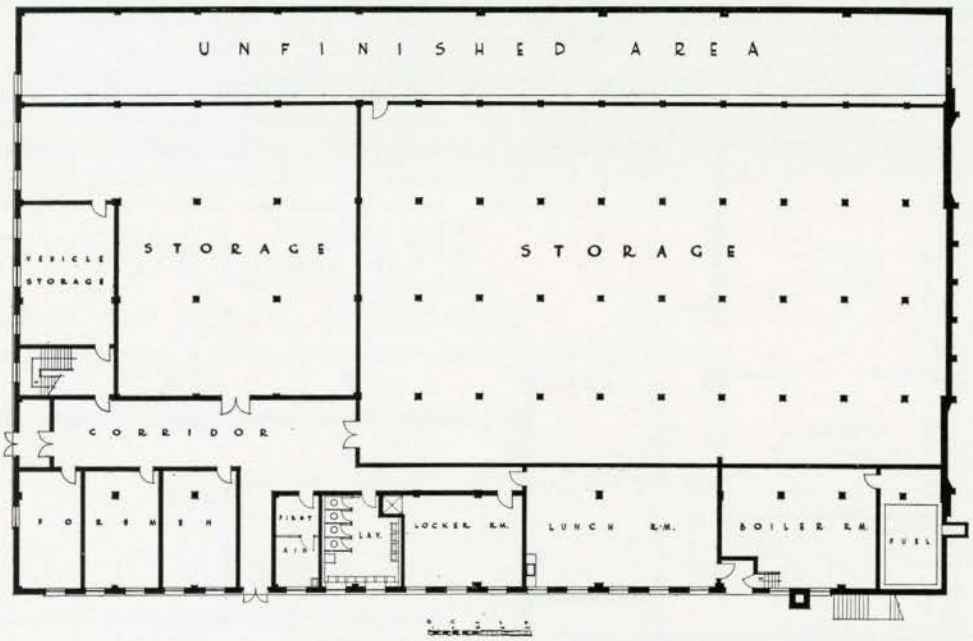


HAYWARD STUDIOS

ST JEROME, QUEBEC

LAWSON & LITTLE, now
LAWSON & BETTS, ARCHITECTS
A. F. Byers Construction Company Limited, General Contractors

HAYWARD STUDIOS



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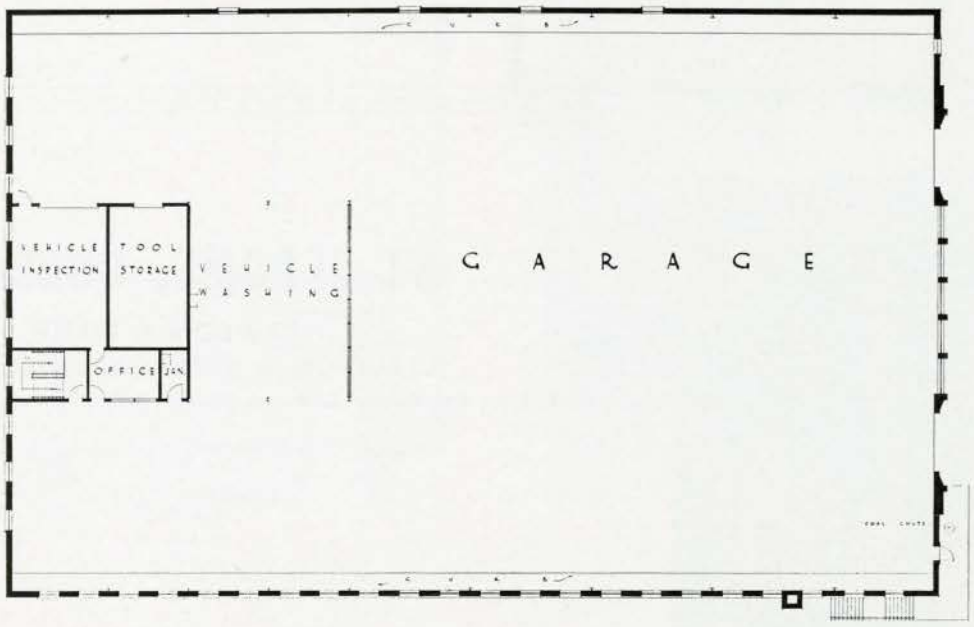

GROUND FLOOR

at left:

WORK CENTRE, MOUNT PLEASANT ROAD, TORONTO, ONTARIO

MATHERS AND HALDENBY, ARCHITECTS

Wallace, Carruthers & Associates Limited, Structural Engineers
Milne & Nicholls Limited, General Contractors

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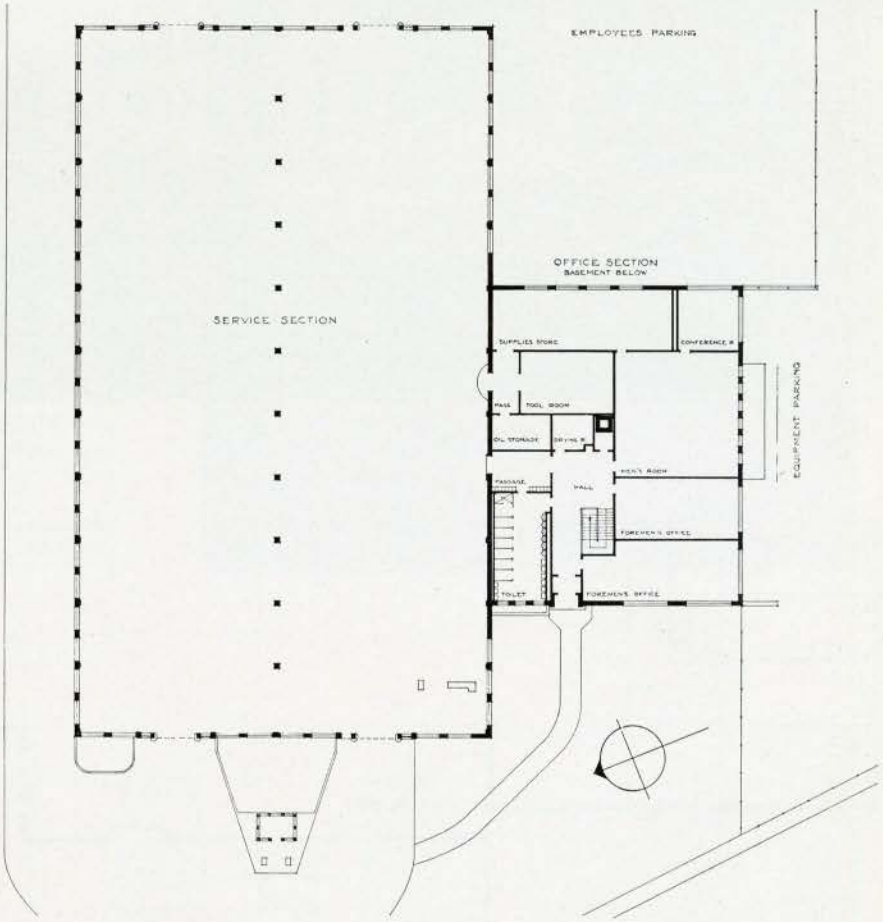
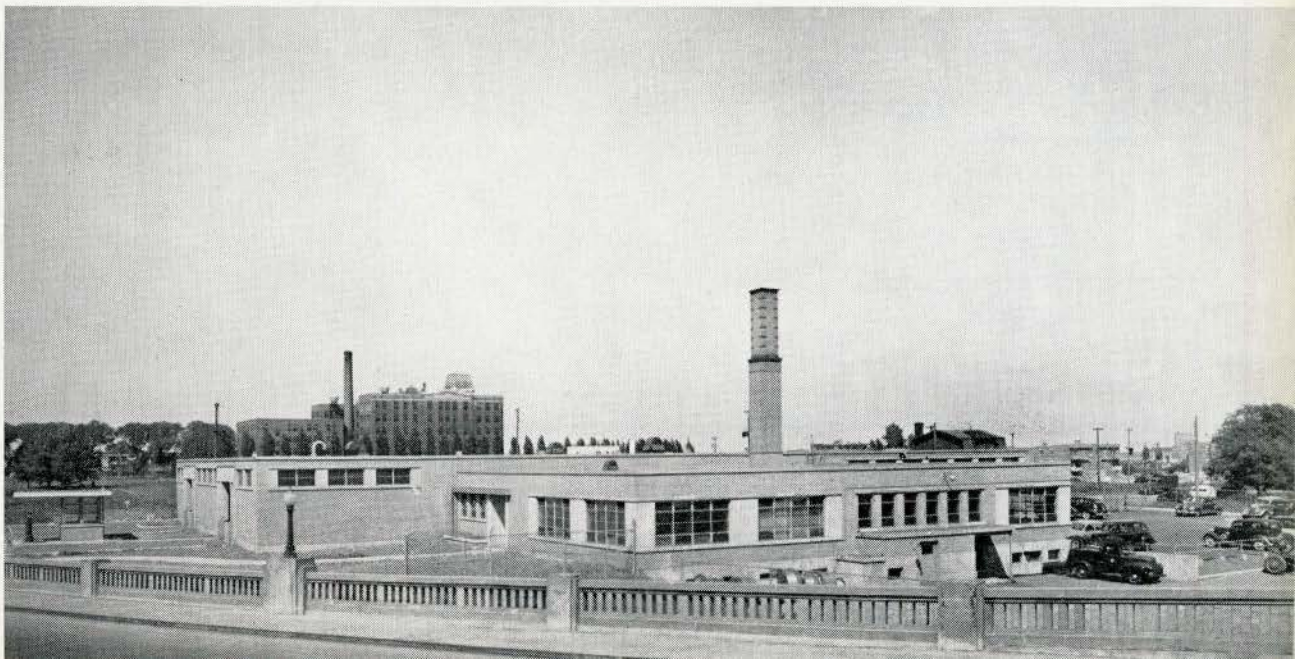
below: EAST END SERVICE CENTRE, MONTREAL, QUEBEC

