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R . A . I . C
JOURNAL
OCTOBER 1945

THE briefs presented to the Government by the R.A.I.C. and the Society of Landscape Architects of Ontario have achieved nothing definite. The publicity given the correspondence, including the Prime Minister's reply, has, however, broadened the scope of the inquiry. The press has taken it up, and the radio, at any rate in Toronto, has done an excellent job. Quite a number of civilians, both men and women, have mentioned it to us, and in all cases, they see it as an issue much wider than the infringement of the rights of the professional bodies involved. The R.A.I.C. obviously can do little more than bring the matter to public attention — only popular displeasure can bring about a rearrangement of the terms under which Mr. Greber will work. Short of his being paid in full for his time and trouble, and his contract terminated, the only workable solution now would be his inclusion in a committee of experts in which he would have a voice, but not a deciding one. We can only hope that there will be some Members of the House who may see the importation of a foreign architect in the way that many of their constituents do, and will not hesitate to express their views.

A CURIOUS discrepancy appears in the statements of the Prime Minister and Mr. Greber. According to the Prime Minister, a pre-war plan of Mr. Greber's exists, and he is here to develop it. Mr. Greber, according to the press, claims he has no plan, and that he is here for a preliminary survey of the ground. In either case there is no time to be lost. The Czars of Russia imported French and Scottish architects who imposed national characteristics on a native architecture quite unnecessarily — the governors of French Indo-China may repeatedly have asked for assistance from Paris for the embellishment of their Capital. Canada is not an outpost of a Colonial Empire. If it were, Mr. Greber might be asked to stay another week and design a national flag.

WE are sorry for Mr. Greber under the circumstances, but he must occasionally think of a fantastic situation in which an architect from Ottawa arrived, at the invitation of General de Gaulle, for the redesigning of Paris. An armoured division would hardly be enough to protect him.

WE are obliged to *Time Magazine* for drawing to our attention an article, by Mr. Russell Lyne, in October *Harper's*. We shall try to obtain permission to publish it as it should start a lively controversy in these pages. Mr. Lyne makes an attack on the modern house. He takes the view that "functionalism" is all right in its place, which is the kitchen and the bathroom, but "that modern floor plans, for a few big rooms instead of a lot of little ones, sacrifice privacy to create an illusion of space. Most people would rather have privacy. . . . To have the outdoors always peering at us is a little embarrassing. . . . Modern houses need modern chairs which are delightful as long as you give yourself to them utterly. . . . Their designers insist that when it is our whim to cease sprawling and take an active interest, we should celebrate by moving to another chair." There should be enough there to arouse the ire of the students in the Schools of Architecture who are entitled to space in these pages when they have anything worth while to say.

— Editor.

ART GALLERY LIGHTING

Report of the Committee on Art Gallery Lighting of the Illuminating Engineering Society, New York

Introduction

The chief function of Art Galleries, in the technical sense, is to show the treatment of colour, form and composition in such a way as to give enlightenment and pleasure to the beholder. Although diverse activities are necessary to support this function, and a complete art gallery will include a book bindery, a printery, a laboratory, an office, a library, files, a cafeteria, a laundry and storage facilities, this report will be confined to the lighting of exhibition areas.

Most objects can be seen under a wide range of lighting conditions, but that is not enough for a cultural display. The peculiar beauties of the objects must be clearly and satisfactorily revealed by the light. Cultural objects of different materials and treatment cannot often be revealed to equally good advantage by the same kind of lighting, or similar "surround" treatment. This is a complex problem. Each object worthy of public exhibition should be so displayed that its beauty and power are evident even to the casual observer. Many objects, both sculpture and paintings, require individual study and treatment. Some objects can be treated as a class, but there are many classes that need different *ensemble* treatments, of illumination and surround design, for their best display.

Two-dimensional objects may be shown in vertical, horizontal, or inclined positions. Each position will introduce a modification in the lighting specification. They may be placed above or below the horizontal line of sight; they may have polished or dull surfaces, shallow or deep detail. They may be of canvas, wood, papyrus, paper, silk, velvet, leather, textiles, plaster, tile, terra cotta, marble, gold, silver, bronze, iron or a variety of other materials, each having its own special physical characteristics, and requiring its own special modification of the lighting. Three-dimensional objects may be free-standing.

This report, therefore, can offer only general guidance. Where illumination levels are suggested, the characteristics of the individual pieces of art should be the determining factor in specific cases.

Nature of Light Required

Colour

While artists have the popular reputation of having traditionally carried on their work under north daylight, because light from this quarter of the heavens is less variable in colour (and to a smaller degree, in quantity), than light from the other quarters of the heavens, this is not true of murals, which until recent centuries formed the majority of paintings and were executed in situ. They were thus painted under whatever light could be made available at their location. Tapestries were woven under all conceivable lighting conditions. Oil paintings, which in the span of art are relatively new, (this technique being developed about 460 years ago), have usually been painted where their subject was available. Marine pictures have been painted outdoors in marine surroundings, landscapes likewise. Sometimes the finishing touches were put on indoors. The paintings of the Italian Masters were largely executed outdoors. Portraits and "still-life" are the principal types of oil-painting executed indoors. There is, therefore, no special kind of light (such as north daylight) that the lighting engineer is required to reproduce.

The chromatic character of the light, is, none-the-less, important in its relation to paintings, and of some moment in connection with all objects that depend on colour for their appeal.

It is possible to distinguish between tens of thousands of different colours, but, throughout the long history of art, man has confined his preference to about six hundred of them; the majority being in what is known as the "warm" group, (or in the region, in the colour solid, of red through yellow). These colours, for the most part, are concentrated in the tints (*i.e.*, the various Pinks), in the red section; and in the shades (or browns), in the yellow-red section. A much smaller number of popularly used colours is found in the region of green-yellow through green. A few are also found in the dark blues and purples.

Most objects displayed in art galleries have been decorated with these colours. So were the interiors from which the objects came and for which they were originally designed.

A light that is rich in the warm colours will, therefore, satisfactorily illuminate a wider variety of art objects than a light that is rich in the cold colours. This matter was of small importance until recently, as all forms of artificial light in use in art galleries were relatively rich in the warm colours. The advent of fluorescent lamps, with their attractive luminous efficiency, has changed this. Man now has, for the first time, an artificial illuminant that depresses the warm colours and exaggerates the cold colours, so that the appeal of pleasing colours may be inadvertently reduced, and the shock of unpleasing colours increased, unless this light source is used with discrimination.

Amount of Light

The amount of light which will give sufficient illumination on an art object is not a single, fixed quantity. It will depend upon the location of the object, *i.e.*, whether alone, or displayed in a group; upon the location of the observer (above, below, on a level, near or distant); upon the general brightness of the field of view; upon the percentage of light received that the object can send back to the observer; and upon whether the object is diffusely or specularly reflecting. It will also depend upon the retinal adaptation of the observer, but if the relation between the object and surround brightnesses has been properly adjusted, the retinal adaptation will be satisfactory for the normal observer, and so it need not be considered as an additional factor.

The amount of daylight will depend upon what is available at the location of the gallery, art galleries in England being fortunate to get as much as 17 footcandles of vertical illumination, whereas the National Art Gallery in Washington, D.C., could be designed for 30 vertical footcandles, owing to its more southerly latitude. Ample studies have been made of the best methods of design to admit daylight effectively into art galleries, so there is no need to discuss this matter here.

TABLE I—DISPLAY SPECIFICATIONS

Type of Display	Individual or Group Display	Material	2 or 3 Dimens.	Principal Plane of Display	Type of Surface		Framed	Unframed	Remarks	Lighting Data	
					Dull or Uncovered	Polished or Glass Cov'd				Illum. Normal to Sight Line of Observer	Lighting Specifications
Oil paintings	Individual or group	Canvas Wood Silk Velvet Leather	2	Vertical	√			√		30 ft-c 50 ft-c 30 ft-c 50-100 ft-c	No. 1
"	"	Canvas	2	"	√		√			30 ft-c	No. 2
"	"	Wood	2	"		√		√	Should not be displayed on opposing walls, to avoid self-reflections	50 ft-c	No. 1
"	Group	Canvas	2	"		√	√			30 ft-c	No. 2
		Papyrus, Parchment, Rice paper	2	"		√	√		Ditto	20 ft-c	
"	Single	Canvas	2	"		√	√		Any painting important enough for single display should be completely masked from all other objects so that it can be lighted and surrounded perfectly as an individual piece; and studied without distraction	30-50 ft-c	No. 2
		Papyrus,, Parchment. Rice paper	2	"		√	√			20-30 ft-c	
Water colours	Group		2	"	√	√	√	√		20 ft-c	No. 1 No. 2
Murals	Individual	Plaster	2	" Horizontal	√ √	√		√	Display to avoid self-reflections	20-50 ft-c	No. 1 or No. 5 No. 2 or No. 5 No. 3
Pencil drawings	Group	Paper	2	Vertical	√			√		20 ft-c	No. 1
Ink drawings	"	"	2	"	√	√	√	√	" "		No. 2 No. 1 No. 2
Etchings, engravings, mezzotints, etc.	"	"	2	"	√	√	√	√	" "	20-30 ft-c	No. 1 No. 2

TABLE II—DISPLAY SPECIFICATIONS

Type of Display	Individual or Group Display	Material	2 or 3 Dimens.	Principal Plane of Display	Type of Surface			Remarks	Lighting Data	
					Dull	Semi-polished	Polished		Illum. Normal to Sight Line of Observer	Lighting Specification
Leatherwork	Group	Leather	2 2 3	Horizontal Vertical Inclined		√ √ √			30-50 ft-c	3 1 1
Interior architectural details and ornaments	Group Individual	Various "	3 3	Vertical "	√ √	√ √	√ √		20 ft-c	1 6
Exterior architectural details and ornaments	Individual	"	3	"	√	√	√	Shadows should be similar to those cast by the sun at 45° from zenith	20 ft-c	6
Ceramics	Group	China, etc.	3	Inclined	√	√	√	Generally shown in self-lighted display cases	20 ft-c	1
Jewelry	"	Gems & settings	3	"			√	Scientific "white" light is desirable	50-100 ft-c	1
Sculptures free-standing	Individual	Marble	3	Vertical		√		See paper "Modelling with Light," pg. 202, Vol. XXVI, No. 2, I. E. S. *Transactions*	30-100 ft-c	
		Terra-cotta	3	"		√			40-60 ft-c	
		Plaster	3	"	√				30-100 ft-c	
		Wood	3	"	√	√	√		20-100 ft-c	
		Light bronze	3	"		√			250 ft-c	
		Dark bronze	3	"		√			600 ft-c	6
		Red copper	3	"		√			400 ft-c	
		Green copper	3	"	√				600 ft-c	
		Brass	3	"	√		√		250 ft-c	
		Gold	3	"			√		100 ft-c	
		Silver	3	"			√			
		Ivory	3	"		√			40-60 ft-c	
		Glass	3	"			√		?	6 or 7
		Wax	3	"		√			40-60 ft-c	6

TABLE III—DISPLAY SPECIFICATIONS

Type of Display	Individual or Group Display	Material	2 or 3 Dimens.	Principal Plane of Display	Type of Surface			Remarks	Lighting Data	
					Dull	Semi-polished	Polished		Illum. Normal to Sight Line of Observer	Lighting Specification
Mosaics	Group	Tile	2	Vertical					20-50 ft-c	1
				Horizontal	√		√			3
Enamels	Group		2	Vertical			√	Generally shown in display cases that are self lighted	20 ft-c	1
				Inclined						3
				Horizontal			√			
			3	Inclined						1
Metal work	Individual or group	Gold, silver, brass, aluminum	2	Vertical			√	Relief work, penetrated work, armor, weapons, sculptures, etc.	20 ft-c	1
						√				
			3	Inclined			√			3
						√				
		Bronze, copper, iron, lead	2	Vertical	√		√		30-600 ft-c	
						√				
		Bronze, copper, iron, lead	3	Inclined			√			1
					√	√				
Textiles	Individual or group	Cotton, linen, wool, silk	2	Vertical	√	√			20-50 ft-c	1
			3	"	√	√		Costumes on dummies		6
Woodwork	Individual	Wood	2	"	√	√	√		20-100 ft-c	1
			3	Inclined	√	√	√			
	Group	Wood	3	"	√	√	√	Period room	10 ft-c	4
Books & mss.	Individual	Paper or parchment	2	"	√		√	Generally shown in self-lighted display cases. "	20 ft-c	1
	Group	"	2	"	√		√			
Ivory	Group	Ivory	3	"		√		"	20 ft-c	1

The amount of artificial light that should be provided has been suggested in the Display Specifications for each type of object. It should be remembered, as mentioned before, that these levels are only guides, and are subject to modification by the special factors that surround each individual case. Galleries of the future are likely to be lighted entirely by artificial light, as it is doubtful if an art gallery can be designed to give satisfactory natural lighting during much of the year. Such natural lighting had to be accepted in the closing quarter of the last century, when most of the world's art galleries were built, as no satisfactory artificial substitute was available. Today, any interior gallery can be artificially lighted to better effect than is possible by daylight; and, in addition, it can always reveal each item in its best aspect, which is only a fleeting occurrence under natural lighting.

The general lighting level, in galleries devoted to group displays, should be caused by the overflow (or reflected light) from the illumination provided directly on the objects and their backgrounds unless the galleries are extremely wide, in which case some additional diffused lighting can be provided from the ceiling to remove a feeling of shadow in the centre of the gallery. The designer should be careful not to introduce the problem of reflected glare from the exhibits, in his effort to light up the centre of the gallery; nor direct glare to the observers.