J. C. MEADOWCROFT, ARCHITECT

J. L. de Stein, Structural Engineer
James P. Keith and Associates, Mechanical Engineers
J. L. E. Price and Company Limited, General Contractors



HAYWARD STUDIOS

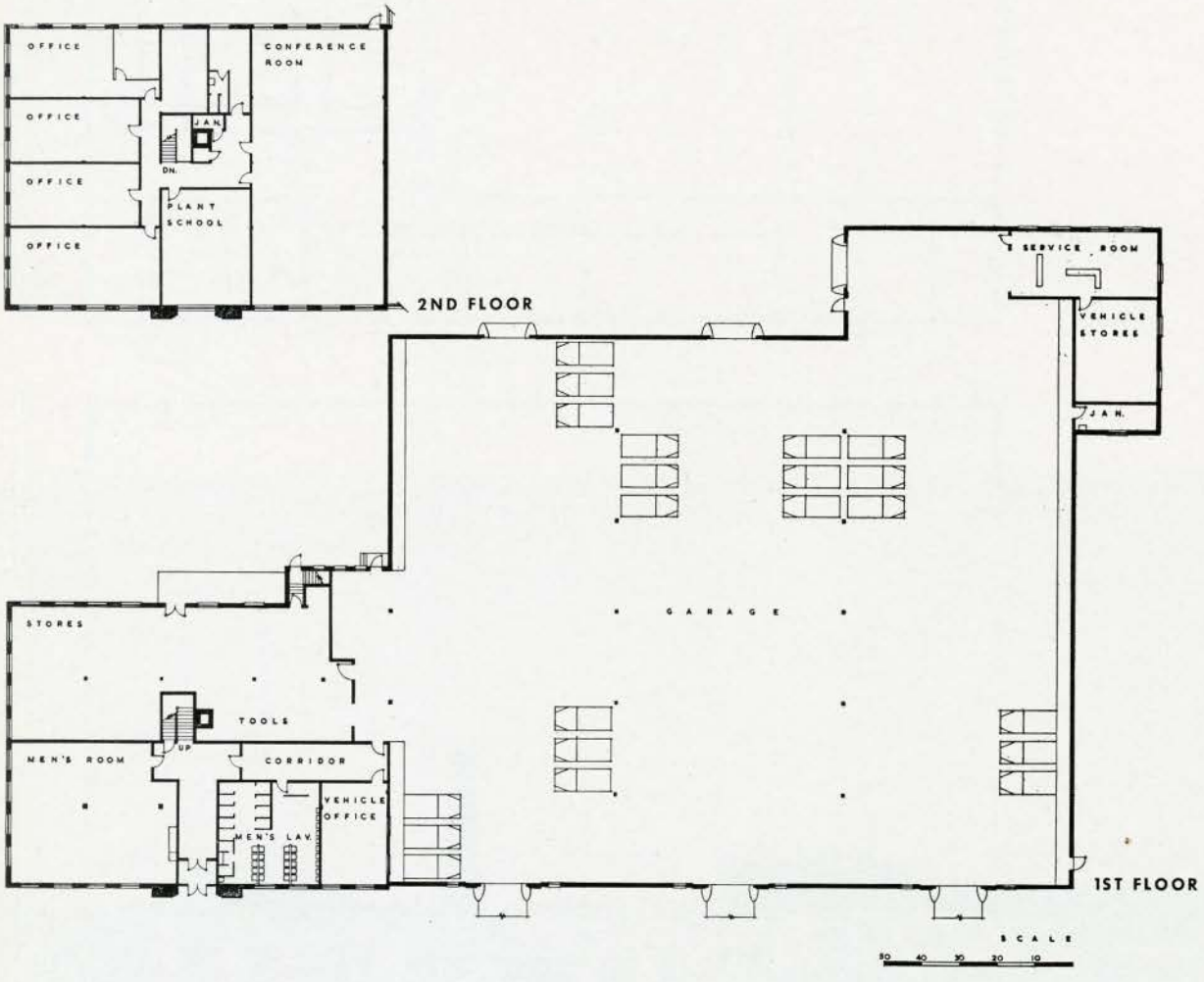


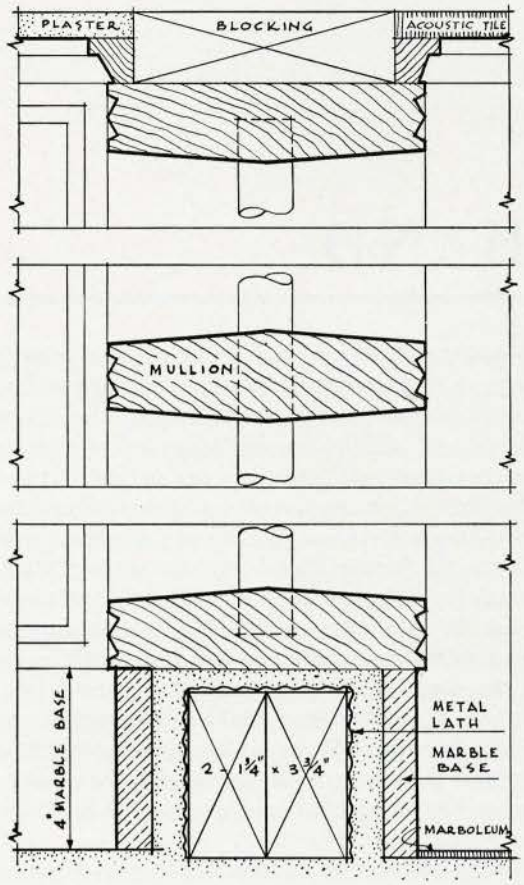
WORK CENTRE, HAMILTON, ONTARIO

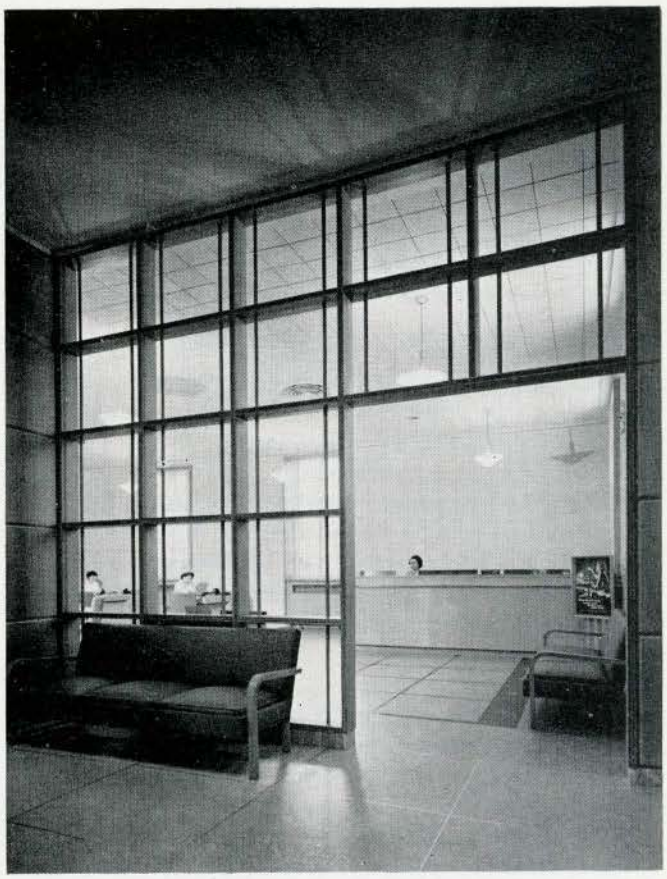
PRACK AND PRACK, ARCHITECTS

W. H. Yates Construction Company Limited, General Contractors

HAYWARD STUDIOS

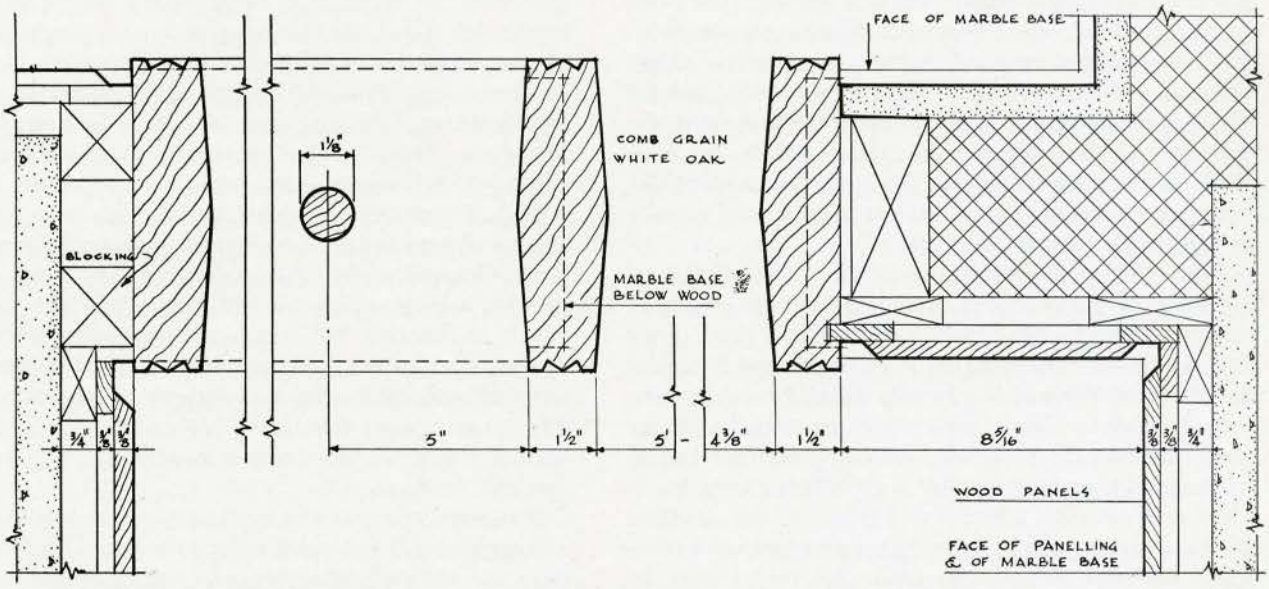






SECTION 3" = 1'-0"

G.F.H.



PLAN THROUGH SCREEN

SCALE 3" = 1'-0"

WOOD SCREEN

BELL TELEPHONE BUILDING BRANTFORD

MARANI & MORRIS

ARCHITECTS TORONTO

HEAD, HEART AND HAND

I HAVE SET myself the task of trying to define the relationship between the fine arts, the applied arts, and the crafts, in the hope that this will enable me to express my views clearly on commercial art.

To study any one particular branch of art without relating it to the whole activity of art leads nowhere – worse than that, it leads in the wrong direction. It would be like a man who had never seen a tree, but who found a twig and who became absorbed and fascinated by that twig, who studied it, dissected it and produced theories on the purpose of twigs, theories which, from the vantage point of knowing that trees exist, would appear ludicrous. So I will attempt here to examine the whole tree of art, before considering the twig of commercial art.

For me, the definition of art lies in its practice. For the practice of art is an approach to truth, a search for an aspect of truth, a search to sense and capture the underlying laws and harmonies which create and govern life on this planet in such a miraculous way. It is a search to understand and feel more deeply, to find true relationships and values and to enrich the soul by trying to penetrate the wonders which surround it. Great works of art – in any medium, be they music, writing or the visual arts – are works of understanding, which can illumine aspects of the world for ordinary mankind. In order to relate the various branches of the visual arts to this concept, let us look for common denominators in the work of the fine artist, the designer and the craftsman. One stands out clearly. They all desire to create objects, be they pictures, candlesticks, chairs, or exhibitions, and their creations depend initially on this emotional urge to create.

Two other common denominators are intellect and manual skill. By intellect I mean primarily the ability to reason, to plan and to organize. Reason in a work of art should always be discreetly present to guide and discipline the emotions. Without this faculty an artist would be unable to translate what he understood emotionally into his given medium. In a certain, delicate, sense he has to rationalize his emotions – that is give them expression in a certain form. This admixture of reason to the emotions gives coherence and stability to his perceptions. But an artist, however strongly he feels, however keenly he thinks, is still quite impotent, if he has no manual skill at his disposal. His skill, his technique, must be of such an order that it can perform accurately the tasks set it by the emotions and the intellect. In great art it plays the role of the intelligent servant.