The general lighting level, in galleries housing individual displays, should be only enough to permit leisurely traffic and retain a feeling of repose and quiet. Two to five footcandles will often be sufficient, but it should also be remembered that a sudden change from high to low illumination (stepping out of a brightly lighted individual display into a relatively dim corridor), or vice versa, is apt to be distressing, or even unsafe. An appreciable amount of time is required for adaptation from one lighting level to another, but the downward adaptation takes sixty times as long as the upward change. An intermediately lighted vestibule, between bright displays and traffic lanes, may sometimes be desirable.

Where art objects are displayed in their individual surrounds, so that only one object, such as a Renaissance Master, can be seen at a time, advantage should be taken of the possibility that dark objects may benefit from more illumination than that required for light objects. This is not always true, and requires experimental verification in each case. The amount of light on paintings, for example, is a particularly difficult question to settle, as too much may reveal unintended and undesirable details, such as paint cracks or backing showing through. On the other hand, not enough light may mask desirable colour effects.

The illumination of art objects may be divided, for the purposes of the lighting engineer, into two classes; one dealing with the illumination of flat surfaces, and the other with the lighting of solid objects.

The Lighting of Paintings, Etchings, Tapestries and other similar flat surfaces.

Since these are plane surfaces, the problem is simpler than that presented by the solid object. The shadows are placed in the original work by the artist, and do not have to be created by the engineer as in lighting sculpture but instead of a single colour, there will be shades and tints of a variety of colours, requiring a suitable chromaticity in the light.

Some exhibits have specular features, whether because of the materials used, or because they are covered with glass. These surfaces reflect the light source, and surrounding objects. The location of the lighting source, in most cases, must be such that there is no opportunity for the eye to find a position in which reflected glare is experienced.

Since the brightness of a light-diffusing object (such as a wall), will be proportional to the product of the illumination

falling on it and its reflection factor; and since the brightness of an image of the object (such as a wall), reflected from a specular surface (such as a glass-covered picture), will be proportional to the product of the brightness of the object and the specular reflecting factor of the reflecting surface, the following values of the reflection-factors in the National Gallery, London, England, taken from a report of the Department of Scientific and Industrial Research (London, 1927), will be of interest:—

Portrait of Himself, by Rembrandt	3.7 per cent. average
Middlelharnis, by Hobbema	19.0 per cent. average
Portrait of a Jewish Merchant, by Rembrandt	1.5 per cent. average
A Calm: Vessels Saluting, by Van de Velde	47.0 per cent. average

The report states that the reflection factor may be taken as about 3 per cent. for the darker pictures; 60 per cent. for light-coloured materials and 9 per cent. for the reflection from picture glass when the object causing the reflection is more or less in front of the picture glass. It is evident from these facts that the illumination provided on non-featured objects, and the opposite wall, must be determined on the basis of making their reflections from the picture, lower in brightness than the picture.

Where a painting is exhibited in a booth, stall or niche, by itself, its immediate surround should be finished in a gray tone, having a brightness about 20 per cent. less, and never more than 50 per cent. less, than the average brightness of the picture. The particular tone of gray selected should be a warm gray more often than not, although sometimes a strictly neutral gray, and still less often, a blue-gray, will be best. The choice of the exact colour influence in the gray should be left to the art adviser, the engineer contenting himself with establishing the permissible brightness.

The Lighting of Sculpture and Bas-Relief.

Art objects in this class have three dimensions. Usually each such object should be given a prominent place in an exhibit, and be isolated from the general surroundings so that it will not have to compete for attention with anything else. The reflection-factor of the material of the object (bronze, marble, wood for examples), must be considered in designing the lighting and the illumination provided in accordance. The isolation method of display provides an opportunity to present individual objects under the most favourable conditions, but if such displays are to be viewed in succession great contrasts between them may prevent the smooth visual acceptance of each view as the observer passes from one to the next. A compromise may sometimes have to be worked out that will reconcile the best individual values for each piece, with the best succession values. Generally speaking, no exhibit should be presented with startling vividness, nor in comparative gloom.

The lighting of a piece of sculpture, or bas-relief, is an individual problem in which the lighting engineer must consult the art fraternity for knowledge of the best aspect of each piece. The actual footcandles, and consequent footlamberts must be determined by the engineer, but only the appearance as viewed by one familiar with the esthetic values of the object can finally decide if the lighting has successfully summoned the excellence of the object into visible existence.

Ancient sculpture was usually executed in the open under friendly southern skies, for exhibition in the open. Most sculpture is still intended for exterior use. It is only to be expected, therefore, that it usually assumes its best appearance when its lighting is characteristic of outdoor conditions.

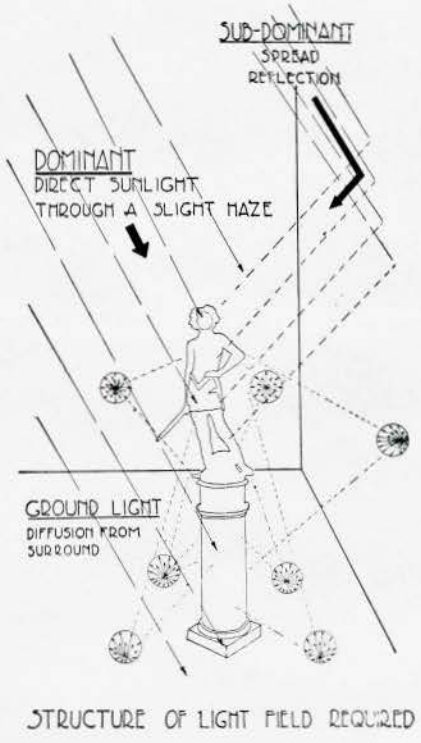


Fig. 1—Structure of light-field required for the illumination of statuary and bas-relief.

The principal features of such lighting are:

1. The main light from the sun and sky.
2. The secondary light, in the form of spread or diffuse reflection, from the higher portions of the setting of the object (such as the nearby wall of a courtyard).
3. Diffuse reflection from the lower part of the surround (corresponding to the ground or courtyard floor outdoors).

These may be termed the dominant light, the sub-dominant, and the ground light, and they are illustrated in *Fig. 1*. The dominant light may be provided by a large low-brightness unit, designed to send direct, controlled light to the object, with a pre-determined and controlled amount to the surround. The sub-dominant will most easily be provided from a portion of the same arrangement that provides the dominant light. The ground light may come from suitable, diffuse reflecting areas, around the base, or support of the object. An example of the application of this technique is shown in *Fig. 2*.

The observer should be guarded against glare from either the light sources or the reflecting surfaces. Louvers are a possible solution against the former, and a judicious placing of the reflecting surfaces will prevent the latter.

Where objects are displayed in wall or floor cases the light source should be concealed from all possible observation. If mirrors are used to reveal some hidden aspect of an object they should be placed so as not to reflect an image of the light source to the observer.

Light Sources.

Art Galleries may be lighted by daylight or by artificial sources, or by a combination of both. As implied earlier, natural lighted galleries are now technically obsolete for most types

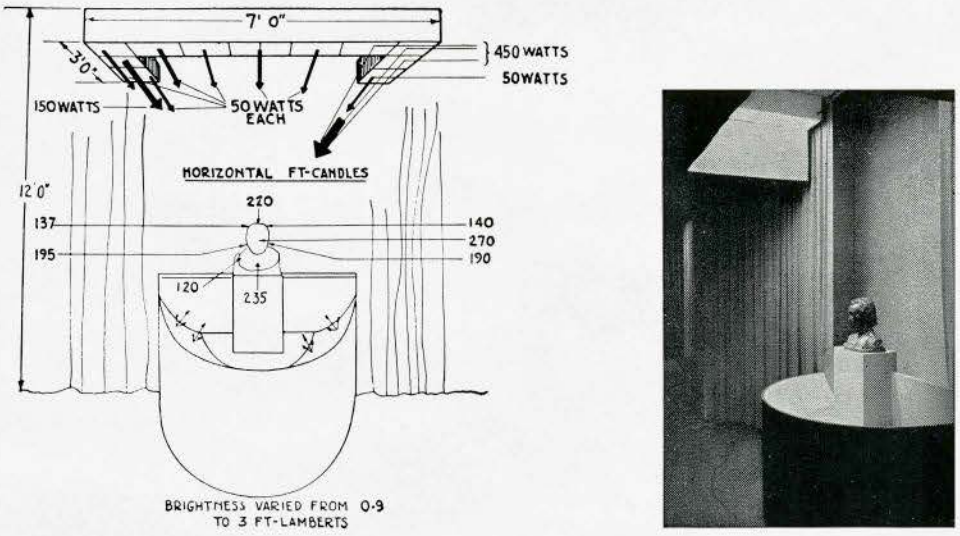


Fig. 2—Method of lighting the Donatello Bronze, Museum of Modern Art, New York, N.Y.

of exhibit, and are likely to dwindle in the future. No satisfactory combination of natural and artificial lighting for art galleries is possible, as the natural partner in the combination varies widely in chromaticity and quantity, from day to day, and season to season, and frequently will change in both colour and quantity in a matter of minutes.

Artificial light sources will therefore continue to be emphasized in this report. Artificial sources are, today, of two types—incandescent (or filament) lamps, and fluorescent (or vapour) lamps. Many people believe the incandescent will follow daylight into the discard, in art galleries, but as long as the fluorescent lamps have a discontinuous spectrum, with gaps, and (for art purposes) excessive energy in the green primary, fluorescent lamps will find their intelligent use confined to experimentally proven, special applications, and in combination with incandescent sources, for the open gallery type of exhibition room, plus their possible application to the lighting of sculpture and bas-relief.

With reference to special applications, many metallic objects are better displayed under fluorescent lighting than under incandescent. In any particular case experiment only can give the final answer. Showcase exhibits will often lend themselves better to fluorescent than to incandescent. The Cranbrook Museum, Cranbrook, Mich., has many successful exhibits of both types. The general lighting of large exhibit rooms by a combination of incandescent and fluorescent sources has also had a successful application. A conspicuous case is that of the Carnegie Art Gallery, Pittsburgh, Pa., illustrated in *Fig. 3*.

There is no known example of the successful application of fluorescent lighting to sculpture, but the feathering of myriad faint shadows, that accompanies the most careful application of incandescent lighting, might be avoided by the use of the longer fluorescent sources, if, at the same time, the light can be sufficiently closely confined to the piece illuminated.

The reader is referred to the many excellent manufacturers' publications for the physical and photometric data of incandescent and fluorescent lamps.

Artificial Lighting Methods.

Most existing galleries have been designed architecturally around the need to admit daylight as copiously, and as pleasantly as possible. In such galleries the artificial lighting inevitably fills a supplementary and inadequate role. With such reservation in mind, a discussion of the artificial lighting methods adopted in such cases, that have achieved a measure of success, follows.

A common method uses a sub-skylight over which is placed a series of reflectors arranged in rows parallel to the sides of the room. The reflectors are, preferably, of the semi-concentrating type, using 150-watt or 200-watt incandescent lamps. The spacing between the reflectors varies from three to five feet, depending upon job conditions. They are placed far enough above the glass to avoid "spotting", usually three to four feet is sufficient, and they are aimed toward the exhibit area at a point about six feet above the floor. Care should be taken in selecting the type of reflector, and in placing it most effectively;

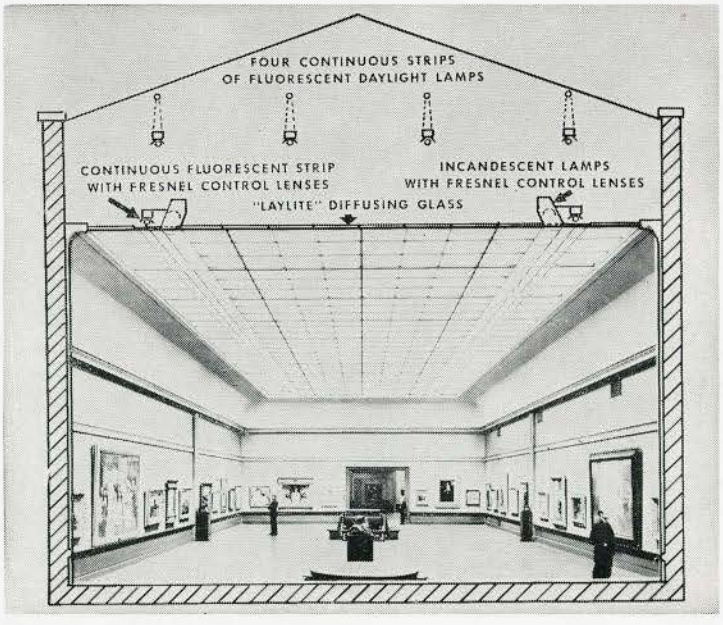
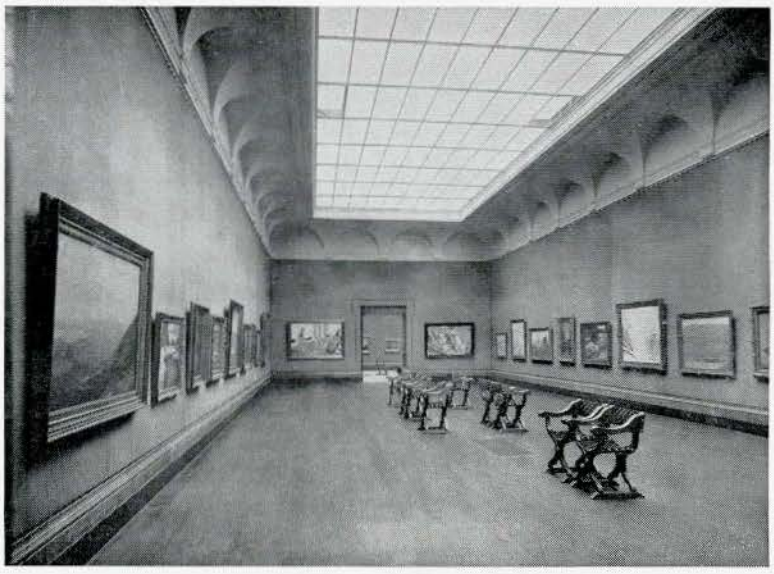


Fig. 3—Method of lighting used in the Carnegie Art Gallery, Pittsburgh, Pa.