A great work of art, then, be it either a painting, or a design, or a piece of craftsmanship, deriving its initial impetus from emotion, is a miraculous blending of emotion, intellect and skill. A wonderfully delicate harmony of head, heart and hand, balanced in a perfect and particular order. Now it is in the balance and the order and the interplay of these faculties that we can see the relationship between the painter, the designer and the craftsman. In the very finest expression of their work all three are artists. But of course a difference of kind and degree obviously does exist between them. To find and see this difference, and the interplay of these faculties, we must return to the emotions which give the initial impetus to their creations.

In the fine arts this impetus lies in their content. It is the content of the painter's work, or what he has to say, which inspires him: and what he wants to say he finds in his heart.

For the designer it is different. His work has a function rather than a content. The function can range from a decoration to delight the eye to a teapot that pours without dripping. But the designer does not derive the main emotional force for his creative work from considering its function. I believe that it comes from a search for a perfection of form. His language is one of proportion, of shape, of pattern and of line and he approaches his truth in these terms. No great designer ever produced a form which outraged the basic forms of nature, for basic natural forms are always his absolute. Function, of course, plays a big part in his work – and this is the intellectual side of his job. The designer of a chair realizes, of course, that his chair will have to be sat on, but the emotion he generates within himself while actually designing must come from seeking a form which will not only satisfy the requirements of function, but which will satisfy his search for æsthetic perfection. And though the field of design is so very wide that it is obviously dangerous to generalize, I think it safe to say that the designer's work is more intellectual, that it has more reason in it, more head, than the work of the fine artist.

The main emotion in a craftsman's work springs from the employment of his skill – from the use of his tools and materials to their best advantage, from the meticulous perfection in his handling of them. As Andre Malraux has said, his concern is to reproduce forms rather than to create new ones. But if his work is of the highest quality, it ceases to be judged as craftsmanship and deserves to be praised as a work of art. It can pass from the realm of

by RICHARD GUYATT

craftsmanship – from the level of manual skill only – to the realm of art. There are many highly skilled forms of craftsmanship – such as those employed in the making of a railway engine – which can never penetrate into the true realm of art because their aim is purely functional. For craftsmanship to become art something more is needed – it must be allied to an emotional understanding of beauty.