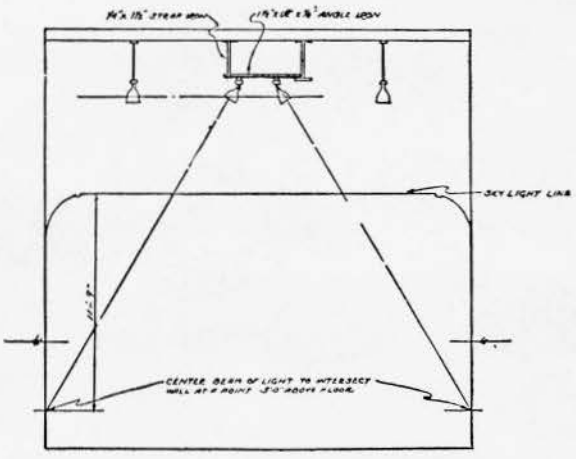


Fig. 4—Section through typical gallery using sub-skylight, showing location of tilted reflectors for wall lighting (and additional subsidiary reflectors for general lighting, if and when required).

and the glass of sub-skylight must be chosen with a high transmission factor, a smooth upper surface and a configurated lower surface, sufficiently obscuring to prevent a view of the fixture above it. Sanded, or etched glass is not satisfactory. A gallery in the Toronto, Canada, Art Museum, shown in *Fig. 4*, offers an example of this lighting method.

The selection of reflectors, their placing, number and other details must be worked out for each gallery since they will be influenced by the character and amount of the illumination required, and the architectural conditions.

Another example is given in *Fig. 5*, a reception room of the Chicago Art Institute in the Goodman Theatre, Chicago, Ill. The ceiling light provides suitable illumination for the tapestries and also general illumination for the room.

A satisfactory variation of this method is to provide reflectors with an extensive distribution over the main body of the skylight to give general lighting in the gallery, and to place continuous prismatic lenses around the perimeter with complementing transparent reflectors above, designed to bend the light towards the wall displays. The transparent reflectors are desirable to permit daylight to pass through them and prevent a band of darkened glass around the skylight during the daylight hours, which would occur with opaque reflectors.

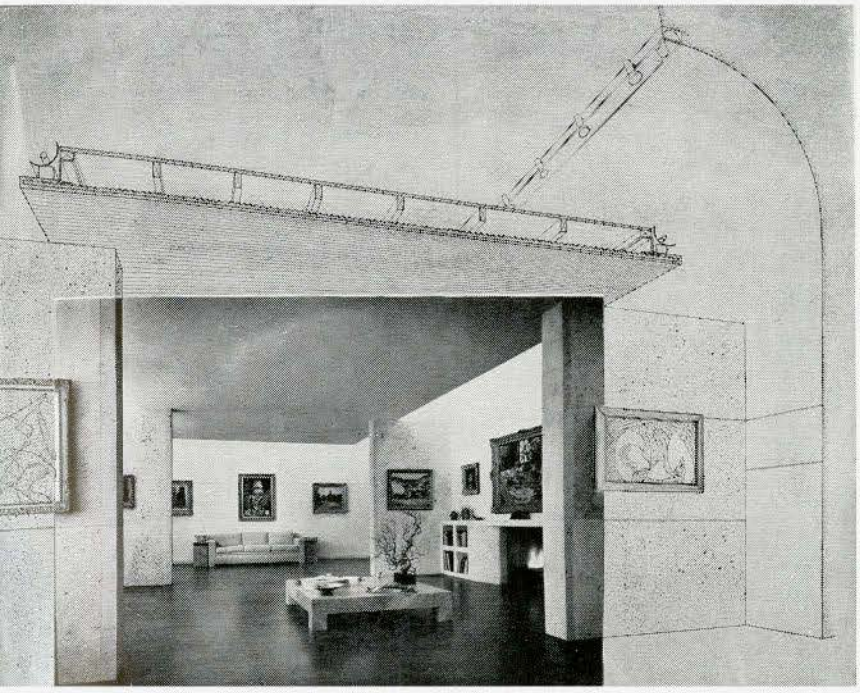
Another excellent method of special application to long, narrow galleries, and to "corridor" galleries is the use of a floating ceiling, suspended below the skylight and completely masking it; thus permitting the natural light to be "spilled" over its edge and down the walls. This is illustrated in *Fig. 6*. The artificial lighting may then be located in a trough, hidden above the floating ceiling as shown in the illustration, with some means of control for individually spotting the pictures. This means of control could be reflector lamps, prismatic assemblies, or reflectors and louvers.

Where the direction of the light towards the display is obtained solely from aimed reflectors sending light through the sub-skylight, the level of illumination on the vertical surfaces of paintings will depend upon the angle of incidence of the projected light on the sub-skylight. The greater the angle of incidence the greater will be the percentage of light reflected back into the attic from the upper surface of the sub-skylight, and, therefore, the less light transmitted to the paintings, or other displays.

Where the lighting is not used to supplement daylight, and where, therefore, there is no skylight to contend with, group wall displays, such as paintings, can be lighted from glass panels in the ceiling, located out from the walls just enough to permit reflectors above them to illuminate the display. An example is shown in *Fig. 7*, illustrating a room in the Kansas City Museum of Art. The central ceiling area receives no light directly but is sufficiently illuminated by the reflected light from the floor and walls. The room is pleasing since the exhibits are high-lighted and the centre of the room is restfully lower in brightness.

Another method for group displays is given in *Fig. 8*—the Elkins Room in the Philadelphia, Pa., Museum of Art. In this case

Fig. 5—Reception Room of Chicago Art Institute in the Goodman Theatre, Chicago. Illinois. Wall lighting from reflectors above ceiling panels.



Courtesy of *Architectural Form.*

Fig. 6—Private gallery in Beverly Hills, California. Samuel A. Marx, Architect, Noel L. Flint and C. W. Schonne, Associates, Chicago.

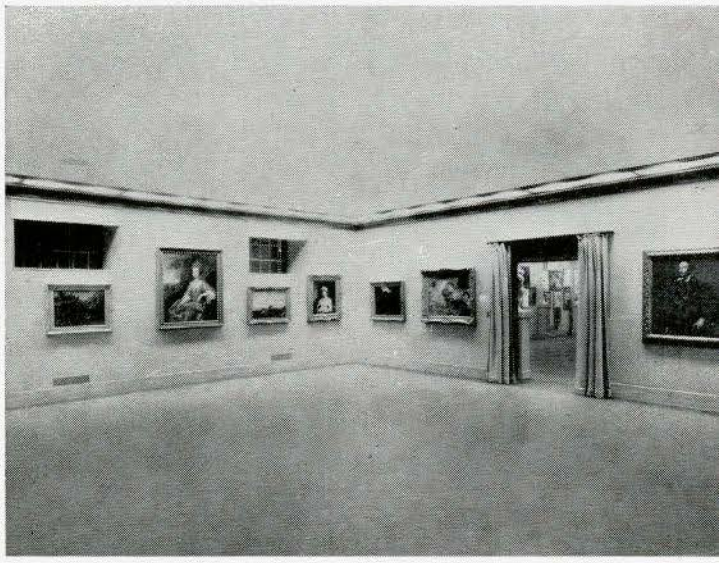


Fig. 7—Wall lighting method used in a room of the Kansas City Museum of Art

the reflectors are entirely hidden behind the false ceiling, the light being transmitted through vertical panels of diffusing glass around the perimeter of, and between the false ceiling and the true ceiling, (not visible in the photograph).

Still another method for illuminating group displays in historical or period settings is that adopted by the Metropolitan Museum, New York, N.Y. (see *Fig. 9*), for the Spanish Room. Here wall lighting is used, from artificial windows, as indicated in the sketch accompanying the ilustration.

Where both wall and table displays occur in the same room, in group arrangements, prismatic lens panels can be used, paralleling the wall displays, to bend the illumination towards, and other glass panels, prismatic or diffusing, or configurated can be used over the central table displays. This is illustrated in *Fig. 10.*

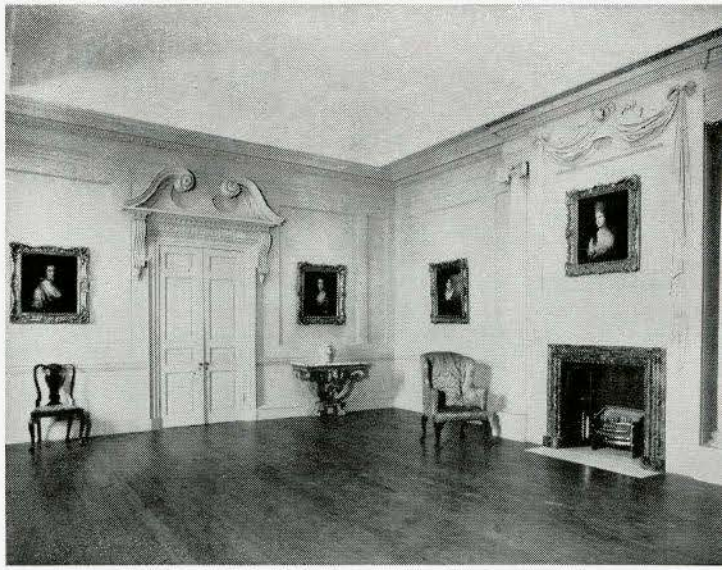
Reproductions of classical and medieval courts and similar spaces, should be lighted to reproduce, as far as posible, effect of the natural or artificial illumination of the period. *Fig. 11* shows the lighting of the Pompeian Court in the New York Metropolitan Museum of Art. The appearance is that of a formal garden, and the lighting helps to simulate the appearance of outdoors.

Period rooms can be equipped with artificial windows, providing illumination which simulates daylight in colour, direction and indoor quantity.

Where an art gallery, or individual displays, as illustrated in the plan of the Italian Renaissance exhibit in the Museum of Modern Art, New York, shown in *Fig. 12,* can be arranged for illumination by artificial light exclusively, the following specifications are applicable.

Specification No. 1.

Light source parallel to object to be lighted, and out from object in plan 25 per cent. of the vertical distance from centre of object to light source. Preferred position of light source is



Courtesy of the Pennsylvania Museum, Memorial Hall, Philadelphia.

Fig. 8—The Elkins' Room, Philadelphia, Pa., Museum of Art.

recessed flush in ceiling. Distribution of light source to be asymmetrical (similar to standard distribution of show-window equipment). Face of equipment should be either tilted away from the observer's line of sight or should be louvered against the observer or should be closed with redirecting lenses. See *Fig. 13.*

Specification No. 2.

Similar to preceding specification but location of light source to be selected by finding that position which results in the best compromise between illumination on the object frame shadow, observer shadow, and reflected glare. See *Fig. 14.*

Specification No. 3.

Light sources designed to deliver general illumination with major part of light in the 0-degree to 45-degree zone. Light sources preferably flush with ceiling to reduce projected area reflected from vertical displays. Area of light sources to be as large as possible to reduce direct glare, unfavourable contrast with display, and reflected glare.

Specification No. 4.

Illumination to be ostensibly produced by period fixture designed to harmonize with the interior on display, but these fixtures should deliver not more than three to five footcandles of general illumination, from small lamps of comfortable brightness. Each piece of furniture and object of art to be accented by additional illumination from concealed sources such as pinhole projectors, louvered downlights or small lens units hidden by beams or similar features of the interior.

Specification No. 5.

Light source to be *parallel* to, *continuous*, and at the bottom of the vertical surface to be illuminated. Light sources below the eye of the observer will require masking but those above the observer's eyes will not. Lenses will usually be required to bring about a uniform illumination of the mural from bottom to top. See *Fig. 15.*

Specification No. 6.

The kind of light distribution required for free-standing sculptures is shown in *Figs. 16, A* and *B*, and *17, A* and *B*. The application of this to a particular piece must be an individual procedure and different in each case.*

Specification No. 7.

Translucent and transparent materials are frequently best displayed by edge lighting in the case of flat panels and by body lighting in the case of sculptured objects. Edge lighting, as its name implies, means introducing light into the object through one or more of its edges. Body lighting means placing the object on a rest over a piece of opal glass, above a light which shines up through the object.

It is doubtful, however, if an art gallery can be designed to give satisfactory natural lighting during much of the year and the future may see such structures designed for artificial lighting only.

Direction of the incident light.

It is evident that there should be no windows in the wall on which the pictures are hung, as the light from these windows would produce intolerable glare interfering with vision of the picture. Windows in a picture gallery should be in the wall facing the picture or statuary or in the ceiling or roof of the

*For details, refer to "**Modeling With Light**", Transactions I.E.S., Volume 36, No. 2.