Before examining the twig of commercial art, it should be stressed that the whole tree of art, like any other, reacts to the conditions in which it grows. The soil and the climate determine its fruits. And the soil and climate of art is the society it grows in. We may theorize about the mainsprings of art, but society holds out to the artist only a few certain channels for the expression of his art. Suppose one takes the whole of society as a human being – then the artists are his eyes. They are part – an integral part – of the whole, and they have no separate life of their own. Just as a man can use his eyes for a variety of purposes, so can society use artists. At one end of the scale he can use them to see and delight in the beauty around him; at the other end of the scale he uses them in a matter-of-fact way for his material needs – for catching buses or to avoid tripping up. In an exactly parallel way society can use artists. Society, by economic pressures, can use its artists to design posters explaining where to catch buses or the virtues of non-skid shoes, or it can demand of the artists the nobler and more inspiring pursuit of enlightening the whole community. But a man, of course, however enlightened he may be, has to use his eyes for a variety of purposes – for catching buses as well as for seeing beauty. What matters is how often he uses them for seeing beauty and the significance he attaches to it. That tells one what sort of a man he is – just as the use made of artists by a society tells one a great deal about that society.

Now what sort of society do we live in to-day? Broadly speaking it is a civilization whose main love and interest is science and technology; its achievements lie in this direction. It is a civilization that is engrossed in its material needs. And the result, which is to be expected, is a long train of ugliness created by this century old production drive. This production drive has needed a vast number – a number increasing and multiplying as it has gathered momentum – of industrial designers, typographers, printers, advertising agents, exhibition designers, etc., to help it in its headlong journey. In fact for this journey, a corner seat has been reserved for the commercial artist – he is really needed there as part of the outfit. The fine artist is left to fend for himself – with luck standing in the corridor – because he is not really needed.

Commercial artists can be divided into two groups: those who help in the actual production of goods, that is those who work as industrial designers, and those who help in distributing goods – that is those who work as publicity designers. For the purposes of this study I am concentrating on the publicity designer. His is a queer position. As a designer his inspiration comes from delight in form, in searching for harmony and proportion. As a designer he also had to deal with function – which in this case is selling. But, unlike the industrial designer – the designer of the chair for example – he has on top of this to deal with content. This puts him in a different category, into a sort of no-man's-land, midway between the painter and the designer. And because of this, often through no fault of his own, he comes a cropper. What he has to say – the content of his work – is usually thought up by somebody else and it is usually cheap and vulgar. But why is this? And speaking in æsthetic terms why is the good poster or press advertisement so rare? Let us go into this question a little more deeply. The function of advertising is to sell, and it is the advertising agent who knows all about the psychology of salesmanship. Out of this knowledge he builds up his elaborate organizations of copywriters, ideas men, layout men, contact men, etc. But really his skill lies in catching flies, and advertising is a flypaper game with variations on the theme of glue. The Advertising Agent mixes up his glue very shrewdly, a nice tasteful glue to catch the refined fly, and a good old vulgar glue – which is very tough stuff indeed – to catch the vulgar fly. This is, of course, plain common sense and it is called being 'realistic.' But this fly-catching game can range from parading giant cheeses through the streets – as Sir Thomas Lipton did in Liverpool – to posters displaying, in a strangely stereotyped convention, the charms of sexy young women. And it is obvious, from the evidence around us, that good pictorial salesmanship does not depend on æsthetics. That Art and Selling are two very different things.

Where does the designer – sensitive, serious-minded, and extremely interested in æsthetics – come into all this? He has to be a bit of an acrobat, he must learn to do the splits, with one foot in the æsthetic camp, and one in the publicity camp. Sometimes, given the right conditions, he can draw the two together, but in the majority of cases this turns out to be impossible. His interest, of course, is

HEAD, HEART AND HAND
is a shortened version of the inaugural lecture given by Richard Guyatt, Professor of Graphic Design, at the Royal College of Art, South Kensington, on 28 November, 1950, and is here reprinted by arrangement with the author and The *Architectural Review*.

centred on the foot, which he tries, manfully, to keep in the æsthetic camp. But it is very difficult for him to keep his balance. The pull on the publicity foot is very strong indeed. Say he gets a commission to do a poster for a firm of sweet manufacturers. He knows that the point of the poster, the reason it is being produced, the reason he has been commissioned to design it, is to enable the manufacturer to sell more sweets. Now this idea, though exciting to the manufacturer, cannot be expected to provide much emotional stimulus to the designer. He'll take it on (if he needs the cash) and, if his life hasn't reduced him to the level of the complete hack, he will engender in himself a certain emotional tension, by trying to arrange the elements of the design as harmoniously as possible. That is his real job as a designer – to create an object pleasing to the eye. But this is very difficult because of all the other considerations which come crowding in. He knows – only too well – that the manufacturer will want his name as large as possible, and that he must use a certain name-block which he himself may dislike intensely. Because of course, a name-block, however hideous it may be, has great commercial value if the public has become used to it. The designer knows it is not his business to improve it, for this change for the better – æsthetically – might only disturb and frighten the fly. He gets handed a slogan which must be incorporated in the design around which to build up his idea for the poster. Now this will be the poster's content and the slogan he gets to play with may be – to quote one which is up on the hoardings at the moment – 'Ooooh – the mint with the hole.' A slogan like this, for all I know, has great sales appeal – but it is a difficult one for the designer. How should, for example, these compelling words be lettered? Would it look well drawn in a beautiful and dignified letter? No, his experience tells him that somehow that would not be suitable – that it is up to him to evolve a letter form to match and express the sentiment behind these words. So, after much labour, he evolves a zippy yet coy type of letter – a lettering to harmonize with the content. He also knows he must restrict his use of colour on account of expense and yet he knows that he must be as strident as possible so as to shout down neighbouring opposition – so that it is his poster which will catch the casual attention of the passer-by. But this question of catching people's idle attention is in itself fascinating and revealing. For true art demands an *effort* of attention on the part of the spectator. His casual interest may well be caught by the superficial qualities of a painting but its content will not reveal itself unless he makes a further effort of appreciation. This even applies to those with faculties and sensibilities educated in the appreciation of art. But the poster or press advertisement has to tell its story and catch the attention of the ordinary person – that is the person who is not at all interested in art and not at all interested in buying – in such a way that he has to make no effort. You really can't expect a fly to make an effort to be caught.

These are some of the many considerations which make it difficult for the publicity designer to produce a work of art – on however modest a scale. The main difficulty, often insurmountable, is the idea behind the poster or press advertisement. And it is here, I think, that we can see most clearly the clash between the man whose main interest is art, and the man whose main interest is selling. For many good ideas in salesmanship cannot be translated into good designs. Æsthetically they are too trivial. In just the same way many good designs æsthetically are bad as salesmanship. Commercially they are too high falutin'. The problem which faces the designer is how to bridge this gap. It can be done, of course, but if it is to be bridged at the level of good design, then the ideas and feelings behind the poster or advertisement must be of a quality suitable to justify and inspire it. Good design and good publicity are not synonymous for it is quite obvious that you can get very good publicity from very bad designs. The problems I have touched on only rear their heads if and when you try to marry the two. And, as in all marriages – if they are to be really successful – both sides must want to be married. This means that both sides – the manufacturer and the artist – must see the possibilities of good design in good publicity – and this will only happen when the man in the street demands it.

A shortened version of a fifth-year thesis, written by Mr James at the University of Toronto

A. MACKENZIE JAMES

ARCHITECTURE & OUR NEW WORLD

Introduction

This essay is an attempt to show that what we call the Modern Movement in Architecture is not a movement confined to the Arts and Architecture, but that it is an all-embracing change involving our whole civilization and sweeping beyond it to awaken more backward cultures. This may be a self-evident truism, but a generalization of so broad a nature should be examined in more detail. It was a failure to examine several generalizations in the last century which contributed so much to the complacency of the era. If the movement is limited to one field of human endeavour one might be justified in asking if its roots are sound and if it might not be mistaking shadows for substance. Hitler set out to create a New Order but misreading the signs of the times, came up with an even more reactionary order. This is to be an examination of the signs of the times.

It is the purpose of this essay to examine the major departments of the thought of our times for indications of a basic change in outlook, such as has occurred in Architecture. It is *not* a recapitulation of the findings of the various branches of learning, but an attempt to show the point of departure from the previous trend of thought.

A secondary purpose is to attempt a limited forecast of the direction in which Modern Architecture may turn. By trying to see where other branches of the movement are turning it may be possible to draw a parallel for architecture.

Science

The scientific approach to man's problems, so firmly established now, had a long and troublesome birth, and an uphill struggle for survival. Even before the embryonic sciences had gained the knowledge or confidence to challenge any profoundly held beliefs, the Church, as the only large educated group, saw that this independent thinking would in time present a challenge to its claim as the one and only source of truth and knowledge.

In spite of the subsequent persecution, science maintained its precarious foothold and gradually progressed from the limited principles of Galileo and Kepler to the magnificent contribution of Newton. Newton was the first scientist to propound a hypothesis of general application to fit all the physical facts of the universe into a single system of explanation. This kind of thinking is the very breath of science, but the result of this flash of insight blinded science for many years. In its seeming completeness, scientists overlooked the minor points it did not explain and assumed these odds and ends would fall into place in due time. A sense of satisfaction and well-being crept into their minds at the thought of having so neatly explained the wonders of all existence. But the seeds of a new order were present even in the heyday of the old.

Science and philosophy between them, had evolved a completely mechanistic theory of the universe which stood almost unchallenged until Einstein's first paper on Relativity in 1905.

This unobtrusive paper was gently laid before the uncomprehending eyes of the world by an unknown man who appeared to care little whether it was accepted or not. The implications of this obscure and difficult piece of mathematics rocked the scientific world. As it was examined in detail, methods of testing and proving it were evolved, and while it appeared to fill the gaps of the old theory it simultaneously created a host of new problems and so widened the horizon of the unknown that man again appeared to be merely standing on the threshold of knowledge.

It is a tribute to the men of science that they shed the straitjacket of self approval and bent wholeheartedly to the immense task thrust upon them. Some odd facts turned up. In order to appreciate fully the turn science has taken, it is necessary to examine a few of its problems.

Measurement is essentially the method of science, and mathematics the tool, and while nature seems to recognize the validity of mathematics, it appears to know nothing of absolute measurement. An example of nature's uncertainty in this respect lies in the ubiquitous electron, now no longer a solid piece of matter. It has been found that if we know the exact speed of the electron we cannot specify its exact location, and conversely if we know its location we cannot determine its exact speed. This inability to measure both simultaneously is not due to a defection of tools and instruments, but is inherent in the nature of matter as inferred from Planck's quantum theory. Planck's notorious constant "h" is the culprit and it appears

to pervade the whole universe from the smallest particle to the outer reaches of space.

The absolute space of Newton took the brunt of the blow from the New Approach of Einstein, and suffered in consequence. The new space exists as a mathematical concept which fuses space and time into an inseparable unity. The one has no longer any real meaning apart from the other. This space-time continuum appeared to be curved, and to be pervaded with energy, in the form of radiation, and with matter. Nothing seems to be sacred to the innocent looking formulae of Einstein. Many great scientific minds have since been enlarging on Einstein's framework, searching for new implications, and adding their own contributions. Matter as an ultimate and primary substance disappeared in a swirl of pure energy. Matter and energy were just different aspects or conditions of the same thing and transmutable, in theory at least, one into the other. Having thus disposed of matter *per se*, science turned on energy, or radiation, and uncovered a monstrous paradox which bids fair to remain unsolved.

Light, and by this is meant the complete band of radiation, has been explained in the past by either the corpuscular theory or by the wave theory. A choice of theories is no longer possible for both must be used. Planck's quantum theory involves the particle theory and supposes that radiation is emitted in definite and separate "quanta" much like a stream of bullets from a machine gun. He has proved that each quantum has a definite, though extremely small mass. Subsequently, a whole series of experiments with light falling on matter confirmed this hypothesis beyond any serious doubt. There are other phenomena, however, which refuse to be explained by this method. In these cases the wave theory fits perfectly, the light exhibits all the characteristics of wave motion, conforming both mathematically and by observation. The one great difference is that wave characteristics are observed when light is travelling through space, and before it falls on matter.

These two pictures of the nature of radiation do not show two different things but two different aspects of the same thing. They are partial pictures of a reality of which we cannot conceive. The real incompatibility of the two theories lies in the fact that all waves fan out as they travel through space and having done this, it is difficult to imagine how they recombine as they reach a point of matter into a complete quantum or photon – as they are observed to do. It is here that science has its first intimation that the space-time framework is not altogether adequate.

Through this very brief examination of some of the representative problems of science, we find that the old approach will no longer serve. It can be seen that any approach which can begin to offer an explanation must abandon altogether the old mechanistic mode of thinking. Instead of uncovering new fragments of information and placing them in their proper positions in an established jig-saw pattern, the new problem is to fit portions of the jig-saw into some unknown and probably unknowable master pattern. Formerly it was assumed the pattern was known and that only some pieces of the jig-saw were yet to be found.

From the seventeenth century until recently, science was befogged by this assumption. Intimations of the inadequacy of this assumption came from a number of philosophers and scientists before Einstein showed how and why. Newton and his followers were correct within their terms of reference and we still follow his methods in the "ordinary size" world. It is in the range of the very large "stellar scale" and the very small "atomic scale" that his conclusions do not hold.

In retrospect we can sum up the evolution of science as follows. First a fumbling, uncertain beginning, followed by a growing confidence in principle and purpose. This in turn led over a long period of time to a real science which exhibited a real scientific attitude and reached amazingly accurate conclusions within the means at their disposal. Following this again is a period of complacency when some progress in refinement was achieved but the true scientific approach was lost in the assumption that all was known and only refinement of detail remained.

Suddenly, the accumulating forces of dissatisfaction in a few people burst the dam and a veritable flood of progress swept the scientific world.

How similar is this to the story of Architecture! We need only substitute the word Architecture for Science to read the whole story, even to the approximate coincidence of the various eras of development.

Philosophy

"Philosophy, from the earliest times, has made greater claims, and achieved fewer results, than any other branch of learning."[1] This rather sweeping claim should perhaps be qualified by the one remaining dogmatic statement that modern philosophy is prepared to make, i.e., that we can know nothing positively. This being so, it can hardly be expected that concrete results can be achieved. Philosophy works from assumptions which by their very nature and by definition, are forever open to question. Results will always be tentative. Bearing this in mind, the foregoing quotation has more than a grain of truth in it.

Bertrand Russell, though writing just before Einstein stirred up the worlds of science and philosophy with his famous propositions, set out to show that the problems and methods of philosophy had been misconceived (his own word) by all schools – that many of its traditional problems have been conceived by man and have no real existence, that others are by their nature insoluble and even basically meaningless, while still others of great importance have remained neglected. He proposed a critical scrutiny of mathematics, as the only intellectual approach we have to reality that can in any way be verified. This approach can not of course be extended to the fields of ethics, morality and æsthetics, nevertheless reason can be, and must be utilized since reason alone has proved its validity in other fields as intuition and revelation never can. These latter may perhaps provide a flash of insight which must then be subject to reason. It must be borne in mind that mathematics is not a reality in itself but is actually only a shorthand notation for a form of logical reasoning, and more important still, it represents the "how" and not the "why" of events.

[1] Bertrand Russell

In the section on "Science," the atomicity of radiation was mentioned, i.e., the fact that it travels in quanta. An experiment utilizing this phenomena has been used to discredit the principle of the uniformity of nature, i.e., that like causes produce like effects. If a stream of photons is shot at a half silvered mirror part of the stream goes through and part is reflected, depending on the angle of incidence. If the stream is reduced to a succession of single photons the same percentage will go through, though the conditions for each are absolutely identical. In this case, like cause does not produce like effect. It is not the individual molecules which reflect the photons, since if this were the case they would reflect at different angles, and since the molecules are in motion, two successive photons would not strike the same molecule in the same place. Regardless of the molecules, the same percentage of photons always get through and not only do the reflected photons all follow exactly the same path, but the transmitted photons also all follow the same path on emerging from the far side of the mirror. If a causal law is operating here, it is beyond our ken and also appears to operate independently of space and time.

It has been shown more recently that the atomicity of matter entails precisely similar consequences as the atomicity of radiation. There are other experiments along different lines which all support the abdication of determinism, as presently defined, from the whole realm of physics.