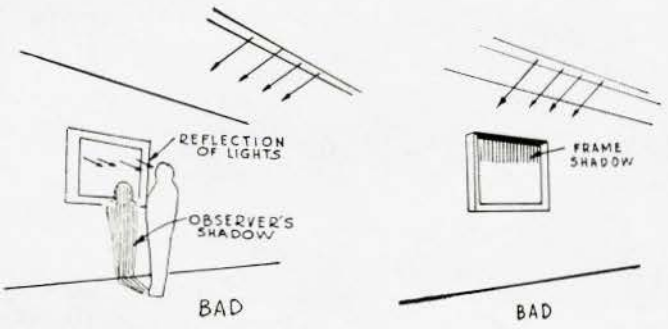


Fig. 14—Specification 2.

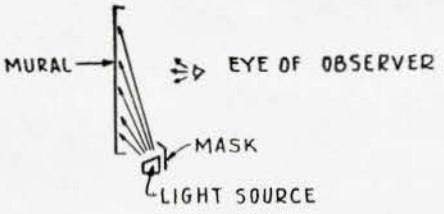


Fig. 15—Specification 5.

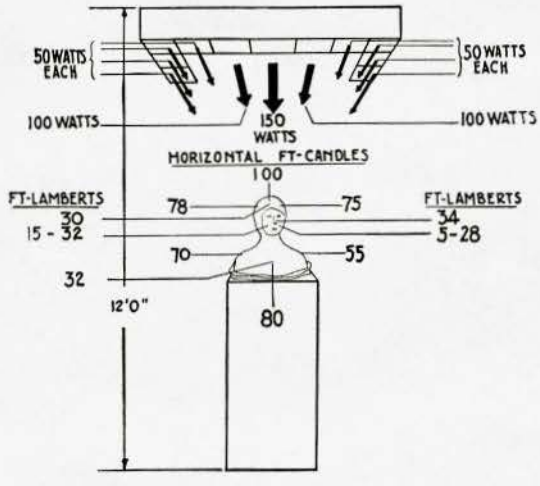


Fig. 16A—Diagram and photograph of the installation of the Laurana Marble.

Fig. 9—Spanish Room, Metropolitan Museum of Art, New York, N.Y.

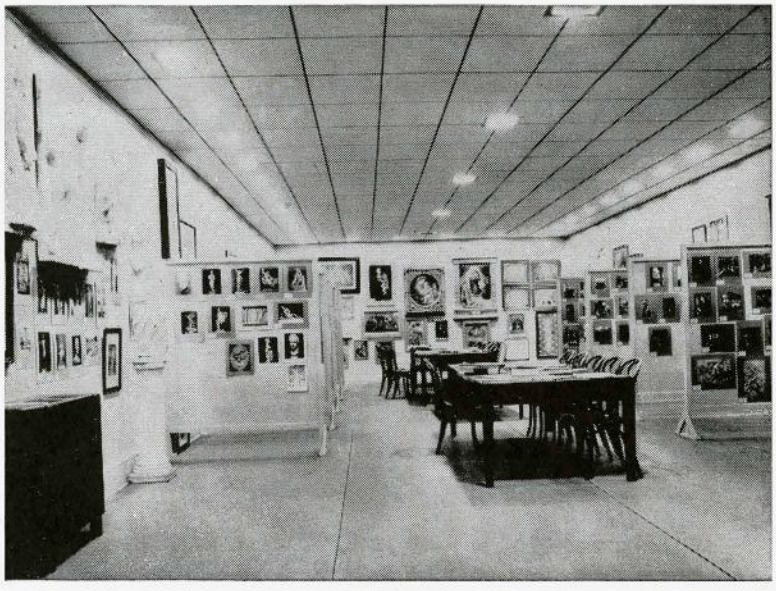
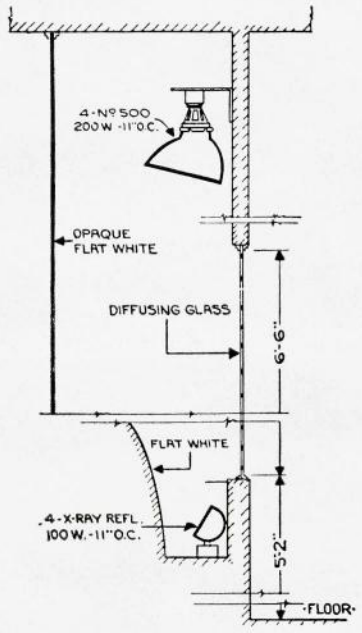


Fig. 10—Art Gallery, University of Maine.

Fig. 11—The Pompeian Court of the New York Metropolitan Museum of Art.



Elevation

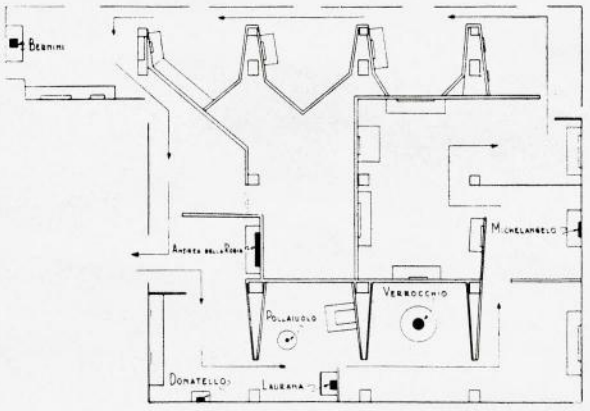


Fig. 12—Italian Renaissance Exhibit at Museum of Modern Art, New York.

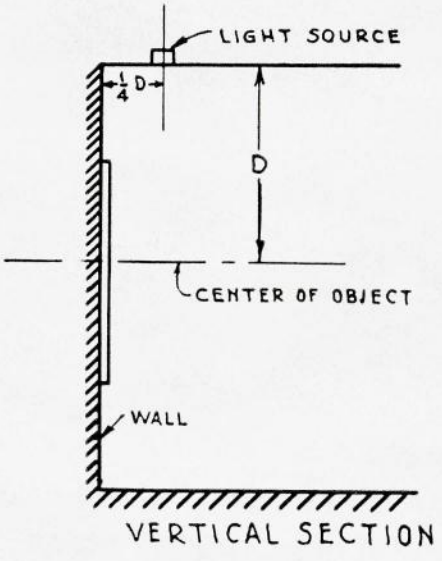


Fig. 13—Specification 1.

gallery. Since most paintings are either covered with glass or are varnished, producing specular reflection from the picture, the windows should be placed at a sufficient height from the floor so that their images are not reflected to the eyes of the person viewing the picture. To accomplish this the lowest part of the windows in the opposite wall illuminating the picture should be at such a height that it makes an angle of at least 45 degrees with the level of the picture. Since in a gallery of ordinary width, say of 30 feet, the bottom of the window in the opposite wall would be at least 30 feet above the floor, it is evident that the most desirable natural lighting is by windows placed high in the wall or by skylights in the ceiling placed at such an angle that no direct sunlight enters them during the hours when the gallery is open to visitors. Sub-skylights should also be used to further diffuse the light from the skylight. The most desirable orientation of the skylights would be towards the north so that only light from the north sky would enter them. Where a horizontal skylight already exists, a false ceiling of a diffusing medium, hung below the skylight, will greatly improve matters. Where skylights face in directions other than towards the north, screens can be erected on the roof to cut out direct sunlight during the hours when the gallery is open to visitors. For the reasons given in this and the succeeding section, it is evident that the most desirable lighting for an art gallery would be unilateral with the skylights or windows facing toward the north, the height of the bottom of the skylight or window being at least equal to the width of the gallery.

It is to be noted that the surfaces to be illuminated may be either vertical, as of pictures on a wall; horizontal, as of objects in cases; or three dimensional, as of sculpture. The character of the illumination desired should determine the position and inclination of the windows or skylights.

Cautions in Connection with the Use of Daylight — Reflections.

To reduce the reflections of other objects from the glazed or varnished surface of a picture, the illumination on the surrounding objects and on the opposite wall of the gallery should have brightnesses lower than that of the object of regard. This can be accomplished by daylighting the pictures or sculpture by windows or skylights placed in the wall opposite and higher than the pictures, so that the direct light from the windows falls on the pictures while other objects and the wall in which the windows are placed, receives only reflected light. The brightness of the picture will then be higher than the brightnesses of the "surround" reflections.

An excellent example of unilateral lighting in which this principle has been used is the Tate Gallery, London, England, as shown in *Fig. 18.* In the one section of this gallery, the visitor views the picture from a corridor along the opposite wall. The vertical window is placed high above him, and between him and the picture, so that the direct light from it does not fall upon him or any objects in the corridor. In this case, the illumination of a picture at eye level was found to be about seven times as great as that of the spectator's face so that the reflections were almost unnoticeable.

Where it is necessary to have a two-sided gallery, a roof section of the type shown in *Fig. 19* can be used, and dark-coloured featureless screens, some 12 feet high, can be erected down the centre of the gallery, dividing it into two aisles.

In any gallery, to reduce reflections and to avoid distortion of the colour quality of the daylight, all surfaces including the walls, should be finished in dull and neutral tones.

Where fabrics or paintings on exhibition are likely to fade under daylight, special glass may be used in the windows or skylights, such as Crooks' glass, which cuts out some of the short-wave or ultraviolet light or such exhibits may be covered and exposed only for inspection.

Fig. 16B—Portrait of a Lady called Eleanora of Aragon; marble; height 17 inches; by Francesco Laurana (1420-1503). A (Above)—Best available previous photograph. B (Below) Photograph by Professor C. Kennedy taken during exhibition at Museum of Modern Art, New York City.

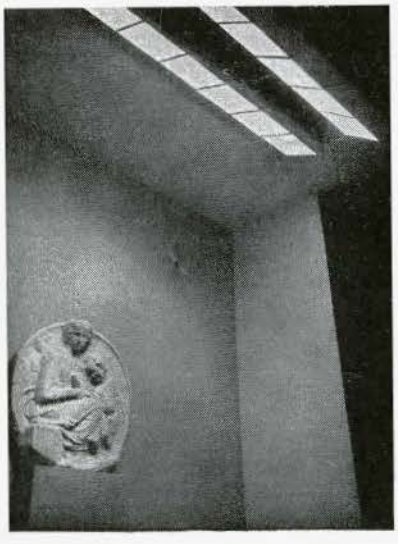


Fig. 17A—Photograph of installation for the Michelangelo "Madonna and Child".

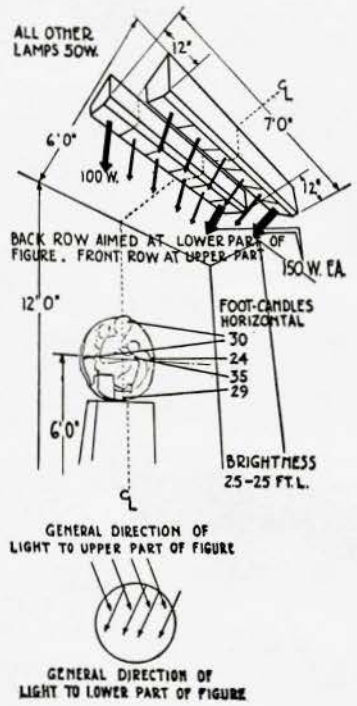


Fig. 17B—Diagram of installation for the Michelangelo "Madonna and Child".

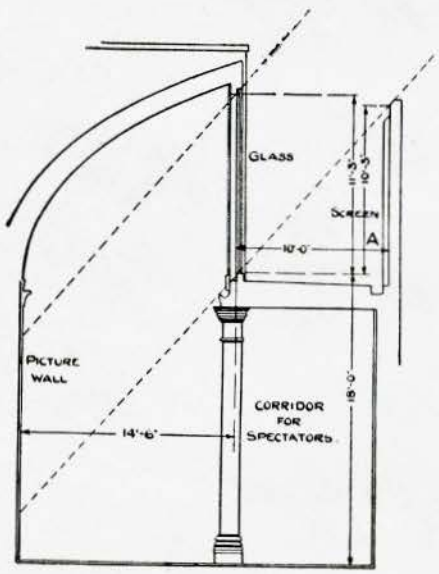


Fig. 18—Cross-section of gallery in Tate Gallery, London, England, showing viewing corridor.

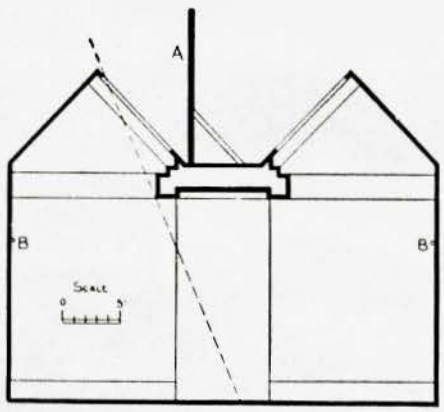


Fig. 19—Roof section of a two-sided gallery.

Bibliography

Lighting of Museums, A. L. Powell and E. Parker: *Trans.* I. E. S. Vol. 16, 1921, 540. A. D. Curtis and J. L. Stair: *Trans Trans.* I. E. S. Vol. 16, 1921, 558.

The Lighting of Picture Galleries and Museums, S. Hurst Seager, F.R.I.B.A.: *The Museums Journal* (the organ of the Museums Association), (England) Vol. 20, 1921, p. 1.

Lighting of Milwaukee Art Institute, Harry W. Bogner and Arthur J. Sweet: *Trans.* I. E. S. 17, 1922, 434.

The Cost of Daylight—Art Museums, M. Luskiesh and L. L. Holladay: *Trans.* I. E. S. 18, 1923, 130.

Windowless Museums—Forecast for Future, *Trans.* I.E.S. 18, 1923, 237.

New Developments in Art Gallery Illumination, G. T. Kirby and L. X. Champeau: *Trans.* I. E. S. 18, 1923, 515.

Effect of Artificial Light on Colour, *Trans.* I. E. S. 18, 1923, 512.

Art Galleries, *Trans.* I. E. S. 23, 1928, 756.
Architectural Forum, July, 1928, p. 105.
Electrical West, Aug. 1, 1927, p. 67; May 1, 1928, p. 276.

The Lighting of Picture Galleries and Museums, S. Hurst Seager, F.R.I.B.A (Fellow Royal Institute British Architects): *American Architect and Architectural Review*, Vol. 124,—1923, Part I, p. 429—Part II, p. 471—Part III, p. 517.

"The Natural Lighting of Picture Galleries", The British Dept. of Industrial and Scientific Research: Illumination Research Technical Paper No. 6, 1927; also *Illum. Eng.* (London) Dec. 1927, p. 334.

Lighting of the Philadelphia Museum of Art, C. L. Borie, Jr., and Ward Harrison: *Trans.* I. E. S. 34, 1829, 61.

Modern Art Lighting—The Development in Europe, H. Maisonneuve: *Trans.* I. E. S. 24, 1929, 456, 475.

Lighting the Replica of the Parthenon (Nashville Museum of Art), J. L. Stair, F. H. Tathwell: *Trans.* I. E. S. 25, 1930, 891.

The Why and Wherefore of Museum Planning, Henry W. Kent, Secretary Metropolitan Museum of Art; *Architectural Forum*, Vol. LVI, June 1932, p. 529.

Artificial Museum Lighting Rivalling Daylight, National Museum, Stockholm: *The Illustrated London News*, Vol. 183, Oct. 28, 1933, p. 690.

Lighting of the William Rockhill Nelson Gallery of Art and Atkins Museum of Fine Arts, Harold L. Hutchinson and Walter H. White: *Trans.* I. E. S. 30, 1935, 453.

Modern Stage Lighting Applied to Museum Groups, Richard C. Engleken: *Trans.* I. E. S. 31, 1936, 985.

Relighting the Walters Art Gallery, Baltimore, Md., Clinton Conway: *Trans.* I. E. S. 33, 1938, 125.

The Lighting of Museums, Olindo Grossi, *Pencil Points*, Vol. 19, Sept. 1938, p. 569. Includes study of natural and artificial lighting in Art Galleries and Museums both American and European, Boymans Museum at Rotterdam.

The Museum in America, a Critical Study, Lawrence Vail Coleman, Director of the American Association of Museums, Published by the American Association of Museums, Washington, D.C., Vol. 1, 1939.

Museum Lighting, by Thomas S. Kelly, Lighting installation in the Whitney Museum of American Art, New York, *Architectural Forum*, Vol. 71, 1939, p. 350.

Associated American Artists Galleries, New York City; *Architectural Forum*, Vol. 71, 1939, 347.

The Museum of Modern Art, New York City, Philip S. Goodwin and Edward D. Stone: *Architectural Review*, Vol. 86, 1939, p. 121.

Modeling with Light, H. L. Logan: *Illuminating Engineering*, 34, 1941, 202.

Illumination of Statuary, L. R. Steinhardt: *Illuminating Engineering*, 34, 1941, 509.

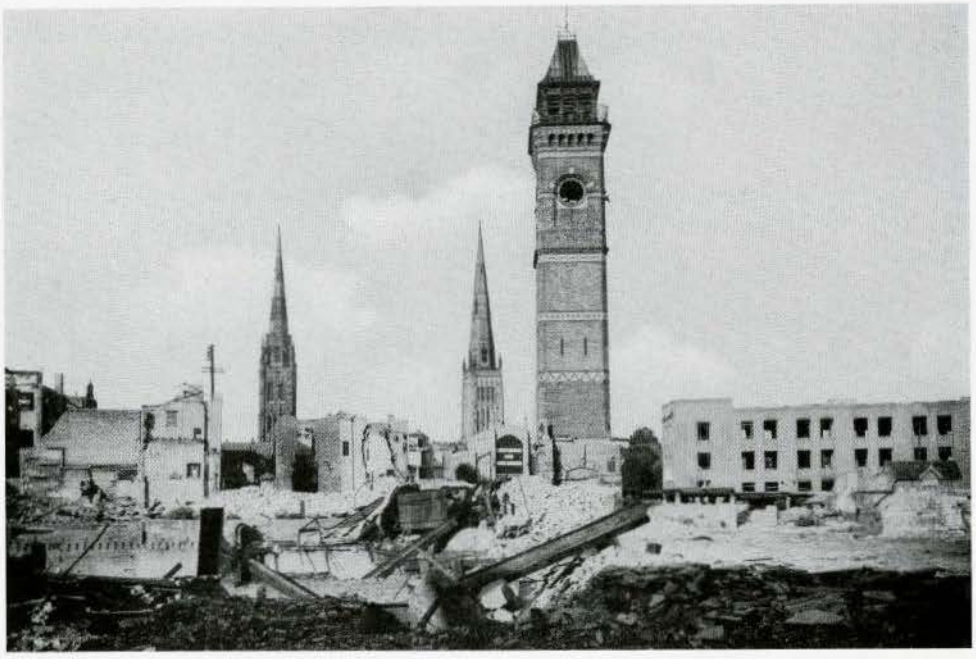
Man-Made Sunlight at the Carnegie Institute, Pittsburgh, Pa., Vol. 14, No. 8, January, 1941, p. 232.

The Museum of Modern Art, New York, *The Museums Journal*, Vol. 41, 1941, p. 93, 102 and p. 154-156.

Worcester (Mass.) Art Museum, *The Annual*, Vol. IV, 1941.

Respectfully submitted,

H. B. Dates, Chairman.
H. L. Logan.
Aksel J. C. Knudstrup.



HOW BLITZED COVENTRY WILL RISE AGAIN

WHEN the Luftwaffe bombed Coventry on November 14th, 1940, Göring was very proud of the exploit: this was the first British city to be almost destroyed in a single raid. The 'planes came over hour after hour from dusk to dawn and the bombs rained down on the city indiscriminately. Coventry has for long been a centre of heavy industry in Britain, but the Luftwaffe made no attempt at target bombing. The beautiful fourteenth century cathedral was gutted and the centre of the town was utterly shattered. So pleased was Göring with his night's work that he declared he would "coventrate" Britain's cities one by one—a promise he was never able to keep.

Morning came on November 15th and the people of Coventry who had escaped injury crept out under a great pall of smoke from the fires that were still raging, and tried to save a little from their shops and their homes. Hospital staffs had worked at incredible pressure during the night while bombs fell all around—surgeons operated by the light of a hurricane lamp when the electricity failed. The wards were so crowded that in the morning all casualties who could be moved were taken elsewhere. Nothing could be done that first day but to attempt to put out the fires, search for survivors, and do a certain amount of rather hopeless salvage.

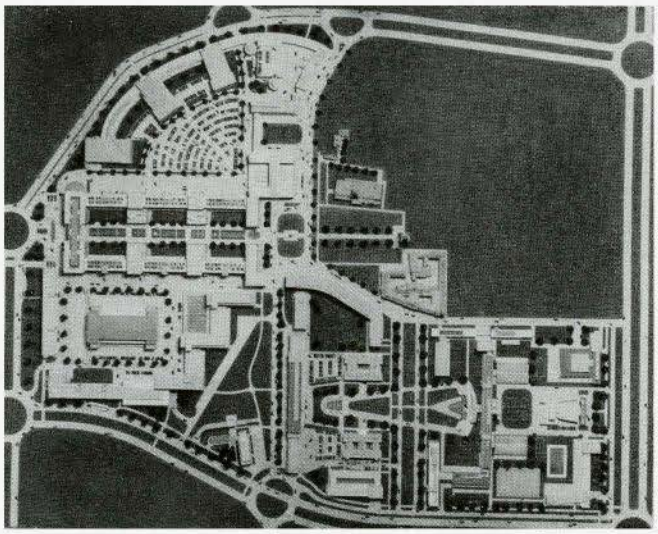
Gradually the city gathered itself together again. Patched and repaired, Coventry's workshops were soon in action again producing essential war material. Emergency arrangements for feeding the many homeless were organized, and the work of repairing shattered houses was begun. The shopping centre simply did not exist, and as a temporary measure a street of neat, tin-roofed shops went up. They were easily erected, all of the same pattern, and they adjoined each other. The shopkeepers had big name-plates affixed to the fascia boarding.

The people of Coventry were determined that a new and finer city should emerge from the ruins and that the plans should not be put aside until after the war. Naturally no permanent rebuilding could be started for some years, but the plans could be made so that the new city did not eventually grow badly and haphazardly. The city architect, Mr. D. E. E. Gibson, and his staff went to work and planned a city which would have plenty of open space even in the centre. The three spires for which Coventry is noted—those of Trinity Church (which is not seriously damaged), the Cathedral and Christ Church—remain standing. It is expected that Coventry's fine cathedral will be restored and its medieval stained glass replaced.

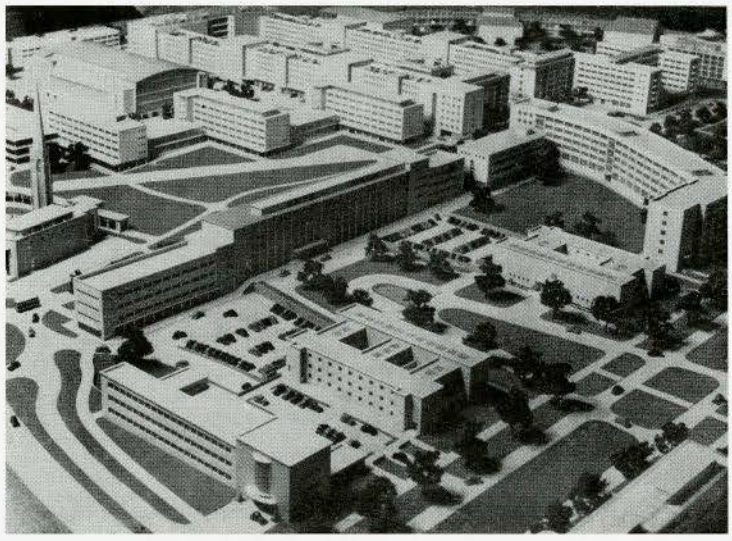
From the large ground plan of the future city of Coventry it can be seen how well the working centre of the city has been apportioned, and how much allowance has been made for free space and well-devised roadways and car parks. The main Shopping Precinct (the rectangular block of buildings in the lower right-hand section of the plan) is made up of multiple stores and small individual shops with offices above them. All the shops are set around gardens so that pedestrians can move in safety, and there are service roads and car parks at the back of the shops on each side. The cathedral spire is made a focal point at the end of this vista of buildings. The Administrative Centre makes provision for police station, police court, magistrates court and juvenile court, county Assizes court, and for parking and police garages. Also grouped together are all Government offices—such as the telephone exchange, General Post Office, offices for social welfare, inland revenue and district valuation.

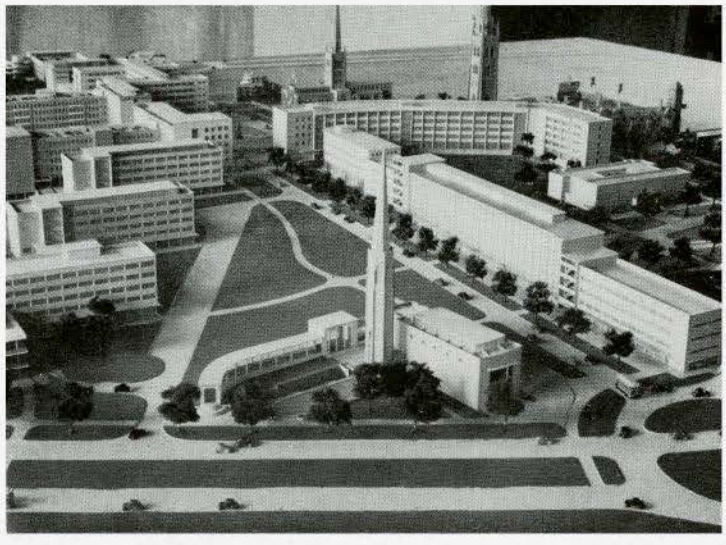
There are to be first-rate new places of entertainment, theatres (including one for repertory, another for students, and an open-air theatre), cinemas and a Committee Section where societies can hold their meetings and lectures. Here there will also be a gymnasium and a café for those people who come straight from work. There will also be a place for music, an art gallery, a city library, a small exhibition hall, and swimming baths. One of the completely new features which the architect has planned is a college of adult technology, which will have science and workshop blocks, a library, dining-room and common-rooms. The roof will be used for laboratories.

The civic pride and spirit of the people of Coventry, which they have shown by their resilience in disaster, and their determination to turn destruction to good account, has found full expression in the plans for their new city. No side of their corporate life has been neglected, and in the years to come they will have a city created as one whole in which it will be a pleasure to work and play.