This does not leave us in a state of chaos or physical anarchy since it now appears that the apparent determination of the normal scale world is only of a statistical nature. In other words the immense number of electrons and photons involved means that the mathematical law of averages imposes the determination which physical laws have failed to provide.

It has been fairly well established that the same laws govern the whole universe from the very large to the very small, the difference lying in the fact that some aspects which are all-important in the atomic size world are of negligible importance in governing the stars; the reverse condition also holds true. With this in mind it will be seen that the implications of atomic research apply as well to the large-scale world of the universe, and that the apparent existence of the causal law and the principle of the uniformity of nature are due to nothing more than the size of the bodies observed.

Philosophy has been forced, by numerous experiments and phenomena, to the conclusion that we must suppose another strata of reality beyond the limits of space and time though acting in perfect harmony with it. There is much of space-time we cannot perceive directly, but through extensions of the sense data. There is nothing fanciful in supposing that our meagre five senses do not make contact with all of reality. If knowledge of a section of reality has no survival value to an organism it is unlikely that the organism will have a sense to perceive it. If this unknown reality exists, we cannot perceive it through our senses and so cannot conceive of it. It is not at all unlikely that the causal law for the sub-atomic world operates through this "supernatural" reality but philosophy inclines to the idea that the whole concept of causality is misstated and that the question has no real meaning in its present form. Jeans states that determinism and freedom, matter and materialism need to be redefined in the light of our new knowledge.

The above is an attempt to show the extent of the reorientation of thought which has occurred in philosophy, and to show that the nature of the goal cannot even be suspected, though we think we can now see the direction in which it lies. The course of philosophy parallels closely that of science throughout its development, and we have already seen the rather remarkable resemblance that the course of science bears to the course of architecture through the ages.

Political Economy

The field of economics is more intimately connected with the rise of a new architecture than the fields already covered. The economic factor is an important one in building but it is not this aspect which was primarily significant in the development of a new order in both fields.

The story of the guild system and its replacement by the capitalistically organized industrial system is familiar. The significant factor here is the gradual and growing concentration of power in individuals. With this power went its corollary, enslavement. This enslavement was quite real as a look at some of the large industries such as coal mining and the weaving trade will show. The workers were paid so little and worked such long hours in order to exist, that they had no choice but to remain as they were, their children following in their footsteps.

The huge accumulation of wealth and power in a class of "new rich" who had not the education or cultural background of the aristocracy, led eventually to the degrading of popular taste and appreciation of beauty. The low ebb to which art and architecture had fallen was equalled only by the desperate plight of the working man.

Resentment against this degradation, squalor and ugliness spawned two separate movements at almost the same time. From the mire arose the first signs of a deep-rooted reform. William Morris on the one hand, undertook single handedly to lead the way to æsthetic honesty. On the other hand a group of men, appalled by the economic scene, and convinced that the capitalists were beyond normal control, advocated a variety of socialism as the only way to level the extremes of poverty and wealth. Morris later joined this group as a means toward his own ends, though he always considered that the socialist state was merely a means. Bertrand Russell, in our own day, advocates an ideal state which is almost an exact duplicate of that which Morris conceived. This was essentially a state where the machine and the processes of government were used to achieve the essentials of life leaving adequate leisure for constructive pursuits.

Marx was motivated by the same causes as were the Socialists and set out to develop a system for achieving his goal. Marx, unfortunately, misread history and was moreover working from a Newtonian philosophy which pictured nature as entirely mechanistic. The resulting theories of Marx quite naturally were almost completely materialistic, and such a one sided concept of man's affairs should only have had a limited objective. Assuming that Marx's

premises had been correct, his theory that revolution was the only way to redistribute wealth, and that the end justified any means, was correct. His followers, from whatever motives, built up his theories into a whole way of life, a philosophy of living, sufficient unto itself.

In the field of politics four factors are the prime movers of almost all that happens—acquisitiveness, vanity, rivalry and love of power. Communism is based almost exclusively on the first of these, the materialism inherent in acquisitiveness. The other three are concerned with racial relations, and it can be seen that any inclusive system must account for all factors. This is not to say that all four factors are not at work among the leaders of a movement, but that the philosophy of Marxism does not allow for the other three factors existing in the general population. They are to be suppressed or assumed not to exist except in the leaders. Individual initiative and ambition are composed largely of the last three factors. Socialism to a lesser extent has this same inherent fault.

Socialism in practice is not of course, the same thing as theoretical socialism and in effect this means that the socialistic governments have recognized the above fault. Present Labour governments, though they often do not like to admit it, are really striving for a workable blend of the better aspects of capitalism and socialism.

We have noted that capitalism tended towards huge accumulations of power in the hands of a few men. Statism, of whatever form, represents a vast accumulation of power to the State. In both systems the freedom of the individual suffers, so that having achieved the best possible blend of capitalism and socialism we have still fallen far short of an ideal state.

It is commonly assumed that Statism and Capitalism are the opposite poles and that our goal is a happy balance between them. We have seen however, that both represent accumulations of power in one form or another. It would follow then, that both are at divergent points on the same pole. The opposite pole is therefore represented by an extreme dispersion of power, which is Anarchy. Anarchy in its simple form is self-evidently undesirable even though it represents the ultimate in individual freedom. The Ideal State would seem to lie somewhere between the poles of Statism and Anarchy. To put this in a different way, it can be argued that first the goal is to achieve the best possible compromise between Capitalism and Socialism (it was observed that Communism has inherent weaknesses) and having attained this state, to proceed with a policy of decentralization of power.

This very process is going on almost unnoticed. Labour through its unions is gaining more power at the expense of management, and the logical end of this struggle will have arrived when labour partakes of a share of profits and has a voice in management. This could also mean that labour actually owns the means of production. A danger that must be avoided is that labour's representatives may become too powerful and repeat in a different form the errors of the capitalists. It should not be forgotten that a labour-owned and -controlled economy would by its nature tend to be static, so that it is not wholly desirable until this era of expanding economy has stabilized itself.

Perfection is unattainable, and if the above is a desirable goal, it must not be assumed that our problems will have disappeared. Very many problems can be foreseen in the economy described but it is to be hoped that they are not so serious as are our present ones. Whatever system evolves, a constant struggle will go on to curb and forestall undue concentrations of power in any one group. With changing conditions the idea of the perfect state will change also, but from our present position at least, the ideal might follow in this general direction.

The break with the past, which had never assumed that humanity in general had the right to expect some of the amenities and pleasures of its rulers, occurred with the rise of the socialistic idea. Even though it might be imperfect it was a philosophy in sharp contrast with preceeding ages, and here dates the beginning of the Modern Movement in the field of political economy.

Arts and Architecture

The development of Art and Architecture have gone hand in hand, each influencing the other and broadly speaking, making the same mistakes. Both were originally utilitarian in nature, art in the magical sense and architecture in a pure functional sense.

Painting is a medium for a flat surface and for a long time it was treated as such. When the principles of perspective became understood, painting had a powerful new tool in its hands which eventually became a sort of Frankenstein's monster. Use of perspective was controlled for some time but eventually, when it was seen that reality could be very accurately represented, perspective became an obsession. It was forgotten that the painting surface was actually flat and as such demanded an appropriate treatment. Instead, the reproduction of reality was carried to such lengths that it became almost a pseudo-sculpture. If it was not actually three dimensional, it was trying hard to hide that fact. The illusion of three dimensionality became an end in itself and reached its height in such things as paintings of bowls of fruit of such perfection that the observer actually thought he was beholding a bowl of dewy-fresh fruit.

If the use of perspective became one of the primary traps in the ensnarement of art, it must not be thought that it was the cause of the degeneration into which art fell. The materialism of the era of industrialism was perhaps the real cause, the realism of perspective being a perfect tool for suggesting *things* rather than *ideas.*

Sculpture, Music and the crafts, all suffered in the general decline of the period. Sculpture tried to be as physically perfect as the Greeks had been, without the insight and the feeling. Music merely copied the forms of the older composers and had nothing to add of its own. The extent of the departure in recent years of sculpture, music and the arts from the old Victorian forms is too familiar to require recapitulation here.

Equally familiar is the development of architecture and of society in general, up to the time of William Morris. Morris began his fight for a return to first principles under the shadow of Ruskin's last valiant attempt to turn back the clock of time. In painting and in nearly all of the crafts, he attempted, single-handed, to lead the way to a fresh understanding of the principles of design. Even in

architecture he made a complete break with his contemporaries and in conjunction with Webb produced the "Red House," an honest and unpretentious dwelling of native materials.