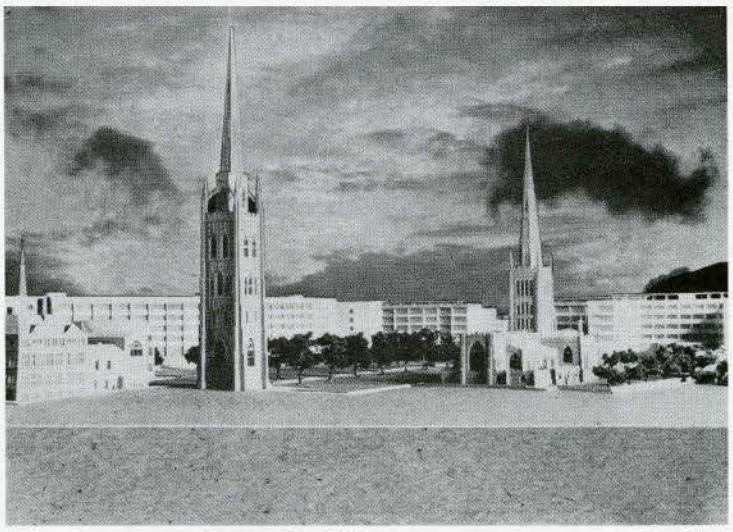


The ground plan for the new city, made by the city architect, showing how much allowance has been made for open space. The main Shopping Precinct, upper left, has gardens for pedestrian safety and a very large car park at the back.

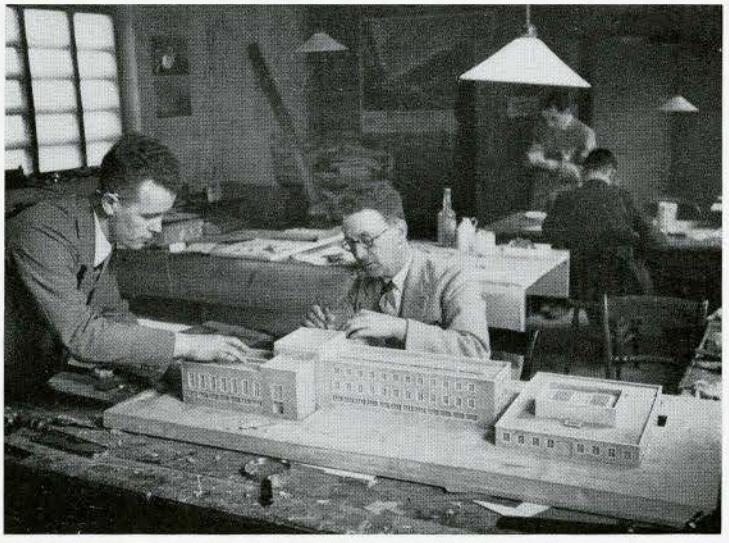




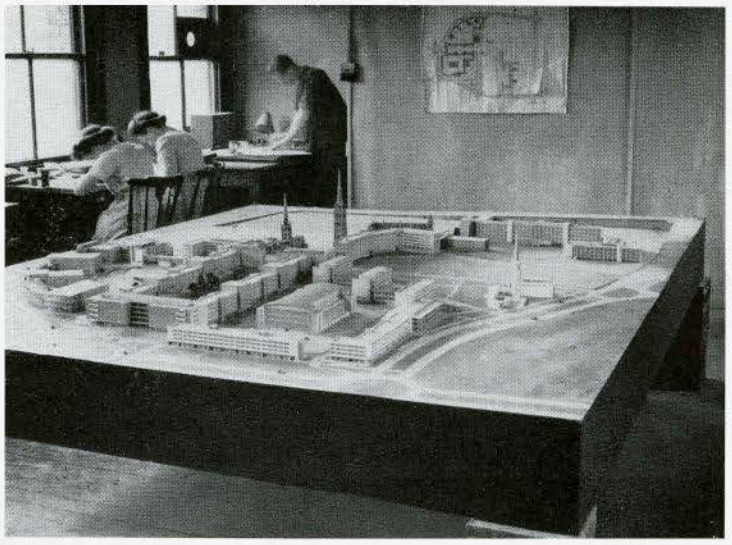
In the foreground is Coventry's third famous spire—Christ Church. To the right are the buildings for Government offices, and to the left are the blocks of shops which will surround the Market Hall.



This model shows the tower of the beautiful fourteenth century cathedral, which may later be rebuilt, and Trinity Church, which remains standing. The cathedral tower will be the focal point at the end of the Shopping Precinct vista when the city rises again.



Craftsmen of a famous British model-making firm at Northampton, which made the miniature city of Coventry, at work on one of the scale model buildings.

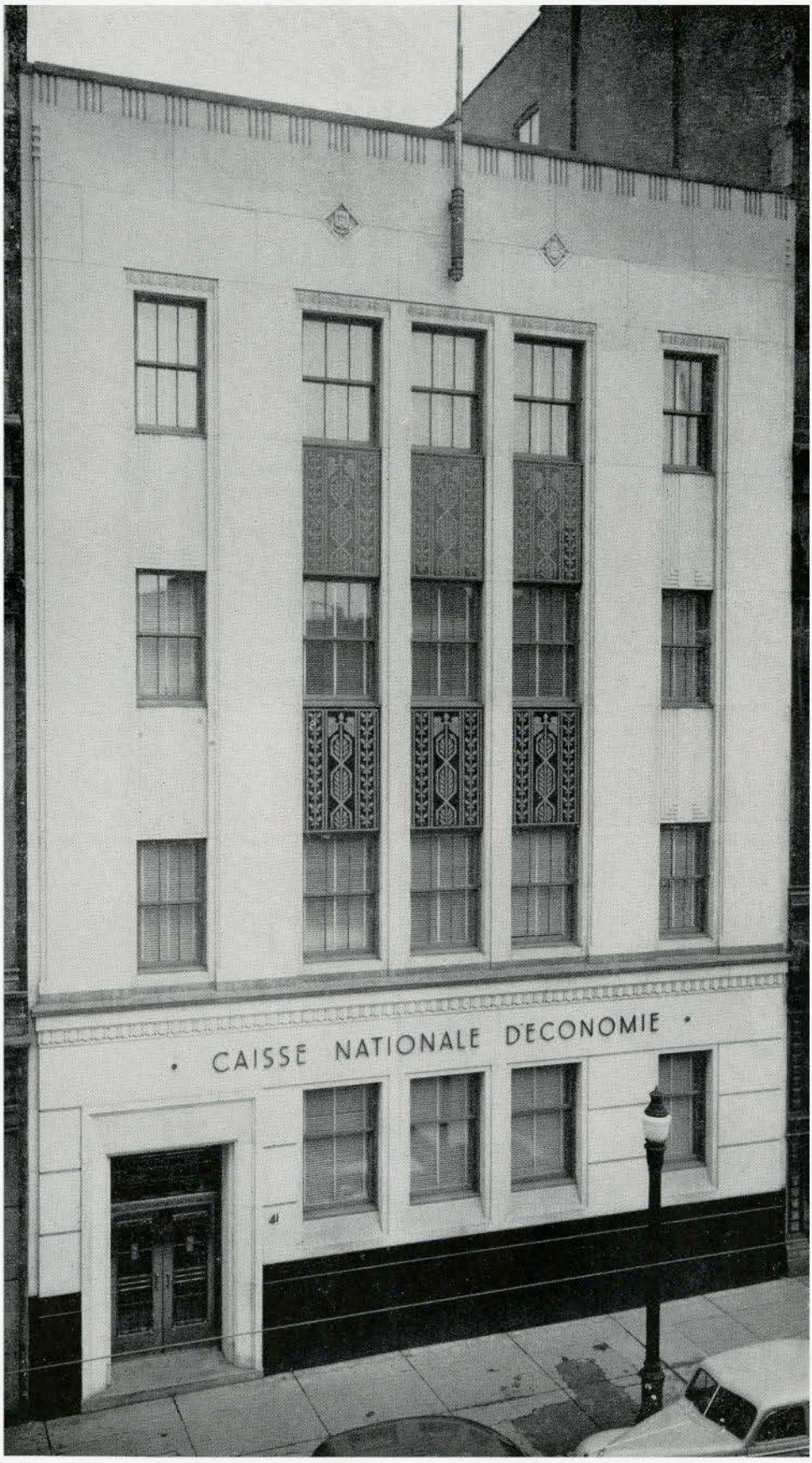


View of the workrooms with the model of the planned city laid out on the table. This gives some idea of the actual size of this lovely miniature.

The office building of the Caisse Nationale d'Economie is situated on St. James Street West, in the heart of Montreal's financial district. It is a pre-war building (built in 1938-39), designed to house solely the owner and accommodate its various administration departments. It is four storeys high on St. James Street and six storeys at the back, on the lower level lane. The exterior is of white granite and the base is of Swedish Black Granite. The building is fireproof, structure is of reinforced concrete; floor finish is terrazzo, marble, travertine; walls Caen Stone Composition.

The main floor for the public is two storeys high with a mezzanine on three sides, the upper floors are for accounting, the basement floor space is taken up mainly by the company's vaults, the sub-basement is used as a garage by the staff.

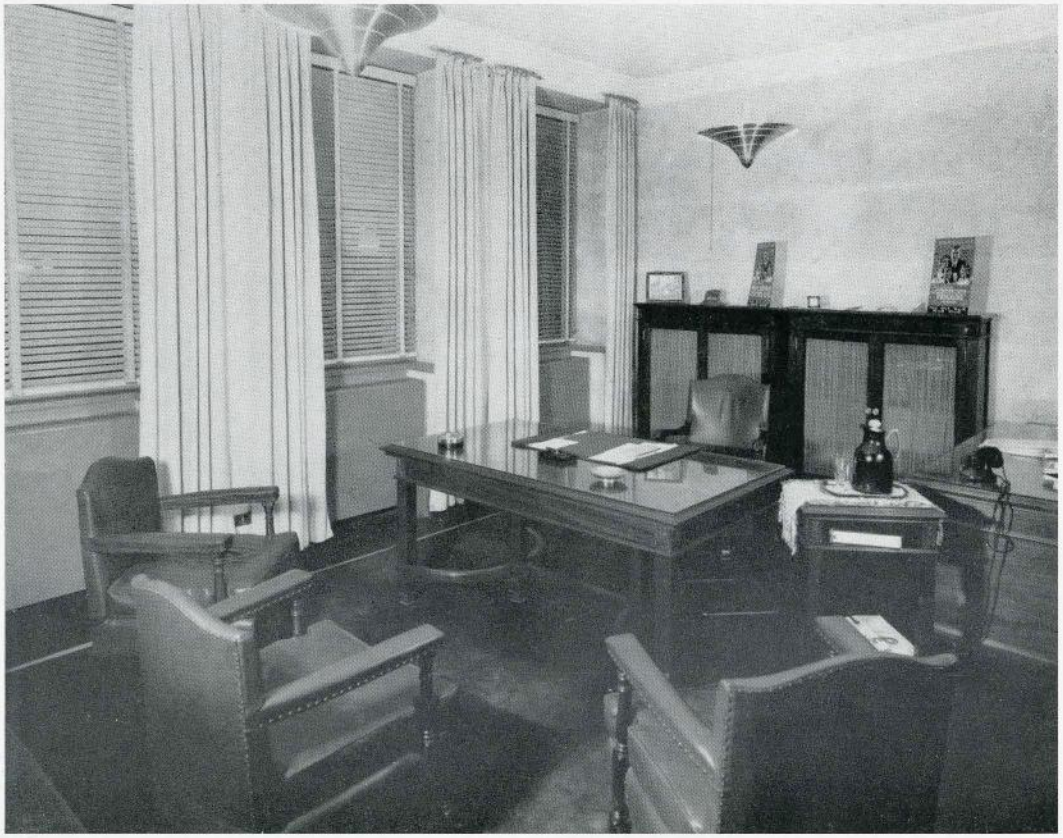
This building of 43'-0" frontage by 92'-0" depth, was erected through contract for $153,388 — plus $92 for extra work.



CAISSE NATIONALE D'ECONOMIE, MONTREAL, QUEBEC

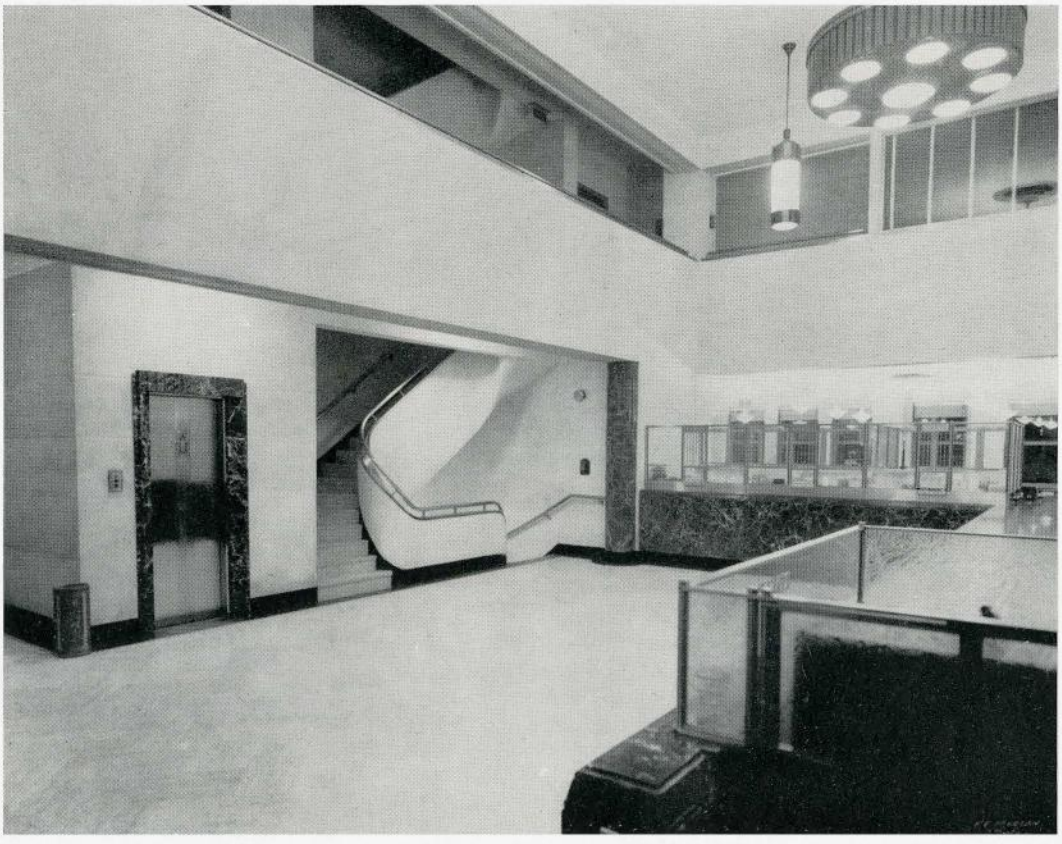
PAYETTE AND CREVIER, ARCHITECTS

BOARD ROOM



GENERAL MANAGER'S OFFICE

BANKING HALL, EAST SIDE



BANKING HALL, WEST SIDE

ARCHITECTURAL DRAUGHTING SCHOOL
TRAINING AND RE-ESTABLISHMENT INSTITUTE, TORONTO

By D. G. W. McRAE, Supervisor of the School

Experienced architectural draughtsmen are at a premium today and may continue to be so for some time to come. However, it may be encouraging news to the architects of Canada as a whole and Ontario in particular, to know that something constructive is being done to remedy this serious deficiency. Since the beginning of May, 1945, a number of veterans have been taking a course in applied architectural draughting at the Architectural Draughting School in the Training and Re-Establishment Institute, 50 Gould Street, Toronto. It is likely that a number of these men will be available to practicing architects by the middle of November. After that date there will be a steady stream of graduates trained to take positions as junior architectural draughtsmen.

The Architectural Draughting School is located in the northerly building of the group that once housed the old Toronto Normal and Model Schools. It is one of several schools in the Training and Re-Establishment Institute, Toronto, which was set up and is supported by the Dominion and Provincial Governments as a part of their joint training programme to re-establish discharged service personnel in civilian life. Any veteran of the recent war is eligible for admittance to the school, but he must first have his proposed course of training approved by the Department of Veterans' Affairs. In addition to training men as architectural draughtsmen, the general policy of the school is to assist them through the difficult period of transition from military to civilian life, and at the same time render a much needed service to the country at large and in this case, the building industry in particular.

Photos courtesy of Townsend and Ibbotson

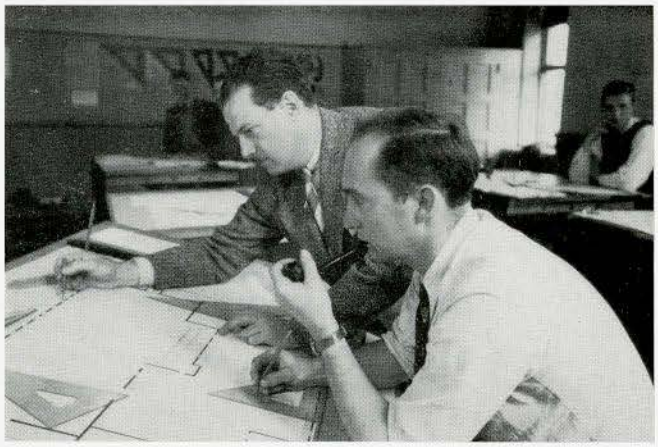
At the present time the school consists of two excellently equipped draughting rooms, a separate room for Ozalid white-printing, adequate storage space, and an office. Draughting table illumination of between fifty and sixty foot candles is obtained by the use of hot cathode fluorescent fixtures. By wiring these fixtures alternately on a three-phase, four-wire circuit, the usual bothersome flicker resulting from twenty-five cycle current has been reduced to a minimum on the working surfaces. Each room is equipped with thirty inch by forty-eight inch Hamilton Ideal draughting tables, several parallel straight edges on pulleys, and both fixed and adjustable head tee squares. All of the equipment was chosen for the purpose of providing as many different learning situations in its use as possible. The present enrollment of twenty-eight students ranging from twenty to twenty-four years of age will be increased to forty which is the maximum number the existing facilities can accommodate. If a sufficient number of applications for training are received, and suitable instructors become available, night classes will be inaugurated.

Although no particular educational prerequisites have been fixed or insisted upon for admittance to training, candidates are strongly advised to have completed at least Grade X standing in Mathematics, English and Science, or the equivalent thereto. Without some such academic background and/or the usual training in Mathematics and related subjects as required by the three services, the average student would not be able to complete the prescribed course of study within a reasonable time or derive the maximum benefit from his studies. Eight of the twenty-eight students now in attendance have Upper School standing in Mathematics in addition to their complete Middle School, nine have complete Middle School standing, and the remainder have all finished Grade X in either a Technical School or an academic High School. Both the quality and quantity of the work produced by those who have been on course in excess of three months more than justified the standard of educational background advised. It is interesting to note that after a surprisingly short period of adjustment to a new environment, Upper School Matriculants generally speaking exhibit sterling qualities as draughtsmen.

Two factors of major importance were given prime consideration when writing the courses of study. First, that each student ought to be able to commence training at any time and receive instruction as an individual, and not as one of a group or class; and second, that he ought to begin or continue training at his own level of experience and ability. These two rather difficult requirements were met successfully by dividing the various courses of study into units, and then subdividing each of the units into an appropriate number of projects. Assignment Sheets were made up for each project setting forth the reference to be consulted, the notes to be written, and the problems to be completed. This method of instruction enables the staff to judge quickly and accurately the exact level at which each student should commence training, reduces the amount of formal "lecture" teaching to an absolute minimum, and permits the instructors to devote the greater part of their time to individual personal supervision.

A point of some concern to both the architect as a prospective employer and to the veteran as a prospective employee, is the latter's standing as an architectural draughtsman after graduation from this school. In other words, how much does he know? Where does he start? And what will his initial salary be? These questions can be most readily answered by making a short analysis of the work now being done by the school.

The following courses are offered by the Architectural Draughting School: Basic Architectural Draughting, Elementary Structural Design and Draughting, Building Construction Estimating, Pencil Sketching, and Blueprint Reading. Obviously the last named course is not intended for the draughtsmen, but rather as a refresher for building mechanics and as related



work for those taking courses in the designated building trades. If and when the demand is felt, courses in Building Surveying, Building Specifications, and instrumental Perspective will be included.

Basic Architectural Draughting is mandatory for all students contemplating a career in draughting offices, whether those of architects or engineers. It covers the use of instruments, line techniques, applied geometry, third angle projection, isometric and oblique drawing, development of surfaces, elementary architectural sketching and perspective, fundamental architectural details, working drawings, elementary design, and a brief review of the history of structure including a few of the more commonly used styles of domestic architecture. A maximum time of approximately six months is allowed to complete the one hundred and sixty odd projects composing this course. At its conclusion the student is reasonably proficient in carrying jobs through from the sketch to the working drawing and detail stage with all of the knowledges and skills that that entails.

Elementary Structural Design and Draughting is a special course for those wishing to prepare themselves for work in a Structural Engineer's office. It also has a strong appeal as a supplement to the course in Basic Architectural Draughting. In general, the course covers all of the basic and detailed operations involved in the design of columns, beams, and trusses in both wood and steel. The student will also have had some training and experience in making simple steel layouts, plans and details including both riveted and welded joints. For his final problem, the student will make a complete set of structural drawings for some proposed or if necessary, some existing building. It is hoped that eventually mutually satisfactory arrangements can be made whereby students will be able to spend a portion of their course time in the draughting offices and shops of a number of local Steel Companies. If such a plan does materialize, much will have been done to bridge the inevitable gap between training and practice. The graduate will also be considerably more valuable to his employer and to himself.

Building Construction Estimating implies a fairly comprehensive knowledge of the materials and methods of architectural construction. Therefore in writing the course of study, an attempt has been made to provide sufficient data for the beginner but not too much for the student who may have had some practical experience in estimating, or the Basic Architectural Draughting course. Each of the designated building trades is covered, and commonly accepted methods of taking off quantities, drawing bills of material, and estimating costs are taught. One of the features of this course is that at its conclusion the uninitiated beginner will have a working knowledge of how and with what materials buildings are erected.

All of these courses are so designed with regard to one another that a student may elect to take any one, any combination, or all of them depending on his ultimate objective, the amount of credit he has with the Department of Veterans' Affairs to devote to vocational training, and his ability to complete the course within a specified length of time. However, each student is urged to finish his training and obtain gainful employment as soon as possible, because it is recognized that the best possible way to re-establish a discharged airman, soldier, or sailor is to see that he is placed in a wage-earning position at the earliest possibe moment. For this reason the Architectural Draughting School is not in any way a finishing school, but rather a place where discharged service personnel can obtain whatever basic knowledges and skills are necessary to qualify them as junior draughtsman.

Because no one as yet has graduated from this school and had the opportunity to prove himself either successful or otherwise in the routine work of an architect's office, it is impossible to say at this moment with any degree of certainty exactly where the future graduate will stand in the gap between the Technical School graduate and the University graduate. However, it is safe to say that with his broader and higher academic background plus six months intensive training, and because of his experiences with and knowledge of men gained in the armed services, the average graduate of this school will find his starting level at a fairly advanced point. He ought to be able to cope with the office jobs assigned to him after a relatively short initial period of experience. The matter of salary is something that will have to be settled on an individual basis in the light of circumstances current at the time of engagement, and the student's performance at the school.

Possibly the most unique feature of this school is that it is conducted in conjunction with, and under the same supervision as that of the Building Trades School. The Building Trades School offers six months courses equivalent to the first two years of apprenticeship training in Carpentry, Bricklaying, Sheet Metal Work, Steamfitting, Plumbing, Painting and Decorating, Electrical Construction, and Plastering. Advantage is taken of this situation to offer the architectural draughting students some related work in each of the designated trades. It is felt that some such experience, however limited it may be, is a decided advantage to the future architectural draughtsman.

Several architects have already indicated some uneasiness concerning the status of the graduates of the Architectural Draughting School with the Architects' Registration Board of Ontario. It cannot be stated too emphatically that the men who complete any or all of the courses offered at this school have no standing whatever with the Board. All of the students have been clearly told and are constantly reminded that their training in no way contributes toward their registration as architects. Any misconception concerning this point is quite without reason. Graduates receive no diploma and are urged to advertise themselves as junior draughtsman and seek employment as such with architects, engineers, contractors and the manufacturers of building materials and equipment. If at a later date they wish to proceed to registration as professional architects they must conform in every detail to the requirements of the Architects' Registration Board of Ontario.

The School of Architectural Draughting not only presents a wonderful opportunity to discharged service personnel to train themselves for work in a sadly neglected and depleted field of endeavour, but it may also be regarded by the architects if they so wish, as an experiment in a new field of architectural education and training in which they ought to have a direct and intimate interest. Although a start has been made and much has been done to determine the kind of training that the school offers, it is not intended that the courses should crystallize and remain static, but rather that they should remain elastic and at all times subject to change with the changing conditions of professional practice. The staff will at all times welcome suggestions and visits from the Architects of this or any of the other Provinces.

THE PROVINCIAL PAGE

AEDIFICAVIT

F. H. PORTNALL, REGINA, SASK.

My meeting with "Port" and our subsequent friendship was a high-light of my trip out West last Fall in the interests of the R.A.I.C. I hope that trip contributed something to a better understanding of each others problems, between those of you out West and those of us here in the Centre: certainly it was a wonderful privilege for me to visit Western architects and to see many of the splendid buildings that their talent has produced. Standing out prominently among those buildings is the Confederation Building in Regina, designed by the subject of this little biography.

Port is one of those delightful persons upon whom nature lavished her gift of talents. Not content with being a master of his own craft, he is also a pianist of a high order and a soloist of such outstanding merit that the capture of the gold medal in the Provincial Musical Festival was just taken in his stride. Not to be outdone by her talented husband, Mrs. Portnall won the gold medal in her own class, just by way of proving that the Portnall family rates high in cultural achievement. On the other side of the picture, Port's golf is of a superior brand and his prowess as a hunter is legendary.

Born in the delightful county of Surrey, he received his architectural training with high-ranking British architects and came out to Winnipeg in 1906 to the branch office of Darling & Pearson. In 1912 he established his practice in Regina in partnership with F. Chapman Clemeshaw and the firm succeeded in winning the Winnipeg City Hall competition and the Canadian Battlefield Memorial competition. During the First World War he served overseas from 1915 to 1919 with the 10th Brigade Machine Gun Company.

In 1928 and 1929 he was President of the Saskatchewan Association of Architects and has been a tower of strength to that organization to this day.

The recent Editorial Board edict limiting these biographical sketches to some 300 words, alone prevents a lengthy recital of the accomplishments of this interesting personality, this good companion, this kindly man, who, in such a large measure commands the respect, the confidence and the friendship of his fellows. Of "Port" it may be truly said, "A Gentleman and a Scholar."