It was not so much his own work as the effect he had on European followers which led a little later to a whole new approach. The engineers and their new materials supplied the missing elements and the complete justification for change.

The movement thus started has progressed up to the present, and if its principles are not forgotten will continue to evolve. We are still standing on the threshold of the new era opened up by the restatement of age-old principles and by their application to the tasks at hand, in whatever field. Having shaken off the fetters of the past and yet profiting from it we are free to advance – if we do not forget.

We have seen that science has a limitless and ultimately unknowable horizon to explore. In the possibilities of human nature and social development, architecture has a parallel. To achieve its ends, science has come to depend on teamwork and in financial backing by governments and large industry. The day of the scientist as a lonely man in a cellar are not only past but no longer possible if anything is to be gained. A few theorists like Einstein work alone, but must confer and collaborate regularly.

The philosopher has had the same vast vista of the unknown thrown before him as has the scientist. For the philosophical implications of science, he must also confer and collaborate to accumulate his facts and develop his theories. The fields of ethics, morality and æsthetics do not depend on concrete facts, and so are much more a matter of reasoned opinion. For these reasons the philosopher does not require heavy financing and so may work on his own. Philosophers must, however, make a living and this is most often done by drawing them into institutions of learning, thus purposely bringing them into communion with eminent minds in other fields.

Political economy is tending toward a modified Statism which emphasizes the welfare of the ordinary man. Planning for the common man will tend more and more to be on a national scale in the fields of health, welfare, social services and industrial welfare.

These brief summations are stated from the point of view from which they may affect the future of architecture. As it can be seen, each field is tending to work from groups of people rather than individuals. Centralized control and group planning is evident everywhere. The centralized control will probably remain, though in the future the centres of control may be dispersed in a more efficient and less impersonal manner. On a national scale, authority may be delegated to regions and from regions to districts, and so on.

If all this is to be, and it seems likely, the architect-town planner will be involved both politically and socially in the planning of areas, and only secondarily in planning for individuals. Under this system of planning of areas, it is more than probable that he will be taken into a government planning board with a chain of authority paralleling the political authority. If this is done, the future of the architect as a private business man is in some jeopardy. The design of individual buildings will be governed by the overall plan of the district. The question is, will this residual planning be done by the district board architects, or by private architects? If the analysis in "Political Economy" is correct, then the answer would be that a comprehensive system of planning boards would reach from the capital of a country down into each community. The work of these boards would be comprehensive enough to assure harmony in the individual buildings. At this stage the private architect would take over.

In the overall picture the rôle of the architect has not been reduced but vastly increased, the difference being that the "private" architect will have to bear in mind the work of the "public" architect and to some extent be governed by him.

Conclusion

Human thought in the branches that have been considered, began in a rudimentary form with early man. From historical times onward, development has been spasmodic, with occasional lapses when not much was achieved. Because civilization grew organically, man did not lose track with his basic values and principles. With the coming of the industrial revolution, the western world suddenly found itself in an artificial environment for which it had no precedent, and to which it was not adapted. Having thus lost his orientation, man's sense of values became distorted and eventually inverted upon itself.

This was not a stagnation due to loss of vitality, on the contrary, it was due to a channelling of abundant energy to material ends. The more abstract considerations were drowned in the rising tide of materialism. Reaction to this tide was profound and resulted in a complete re-evaluation of the principles which had produced it.

The mounting surge of energy sweeping the western world now flowed out into the fields of abstract thought as well, and in its tumultuous haste, found expression for its excess in war. The impact of this tidal wave awakened the east, and if its energy is not expended in further wars, may carry us of its own momentum into an era of unprecedented achievement.

However that may be, there appears to be concrete evidence to support the view that the Modern Movement is all-inclusive. How far it may go, and where it may lead us, is in some small way, up to ourselves.

Architects today are like musicians, each playing his own instrument and his own music, and however melodiously the individual may play, the combined effect is a cacophony. If Architecture develops as we have pictured it, the architect, or to continue the simile, the musician will continue to play his own instrument, but will join with the others in producing a symphonic harmony. A harmonious and integrated architecture on a regional scale is surely a more noble aspiration than individual and unrelated perfection.

FELLOWSHIPS

RAIC College of Fellows Scholarship

Applications for the 1951 RAIC College of Fellows' Scholarship must be forwarded to the Secretary of the Institute this year by December 1st, 1951. Members will recall that the first award of the College of Fellows' Scholarship was made in the year 1950 and that subsequent awards were to be announced every second year. Its value is $1500, and its purpose, the advancement of architectural knowledge through travel, study or research. The Scholarship is open to Canadian citizens who have graduated from a Canadian School of Architecture, and who have taken their entire architectural course at a Canadian School or Schools. Applications for the award must be made within five years of the date of graduation, and candidates for the 1952 award must submit their applications to the Institute Office by December 1st, 1951.

The full Conditions of Award, together with the formal Application Form, may be obtained from the Secretary of the Institute, and any inquiries concerning the Scholarship should be addressed to the Institute Office. Announcement of the 1952 award, if any, will be made at the Annual Dinner of the Institute which is to take place on May 3rd, 1952.

Applications are invited from members of the Institute who qualify under the conditions, and who wish to apply for the Scholarship. In addition, it would be very much appreciated by the Officers of the College of Fellows, if members of the Institute would assist in the distribution of the above information by drawing it to the attention of any architectural graduates, who would be qualified to apply for the award, although they have not yet attained membership in the Institute.

ALBERTA

A month or two ago there appeared upon my desk, through the public delivery system, what I must consider a magnificent gift, for I cannot remember having either ordered or paid for it. This is the General Report on the Plan for the National Capital along with the relative Atlas. I do not now why I should be picked on as a recipient of this, for I cannot learn that any of my confrères here have been so favoured. In these circumstances I feel that I ought to get out and say something about this great effort of such complex workmanship. As to its final recommendations, I understand that criticisms are not entirely wanting. That is to be expected. I have known people so critically minded that they could not enjoy a good thing when they saw it. Perhaps because it contained too little to give them enough to grouse about.

In the present case I am in no position to offer any advice. Frankly I come to praise Cæsar not to bury him. This work is monumental and is a model of how, in the present day, the town planner must go to work. It presents a series of many studies by many minds on many subjects. These include physical studies, geography, climate, geology, the winds, vegetation, waters, history, evolution of the city, demography, religions, racial origins, activities, land uses, land and building values, housing, traffic system, transportation, public buildings, services, education, hospitals, cultural institutions, public utilities, open spaces, recreations, tourism, natural assets, deficiences and proposals. All these subjects are here carefully charted and examined and beautifully illustrated, each one as its nature permits.

The objectives proposed by the Report are clearly and firmly defined in a spirit of optimism and modesty. The following statement by the master-planner M. Jacques Gréber is the key-note to the Report, as it is indeed to all town planning, and is worthy of the attention not only of town planners, but also of the general public:

"Above all we must remember, if we wish to produce a "useful and practical work, that the master plan is a flexi- "ble creation rigorously *conditioned* to the needs of the "inhabitants of the studied territory. The plan *cannot be* "*imposed* upon the people, but if, by the seriousness of its "study, it answers their real needs, it naturally will appear "to them as the medium through which their aspirations "can alone be satisfied. The town planner does not labour "for *his own satisfaction as a technician, but for the wel-* "*fare of the people,* in whose interests he is responsible for "furthering the attainment of wholesome living, work and "environmental conditions."

The illustrations represent an immense amount of work of careful selection in the case of the many fine photographs and in the preparation and method of representation of the plans and charts. A vast amount of information and explanation is conveyed within remarkably small compass and will repay deliberation on the part of the peruser.

The expense of such a work must necessarily be great, yet may well be justified by the importance of the subject. It is well that the planning of the national capital should be set forth to the public in a clear understandable form. The large model has been transported and displayed throughout the Dominion and copies of the report are, no doubt, available in all the larger cities. In comparison with elaborate plans that have recently been made for other cities, this has been in some respects a simpler matter. Ottawa is not a large city. It has many fine natural features of which advantage has been taken in the past. The proposed plan does not call for major engineering work such as is needed in some cases. But if M. Gréber has not asked for the removal of mountains he seems to have been enabled to remove even railways and the extent of territory he has had to cover is very great.