ALBERTA

Much is at present being done in the lay-out of small residences in groups with a view of improving the environment of these beyond what may be got by a mere regular row of houses. A question of some importance arises about which opinions differ and concerning which a good deal may be presented on both sides. This is the question as to whether it is preferable to have rear lanes in residential districts. In some cities the rear lane system has been adopted, in others it may be nonexistent or exceptional. It would probably be a matter of considerable difficulty to change a system that has been adopted.

Against the rear lane system probably the most forcible argument is that rear lanes occupy quite an appreciable area of ground and greatly extend the amount of road surfacing to be maintained by the municipality. The latter is probably the argument of greater validity, for the mere extension of open area is not in itself an evil. It gives more openness and operates against congestion. The rear lane or alley is intended as a convenience. The extent of this convenience ought to be fully considered. The principal services rendered by the rear lane are: convenience in handling garbage, accommodation for motor cars, and getting such services as water, sewer, gas and electric lines better disposed. There are, of course, answers to all these claims, more or less convincing.

Garbage can be removed along the front street. With a well-organized and well-operated removal system little objection can be raised. But it appears to be difficult for small towns to perform this service with regularity and efficiency. As garbage is usually held for most part of a day and in many towns for two or three days, it seems preferable that this should be done as far from the dwelling as possible. This is naturally at the rear lane. It may be contended that rear lanes tend to become untidy and noxious. This is not necessarily so. Many will be found to be very pleasant being lined as they often are with lilacs and crab apple trees. Garbage cans themselves are not usually pleasing objects and the ungentle hands of garbage men add little towards improving their figures. It has been frequently recommended that these cans should be housed in wooden bins with sloping lids towards the gardens and self-closing doors towards the lanes. This is an excellent recommendation, but is not sufficiently adopted. It would be a good idea for stores to stock ready-made articles of this kind which would surely meet with ready sale. As it is, the householder has to devise and order or make these himself—an operation beyond the enterprise of the many.

For motor cars the rear lane has its own advantages and, no doubt, some disadvantages. The garage being placed away from the house is not so convenient of access, but the inconvenience of walking the length of the garden is not great. It may even be a pleasure and may be balanced against the quiet that may be preserved in the house. The driver has little difficulty in bringing the car around to the front street when required. When the garage forms part of the house and the car issues upon the front street there is an interruption of the curb and the sidewalk which tends to block the run-off of rainwater from the gutter. Further, when house after house has its car exit running across the sidewalk, the pedestrian—supposing that wretched creature has still some claim to consideration—fares rather poorly, being apt to be held up at intervals whilst cars are entering or leaving these garages. The plan of a house is simplified and generally improved when the garage is altogether separate. This is severely felt on narrow frontages.

The practice of using rear alleys for water, sewer and gas lines has also advantages and disadvantages. It seems a fatally frequent occurrence that just after a street is nicely laid with concrete or asphalt, up it comes again to alter some of these services. As lanes are generally merely gravelled the expense of this sort of thing is much less. The temporary inconvenience may be greater, for it may be difficult to dodge an excavation in a 16 or 20 foot lane. The repair, however, may be more quickly done and the public involved fewer.

Poles carrying telephone and lighting lines are no great adornment anywhere. Even transformers fail to transform them into ornaments. They are surely better disposed of in the lanes. It is probably too much to expect that, in residential districts, these lines should be run under ground. Probably not many towns (there are some) are careful to have their poles truly perpendicular and painted green. From poles in lanes it is usually necessary to string at least two lines, one for electric light and one for telephone, across the rear garden. Sometimes an unfortunate owner finds a cobweb of lines overhead, and observes that his cherished trees have grown so high that their branches are rubbing off the insulation from the electric wires. So the trees must be ruthlessly pruned or even removed.

Architects designing grouped houses are apt to find their well intentioned efforts thwarted by contrary local opinions or practice in matters of this sort.

Another aspect is worth considering. No plan is static. What is now a residential district is liable to become a business district. A business district requires rear lanes. The transformation will be more easily effected if lanes already exist.

Cecil S. Burgess

OBITUARY

MARCEL PARIZEAU

Marcel Parizeau was born in Montreal on the 6th of May, 1898, the son of Doctor Telesphore Parizeau, who later became Dean of the Faculty of Medecine of the University of Montreal. He studied at St. Mary's College and at *l'Ecole d'Architecture,* which was then a branch of *l'Ecole Polytechnique de Montreal.* The choice of his career was not due to his environment but to the laws of heredity as his grandfather was a church builder of established reputation. Admitted to the practice of his profession in 1921, he was wise enough to know that he did not know everything about his art and decided to pursue his studies at *l'Ecole des Beaux-Arts* in Paris. It must be said to Parizeau's credit that his avidity for learning was insatiable and that his interest extended beyond the study of architecture alone and covered the realms of literature, philosophy and all the major and minor Arts. He was a man of wide and varied culture, and his mind was always busy working on some artistic or philosophical problem. Parizeau was awarded scholarships both by the Government of the Province of Quebec and the French Government. This permitted him to stay in Paris from 1923 to 1933. Of course during all that time he was a pupil at *l'Ecole des Beaux-Arts,* but he found time to travel through France and Italy, studying and sketching. He made a hobby of water-colours and succeeded so well that he was later to exhibit in Montreal, Toronto and Rio de Janeiro.

Upon his return to Montreal he opened an office with Mr. Antoine Monette, who had also studied at *l'Ecole des Beaux-Arts,* in Paris. In 1936, they were chosen by the French Government to act as associates with Mr. Eugene E. Beaudoin, the eminent French architect, in the construction of the French legation in Ottawa. Soon after, they were commissioned by the Federal Government to plan and supervise the reconstruction of the Craig Street Armory in Montreal.

Parizeau's activities, however, were as numerous as they were varied. He designed quite a number of homes in the modern trend, always stressing utility and convenience. His conceptions were clear and harmonious, and he never concealed a clumsily-planned apartment behind a tidy facade. He designed pieces of furniture with the same skill and practical insight, and the results were a high tribute to his unusual personality. Father M.-A. Couturier, the well-known French painter and art critic, had written a book on Parizeau's work as an architect and furniture designer which at the time of his death was already in the printer's hands and will soon be published.

His advice was sought for in the most different quarters. He has been in charge of the department of interior decoration at *l'Ecole du Meuble,* in Montreal, since 1936. In 1943, he was appointed consulting architect for the City of Montreal Town Planning Commission. He was a member of the subcommittee on Housing and Community Planning of the Federal Advisory Committee on Reconstruction. Last year he was elected associate member of the Royal Canadian Academy.

His critical sense was infallible and painters and artists earnestly sought his advice and gratefully accepted his opinions, which were always moderate and kind. His influence on the younger group of modern painters was deeply felt. He wrote articles on the subject of their art and talked to them understandingly. He was a witty, colourful, and resourceful talker. One would always be the wiser after an encounter with him, for his opinions were wisely motivated and shrewdly expressed.

The main object of his ambitions, however, was Town Planning. He had devoted most of his time to a methodical study of the subject, and the work he has already accomplished for the City of Montreal Town Planning Commission shows how admirably fitted he was for the task. Unfortunately, death prevented him from fulfilling the most brilliant promises.

L. J. Barcelo, K.C.,

President of the Contemporary Art Society.

OBITUARY

HUGH ADDERLEY PECK

In Christ Church Cathedral, Montreal, on June the second, nineteen hundred and forty-five, many friends within and without the profession, assembled to pay a final tribute to the late Hugh Adderley Peck. His death a few days earlier came as a shock, for only his family and intimates knew that he had borne ill health bravely, and with a smile, for many months.

Hugh Peck was born in Montreal on December the fifth, 1888. After graduation from McGill University with the degree of B.Arch in 1911, he left for Paris to spend a year in further study. Upon his return, he joined the staff of Brown and Vallance and when World War I started he was with Barott, Blackader and Webster.

Always interested in planes and flying he went to Ithaca to train as a flyer and then joined the Royal Naval Air Service until the war's end.

In 1913 he married Madeleine Kohl and had two sons, both born in England. Captain Hugh Sands Peck and Pilot Officer George Richard Peck have proven worthy successors to their father.

Hugh Peck brought his young family back to Montreal after his discharge, opened an office, and picked up the threads of some of his earlier interests interrupted by war. Among these may be mentioned the Griffintown Community Club which he had helped to found and to which he contributed unostentatiously and gave unsparingly of his time.

As an architect, he took painstaking care with all his work and when opportunity offered, among other hobbies, pursued that of painting, attaining some skill in both oil and water-colours.

When the present world-wide conflict started he closed his office and became Works and Buildings Engineer for the Royal Canadian Air Force until failing health forced him to retire.

A brief biographical sketch must necessarily omit reference to innumerable kind and thoughtful acts and personal anecdotes to illustrate his fine human qualities. It can only faintly reveal the character and career of a man who was at all times highly respected and esteemed. His memory will be long cherished.

CLIENT FAILS IN ACTION AGAINST ARCHITECT

Judgment was given in an action brought by a client against an Ontario Architect for damages alleged to have been suffered by reason of the negligence of the Architect in giving an estimate of the cost of alterations to a house. The client alleged he had purchased the house relying upon the Architect's estimate, and, when made, the alterations cost much more than the amount of the estimate.

The client placed in evidence a paper admitted to be in the Architect's handwriting setting out a list of amounts opposite each of which appeared a word or two said to be descriptive of the particular alteration. The total came to $2,850, whereas more than $6,700 was spent on alterations.

The learned Justice in giving judgment said that the evidence, which he accepted, showed that the Architect attended at the house to which alterations were to be made in company with the client and her husband and spent about two hours on the property, at which time certain alterations were discussed. On the following evening the Architect saw the client and her husband at her own home and, after a general discussion, the husband asked what the alterations were going to cost. The Architect explained that no estimate could be made without plans and specifications showing exactly the work to be done and without discussing the same with the contractor. The Architect explained that this would take considerable time. The client had sold the house in which she resided and was anxious to purchase the house which she had inspected the previous day, and the husband pressed the Architect to give him and his wife some idea of the cost of the proposed alterations. As a result of this pressure but only after explaining that it would be a guess, the Architect put down the figures above referred to on the basis of an expenditure of so much on each item set down.

The learned Justice stated that it was his finding on the evidence that the client and her husband well knew that the figures were not in the nature of an estimate but merely an approximation of what might be spent. He stated that it would be unreasonable to expect the Architect to be able to give any reliable estimate without plans and specifications and without having discussed the matter with the contractor, but both the plaintiff and her husband were so anxious to buy the property that they were not willing to wait for this to be done.

It was also held that as the work proceeded many expensive alterations were added which had not been discussed at the time of the alleged estimate.

After pointing out that the onus was upon the client to prove the Architect negligent, the Justice was unable to find that the Architect was in fact negligent or had not used a reasonable degree of care and skill. Moreover, it was held that the client really did not rely in purchasing upon the figures given by the Architect as an estimate of the cost of the alterations.

The client's action was dismissed and the Architect's counterclaim for his fee was allowed, both with costs to the Architect.

SCHOLARSHIPS FOR ARCHITECTURAL STUDENTS

Coincident with the opening of a nation-wide building campaign, Hobbs Glass Limited announces that it is to be donor of scholarships for students of architecture at three universities. These are the University of Toronto, McGill University and the Ecole des Beaux-Arts de Montreal. The scholarships are intended to promote the development of new and higher standards of design in the current and post-war periods.

The name of the competition will be the "Hobbs Glass Limited Scholarship". The prize will go to the student at each school, who, in the opinion of the judges, best solves the problem in which glass is an important item.

A different design problem will be selected for each school of architecture. Two selections already made deal with the use of glass in schools and hospitals. Both types of structure are being given serious consideration at the present time by the whole architectural association, and it is felt that the chosen subjects are of timely interest. The comparatively recent advent of light directional glass block masonry, thermopane hermetically sealed double glazing and many other insulating glass products, holds out to the student's freedom, functional and practical designs.

The subject of the design problems will be selected each year by the university faculty, in conjunction with Hobbs Glass Limited. Judging of the work will be taken care of by the committees of each faculty. The University of Toronto and McGill University have already announced their judging bodies. In Toronto it will comprise the faculty group of the school of architecture, together with possibly a small group of Toronto architects and consultants. The McGill award will be decided on by the advistory committee of the school of architecture. This committee is composed of a number of practising architects in the city of Montreal, together with the Dean of Engineering and the director of the school.

It is felt that the offering of these scholarships is an important step forward in demonstrating to the public that glass has moved a long way from merely a material that you could see through and which broke easily, towards a product that has definite structural qualities, insulating talents and is colourful as well as beautiful.

LETTER TO THE EDITOR

Some readers of the *Journal* may not yet have finished reading the dozen volumes of material laid before the provincial premiers by our federal government last August. On page 14 of the central government's *Proposals,* the following commitment appears:

> "In particular the Dominion is prepared to support in principle the establishment of a community planning institute for Canada, or some similar body, for the co-ordination of planning and action in this field on a continuing basis."

It will be recalled that a Town Planning Institute, enjoying federal support and a modest international reputation, existed in Canada from the end of World War I until the budget-slashing days of 1931.

The provincial leaders are expected to meet their federal colleagues again within a matter of weeks. Can this offer to revive the town planning institute be taken up so promptly and enthusiastically by the R.A.I.C. and its component provincial bodies, that no federal or provincial leader will dare next month to say: "Not a soul seems to have cared about this offer; withdraw it"?

Yours truly,

Alan H. Armstrong.