Cecil S. Burgess

PRODUCT DESIGN COMPETITION

National Industrial Design Committee

Purpose of the Competition

To stimulate interest in good industrial design among
(a) the public
(b) the designers and manufacturers
(c) the retailers and merchants

Theme

Designs for a chair or a writing desk in wood and a chair and door hardware in aluminum to meet mass-production needs in Canada, are asked for in a new competition sponsored by the National Industrial Design Committee. A total of $7,000 is available in prizes. Funds for the competition have been contributed by the Aluminum Company of Canada, the Canadian Lumbermen's Association and the National Gallery of Canada. The purpose of the competition, as announced by W. A. Trott of Winnipeg, chairman of the National Industrial Design Committee, is to stimulate the greater use of trained Canadian talent in the designing of manufactured products. Emphasis is laid on economy of production, mechanical efficiency, suitability of form to the function of the object, and simplicity of design.

Category A (Wood)

A chair made basically of wood or plywood for normal living requirements in Canadian homes, to be made by processes suitable for the production and marketing in Canada of at least five thousand chairs a year.

Category B (Aluminum)

A chair made basically of aluminum for use either in homes, gardens, restaurants or offices, to be made by processes suitable for the production and marketing in Canada of at least five thousand chairs a year.

Category C (Wood)

A writing desk made basically of wood or plywood for small home or apartment which desk could also be used as a serving or occasional table and which would also contain permanent or demountable storage space in drawers and shelves, to be made by processes suitable for the production and marketing in Canada of a total of at least one hundred desks a year and a possible maximum of five hundred desks a year.

Category D (Aluminum)

A set of designs for any four of the following items of door hardware in aluminum:

Knob or lever with escutcheon plate (but not lock mechanism),
Knocker or bell push,
Exterior letter box or alternatively plate and border to surround mail slot in door,
Name card holder,
House number,
Kick plate.

Prizes

For each category the following prizes will be awarded:

1st prize is	$1,000
2nd prize is	500
3rd prize is	250

A competitor may submit one or more designs; a competitor may also present entries in more than one category. Not more than one prize in the aluminum categories nor more than one prize in the wood categories will be awarded to any one competitor. In other words, no competitor can win more than two prizes, one in wood and one in aluminum.

The Jury and the National Industrial Design Committee retain the right not to award any of the prizes if no entries of sufficient merit are submitted.

Terms of the Competition

The closing date of the competition is January 15, 1952, and any entry post-marked later than that date will not be accepted.

An entry blank bearing a number is attached to this programme. This number will serve as an identification for the competitor. A competitor should fill out the blank, keep the stub bearing his identification number and return the entry blank to:

National Industrial Design Committee,
The National Gallery of Canada,
Ottawa, Ontario.

A competitor needs to obtain a different entry blank and number for each entry he submits.

The designs submitted must be the original creations of the competitor(s). Two or more designers may collaborate on an entry; designs may also be sent in by firms of designers.

The competition is open to any designer or firms of designers resident in Canada, or a designer who is a Canadian citizen but living temporarily abroad, except members of the advisory committees for the competition mentioned below and members of the Executive of the N.I.D.C. For the purpose of this competition, residents of Canada are defined as Canadian citizens resident in Canada or other persons who have been legally admitted to Canada as immigrants for permanent residence.

The National Industrial Design Committee does not accept responsibility for damage or loss of drawings, etc. The designer himself should take the necessary steps to protect his copyrights.

If requested, the entries which have not been awarded a prize will be returned to their owners within reasonable time by railway express collect, unless the N.I.D.C. requests and obtains permission to retain them longer for exhibition purposes. Entries whose return is not requested will be destroyed at the discretion of the N.I.D.C.

The prize winning entries shall remain the property of the designer, but the National Industrial Design Committee reserves the right to exhibit and publicize the winning designs.

The products must be designed to be made of Canadian material, and to be capable of being produced in Canada, with an appeal to the average Canadian. They must conform to the basic principle of good industrial design for mass production by manufacturing processes available in Canada. Emphasis should be paid in particular to the following principles, all of which should be considered to be relatively equal in importance:

Economy of production
Mechanical efficiency

Suitability of form to the functions of the object
Simplicity of design and harmonious relationship of parts.

PRESENTATION

All drawings should be made on 20″ x 30″ sketch boards (i.e. Bristol Board, Hi-Art) or the equivalent. Drawings on tracing paper or other paper must be mounted on boards of this size. Each entry may consist of one or more boards as required.

Drawings may be in any medium and arranged in any way. Each piece must be shown in a sufficient number of drawings (plans or half plans, sections, elevations, details and instructions, etc.) so that the piece can be manufactured from these drawings, by mass production methods directly without the need for any further details or instructions being given.

Scale of drawings is left to the competitor's discretion. It is, however, suggested that one quarter of one half of full size be used if convenient for the purpose. The scale of every drawing must be clearly indicated, all important dimensions must be shown and the materials clearly specified. In addition to the scale drawings, each piece must be shown in a perspective or isometric scale large enough to give an accurate idea of the appearance of the finished piece.

ACTUAL MODELS WILL NOT BE ACCEPTED. If the competitor wants to submit a photograph of the model or of the finished product, it should be mounted on a 20″ x 30″ sketch board.

Submissions shall bear no identification, name or symbol. Each design submitted shall bear the identification number of the competitor in clearly printed figures. A different number is required for each entry. This number on each submission will be the only means of identification of the design.

Each design must, besides the identification number, bear a title describing the nature of the piece designed. If several designs for objects in the same category are submitted, they should show, after the title, consecutive numbers, for instance: "Chair 1," "Chair 2," etc.

JURY. The Jury consists of the following:

E. A. Allcut, Head of the Department of Mechanical Engineering,
University of Toronto, Toronto, Ontario.

G. Allan Burton, General Manager,
Robert Simpson Company Ltd,
Toronto, Ontario.

J. S. Luck, Designer,
Aluminum Laboratories Limited,
Kingston, Ontario.

George Nelson, Industrial Designer and Architect,
New York.

J. B. Parkin,
President of the Association of Canadian Industrial Designers,
Toronto, Ontario.

In addition, there will be set up two technical advisory committees, composed of representatives of the aluminum and furniture industries, to advise especially to the making of furniture and in the making of aluminum products. The Jury, before making its final recommendations, must consult with these advisory committees and with the executive of the National Industrial Design Committee.

The members of the executive of the National Industrial Design Committee are:

W. A. Trott, Chairman
Jean M. Raymond, Vice-Chairman
Donald B. Strudley, Vice-Chairman
Donald W. Buchanan, Secretary.

Final recommendations regarding awards will be made by the Jury to the executive of the National Industrial Design Committee and the announcements concerning the awards will be made by the executive before February, 1952. In case any member of the Jury should be unable to attend to his functions, the N.I.D.C. is entitled to appoint substitutes.

INFORMATION

Any additional information may be obtained from Donald W. Buchanan, Secretary, National Industrial Design Committee, The National Gallery of Canada, Ottawa.

CONTRIBUTORS TO THIS ISSUE

A. MacKenzie James was born 1918. After five years with the RCAF he enrolled in the School of Architecture at the University of Toronto, graduating in 1951. He is at present working in British Columbia.

Frederick J. Macnab, born and received his early training in Architecture in Dundee, Scotland. Associated with the Architectural department of The Bell Telephone Company of Canada, first in Montreal and later as Assistant Architect in Toronto. In 1927 he was appointed Architect with headquarters in Montreal. In 1946 the Telephone Company adopted the policy of having its architectural work done by architects in private practice. Since then his position has been of an advisory and consulting nature.

CORRECTION

Messrs Alward & Gillies inform us of an error in the obituary written by Mr Duffus in the August issue. Messrs Alward & Gillies were the authors of the winning design for the Lady Beaverbrook building at the University of New Brunswick.

POSITION WANTED

German Architect, specialist in Living accommodation, first class references, practising since 1935 and 42 years of age, wishes to emigrate to U.S.A. or Canada. Advertiser likes to work hard. Will interested firms please get in contact with H. E. Mendelssohn, Director of Progress Building Limited, 37 Berkeley Street, London, W.1.